

SARTONIANA

Volume 15

2002

**Sarton Chair of the History of Sciences
University of Ghent, Belgium**

ISSN 1377-2155
ISBN 90-70963-37-X
D/2002/2249/3

© Communication and Cognition, Blandijnberg 2, B-9000 Ghent
Belgium

No part of this book may be reproduced in any form, by print, photoprint, microfilm, or any other means without prior written permission from the publishers.

Subscription to SARTONIANA becomes effective upon payment of BEF 650,- (incl. postage) on banking account No. 001-1969611-05 of SARTONIANA, Ghent, Belgium or by sending a check of USD 22.00 to SARTONIANA, Blandijnberg 2, B-9000 Ghent, Belgium, with clear mention of subscriber's name and address.

CONTENTS

Sarton Chair Lectures

F. Vandamme: Laudatio Hubert Dethier	9
H. DETHIER: Averroes (Ibn Rushd, 1126-1198) and Averroism on social sustainability: making a case for a responsible science	15
H. DETHIER: Averroes' dialectic of Enlightenment; Some difficulties in the concept of reason	59

Sarton Medal Lectures

M. Thiery: Laudatio Robert Van Hee	95
R. VAN HEE: The evolution of surgery in the Low Countries during the sixteenth century	97
L. Taerwe: Laudatio Pierre Halleux	155
P. HALLEUX: La compréhension de la pensée technique des bâtisseurs médiévaux: un long cheminement du 12e au 21e siècle	157
D. Heirbaut: Laudatio Alain Wijffels	209
A. WIJFFELS: Flanders and the Scheldt question. A mirror of the law of international relations and its actors	213
P. De Backer: Laudatio Georges Theves	281
G. THEVES: Tiere als Heilmittel. Früher und Heute	285



Authors

- Prof. dr. F. VANDAMME. Universiteit Gent. Communication and Cognition.
Blandijnberg 2, B 9000 Gent, Belgium.
- Prof. dr. H. DETHIER. Hendrik I Lei 189, B 1800 Vilvoorde, België.
- Prof. em. dr. M. THIERY. Aan de Bocht 6, 9000 Gent, België.
- Prof. dr. R. VAN HEE. Academisch Heelkundig Centrum. Lange
Beeldekensstraat 267, B 2060 Antwerpen, België.
- Prof. dr. L. TAERWE. Universiteit Gent. Vakgroep Bouwkundige Constructie.
Laboratorium Magnel voor Betononderzoek. Technologiepark
Zwijnaarde 9, B 9052 Gent, België.
- Prof. em. dr. P. HALLEUX. Université Libre de Bruxelles. Faculté des
Sciences Appliquées. Génie Civil. Avenue A. Buyl 87-CP 194/4, B 1050
Bruxelles, Belgique.
- Prof. dr. D. HERBAUT. Universiteit Gent. Faculteit Rechtsgeleerdheid.
Vakgroep Grondslagen en Geschiedenis van het Recht. Universiteitsstraat 4, B 9000 Gent, België.
- Prof. dr. A. WIJFFELS. Place Montesquieu, 2, 1348 Ottignies - Louvain-la-
Neuve.
- Prof. dr. P. DE BACKER. Universiteit Gent, Faculteit Diergeneeskunde.
Vakgroep Farmacologie, Farmacie en Toxicologie. Salisburylaan 133, B
9820 Merelbeke, België.
- Dr. G. THEVES. Rue de Luxembourg 63, L 8140 Bridel, Grand-Duché de
Luxembourg.



GEORGE SARTON CHAIR

of the

HISTORY OF SCIENCES

2001-2002

SARTON MEDAL LECTURES

LAUDATIO HUBERT DETHIER

Fernand Vandamme

The unanimous choice of Hubert Dethier for the Sarton Chair, by the George Sarton committee, was more than justified in view of the enormous value of his scientific and critical work concerning the history of philosophy and moreover of his successful and stimulating efforts for motivating thousands of students during several decennia to actively study the history of philosophy and philosophy in general. In this laudatio we want to describe (1) how we discovered the immense value of his work. We will touch on some perhaps accidental correspondences, (2) between the work of Sarton and that of Dethier. A short overview (3) of the pluridimensionality of his scientific work will be given. Finally we will (4) elaborate on the personality of Dethier, on his strong, warm, rich and in the first place stimulating personality, for whom knowledge, wisdom, personal and social engagement are all strongly interrelated.

1. How we discovered the relevance and quality of the scientific, historic and philosophic work of Hubert Dethier.

The common man, scientist or not, at one or another moment in his career is confronted with our own western culture in which our professional scientific work is integrated. What are the drivers, the evolution, the future of this western culture? In this spirit we are inclined also to look for the roots, the history of this western culture with the hope better to understand the present status and the future. Rightly or wrongly we also believe that science is the pivot of the modern western society and more in peculiar determining its future. So we are interested to learn more of the origin of science in the western society. We have all learned that for this we have to look to the Renaissance: the basis and origin of modern science.

However, Sarton and Duhem already in the beginning of the 20th century have learned us that this popular view, which seems impossible to eliminate and which still is accepted by the generally erudite people and even by a lot of scientists, is completely wrong.

From Sarton, Duhem and Dethier we learned that modern science didn't find its origin in the Renaissance, not with the Greeks, not in Egypt or Mesopotamia nor in China or India but rather in the Islamic golden age. In the Islamic golden age all the ingredients of modern science which existed in one or another form, separated from each other in these several cultures, were integrated and produced the fruit of modern science, with all its merits and its curses as well (Vandamme, F., 1990, 2001).

Central for this integration is Averroes. Padua was a crucial center where the Islamic philosophers bridged the West and gave rise to the Western Sciences with Copernicus, Galilei, Harvey, Columbus...

When studying the Islamic golden age as well as its western impact one inevitably gets involved with the unbelievable erudite *Summa Averroïstica* of Dethier (with its four parts, I, II.I, II.II, II.III, III).

We can here only be jealous of Dethier who successfully worked for several years in Padua, the cradle, bridge and integrator of Western and Islamic Knowhow, Science and Philosophy ! We only dreamed of visiting Padua, the historical pivot of Islamic and Western science, culture, wisdom and knowledge.

Pitiful enough, both cultures after this intense interaction in Padua, pretty soon went each their own way. By this, they impoverished themselves and each searched its own route. In the 20th and 21st centuries, they meet again. Perhaps both centuries are nowadays more and more one-sided, more and more complementary. Let us hope that both cultures will integrate and again fertilize and ingrengate rather than destruct each other and perhaps even mankind at the same time.

2. Similarities and dissimilarities between Sarton and Dethier

Many authors have elaborated the biography of George Sarton. Social engagement was a fact very early in his life. It was his basic target. He was convinced that the emancipation and development of the workman had to be based on cultural development: literacy, theatre, art, science were basic levers for his emancipation. For these reasons Sarton was rather early active in these domains. He was convinced that to be efficient in this emancipation and development we have to know the processes, motors, roots of our knowledge and science, to be able to use them for the emancipation, progress and

prosperity of mankind. This idea is basic for his attention for the history of science. He approached this area with competence and a systematic method, which made him – as a lot of authors agree – the founder of this new discipline.

It is a pleasure to note that this same social engagement is the basic feature of Dethier's personality. He too searched for the roots of development for the same reasons. He too discovered the crucial role of the Islamic culture for the progress of sciences and western culture in general. He too succeeded in bridging the history of thinking with the construction of a future society. This type of bridging, Dethier realised through his teaching, through his involvement with handicapped people as well as through his political action for the sake of pluralism. His attention and involvement for art and film have also to be mentioned here.

3. The scientific work of Hubert Dethier.

To elaborate on the merits and impact of a scientific work of Hubert Dethier and give a critical analysis would require monograph. Therefore we will restrict us to a short overview. The opus of Hubert Dethier is very elaborated and broad and at the same time very profound.

We have already mentioned his four volumes, the *Summa Averroïstica*. A masterpiece ! However, we have in his work a lot of other contributions to the history of philosophy and knowledge, history of science, alchemy, history of religion, and culture. His strong involvement in esthetics too has to be mentioned. Very important is his elaborate approach to the discussion on the "Two Truth". This old problem is still very important for the better understanding of our own identities and the elaboration of our futures. Perhaps this pluralistic problem of the two truths is not that much anymore the discussion between the truth of the Ratio versus the truth of "revelation". For the 21th century, the traditional opposition between individualistic truth versus collective or even ecosymbiotic truth is perhaps much more important. The work of Averroes "Destruction of the Destruction" is here again probably pivotal.

4. The personality

Here too we could elaborate a monography on Dethier's rich personality. Still we can try to characterize it in some basic sentences. Hubert is a scientist with a mission to understand the past in order to build a better world and a

better future for the human, not only as an individual but in symbiosis with his society and environment. Hubert is an artist, an artist with language and with an analytic perspective. Hubert is a person who radiates strength and warmth: strength which stimulates but never overwhelms. Hubert is a teacher with a mission, motivated to help his students, collaborators, audience and to elaborate their own identity in symbiosis with and not against their cultural, ecological environment. Hubert is a politician too, in the noble meaning of the term, driven by pluralism but also targeting to realize a pluralistic society with as a target as well as a means a symbiosis of strong individuals with their environment.

Literature

DUHEM, P., 1906, *Études sur Léonard de Vinci, ceux qu'il a lus et ceux qui l'ont lu*, 3 vols, (vol. 3 sous-titré *Les Précurseurs Parisiens de Galilée*), Paris.

DUHEM, P., 1905, *Swzein Ta Fainomena. Essai sur la notion de théorie physique de Platon à Galilée*, Paris: Hermann, 1908; réimpr. Paris: Vrin, 1990. Publié d'abord sous forme d'articles dans *Annales de philosophie chrétienne*, 79/156 (sér. 4, vi): 113-138, 277-302, 352-377, 482-514, 576-592. Engl. Tr. E. Doland & C. Maschler, *To save the phenomena, an Essay on the idea of Physical Theory from Plato to Galileo*, Chicago: CUP, 1969.

DUHEM, P., 1913, *Le Système du Monde. Histoire des doctrines cosmologiques de Platon à Copernic*, Paris: Hermann, Tomes I à X (Nouveau tirage pour certains volumes.)

CALLEBAUT et al., 1984, *George Sartons Centennial. Communication and Cognition*, Gent.

DETHIER H., 1977, 1979, 1981, *Summa Averroïstica I, II.I, II.II, II.III, III*, Publikaties van de Vrije Universiteit Brussel, Centrum voor de Studie van de Verlichting.

VANDAMME F., et al., 2002, *Destructie van de Destructie - Een Kennisaudit van de Mens, Feniksreeks*, Gent.

VANDAMME, F., 1997, *Towards the Virtual Society, Feniksreeks*, Gent.

VANDAMME, F., 2001, *Capita Selecta, Communication and Cognition*, Gent.

S.A., 1984, *George Sarton's European Roots, Communication and Cognition*, Gent.



**AVERROES (IBN RUSHD, 1126-1198) AND AVERROISM ON
SOCIAL SUSTAINABILITY: MAKING A CASE FOR A
RESPONSIBLE SCIENCE**

Hubert Dethier

In studies of the work as a whole, those scholars aspiring to present Ibn Rushd (1126-1198) as a philosopher like the others most often simply end up describing a slightly modified Aristotelian system. In such works, the 'philosophy of Averroes' is presented as no more than a blend containing a large portion of Aristotle and a meagre helping of Ibn Rushd. This also prompted Renan to comment that there was no originality in this thought¹. By way of reaction to this, emphasis has been placed on those points where Ibn Rushd affirmed his independence. However, these are often points of detail difficult to co-ordinate by themselves. In the *Encyclopedia of Islam*, R. Arnaldez chose to present only those works known in Arabic, so as to avoid the errors introduced by the translations. Nevertheless, this still does not eliminate the diversity of semantic and intellectual levels in Ibn Rushd's works. Our survey presents what is primarily an interpretation of Ibn Rushd's *approach*. I am aware that while this may help us understand what he wrote in the context of his own time, it makes it harder to grasp the use to which it might have been put under different circumstances. Ibn Rushd's Latin and Jewish readers were not concerned with him as a person nor even as a thinker. What they wanted from him was instruction, and *solutions*. Thus it is not possible to evade the essential points which have produced the term 'Averroism', whilst the other commentators have not given their name to a school. In the middle ages the following five statements were considered characteristic of this philosophy: (1) The world is eternal; (2) God does not know particulars and there is no Providence; (3) There is no free will; (4) The possible intellect is one numerically, as is the active intellect; hence there is no individual immortality nor individual moral responsibility; (5) Philosophy and theology are contradictory to one another and the supernatural must be rejected. The fifth point - the 'theory of the double

¹ Dominique Urvoy, *Ibn Rushd (Averroes)*, Translated by Olivia Stewart, London and New York, 1991, pp. 97 sq.

truth' - is simply a distortion from outside of Ibn Rushd's hierarchical conception. Its second aspect, like points (1), (2) and (3), is no more than an extrapolation drawn from the commentaries alone and presented not just as an explanation given on a specific point of Aristotle's work, but as Ibn Rushd's thought itself. Ibn Rushd gives very specific and entirely explicit solutions to points (1) and (2). As we have also seen, he gives a somewhat modified response on point (3) but clearly opposes Ibn Tumat's idea of predestination. On the other hand it is more difficult to pronounce on the fourth point, described by Saint Thomas Aquinas as 'the most shameful error' amongst the theses attributed to Ibn Rushd. Readers of 'Averroes' have indeed found in the works translated under this name elements which permit the formulation of this 'technical solution' - which is no longer a simple general position like the theory of the double truth but a response to specific problems which are also not specifically Aristotelian. What is it, then, that leads Ibn Rushd to consider this question, and does his overall approach shed light on the solution he gives - a solution on which, moreover, the specialists are far from being agreed?

J. Berque ² has drawn attention to the fact that while aligning himself with pre-socratic Hellenism, Ibn Rushd was clearly marked by one of the most characteristic features of Arab culture - namely a sense of ambivalence. This is represented in particular by the linguistic form of *addad* (singular: *didd*) or opposites, which comprise a class of no less than four hundred and twenty six words that can signify opposites (censure - praise; strength - weakness; etc.). Not only does Berque show this feeling of ambivalence in Ibn Rushd's *Fiqh*, in his religious thought and in the philosophical refutation of Ghazali, but he also points out a highly relevant passage in the *Fasl al-maqal* in which Ibn Rushd refers explicitly to the phenomenon of *addad* in order to expose the confusions that can arise from homonyms. If a single word can indicate different or even opposing things, the only criterion is time. A *didd* only indicates opposites in the dictionary, in reality it indicates one thing at one particular time and another thing at another. The whole of Ibn Rushd's thought consists in shifting from one moment to another. The juridical approach of *ikhtilaf* consists in confronting the practitioner with sometimes equal possibilities between which he must then choose by intuition (*dhawq* -

² J. Berque, *Averroes et les contraires. L'ambivalence dans la culture arabe*, ed. J. Berque et J.P. Charnay, Paris, 1967.

literally 'taste'). However, in theoretical knowledge there are no equivalents, there is what Berque correctly calls 'a gradated theory of truth'³.

A. General overview

1. Introduction

I thank the promotor proximus for his friendly and uplifting laudation and the Rector, the chairman of the Sarton committee, all members and colleagues from the respective faculties for having chosen me to be the laureate for this academic year of their prestigious chair.

Ladies and gentleman, dear students,

I shall, in this setting and to the best of my abilities, as far as this is possible in such circumstances, focus on certain aspects of the work of Ibn Rushd, the Cordoban philosopher of the 12th century, better known by his Latin name, Averroes. Why Averroes? For a number of reasons. Not only have eminent colleagues such as Fernand Vandamme, Herman De Ley and Ronald Commers, been occupied with him directly or indirectly - he is after all the philosopher who, thanks to strongly controversial work by Renan, during the second half of the 19th century, started and stimulated the Arab Renaissance - but Sarton himself has made major contributions during the thirties to the critical discussion, examination, clarification and publication of works by this Arab representative of Enlightenment.

The Arab Renaissance or Islamic revival brings us to another problem. The fourteen hundred-year-old conflict between Islam and the Western World has augmented at the end of the 20th Century. Along with Samuel Huntington, I remark five factors that are involved:

Firstly, the Islamic growth in population has resulted in great numbers of unemployed and dissatisfied youngsters, who become recruits for the Islamic cause.

Secondly, the Islamic Revival has given Muslims new faith in the distinction of the character and dignity of their civilisation. We want to cater to this with Averroes.

³ Ibidem, p.139

Thirdly, an intense resentment has grown due to simultaneous attempts of the West to generally spread its values and institutions, its military and economic superiority in strength, and to intervene in conflicts in the Islamic world.

Fourth, the collapse of communism has removed a mutual enemy of the West and of Islam, after which they came to see each other as the most important threat.

Fifth, increasing conflicts between Muslims and Westerners and their spread on both sides, created a new sense of the singularity of the identity of each and has strengthened the sense of being different from the other.

Therefore this increased attention for Averroes, an important pawn in the light of Islamic revival.

2. Why Averroes?

Averroes (1126-1198) died about 800 years ago in Marakesh, and this symbolic date was commemorated on different locations in the world with colloquia and conferences. It is symbolic because 800 years ago, the work of Averroes had been completely forgotten and unappreciated in Islam, but, ironically enough, was a catalyst, inspirator and provocator, and as such experienced an enormous success, in the Jewish and Latin world: sadly enough, the *Averroes Arabicus*, was not destined the same fate as the *Averroes Hebraeus* and the *Averroes Latinus*. Although apparently conservative, his philosophy was sometimes also too controversial and provocative. Due to his fierce polemic with theologians, he gained a reputation in the West of being a heterodox and a heretic. Siger of Brabant, Boethius of Dacia and their Averroic colleagues from the Faculty of Arts in Paris, did not know however, that such criticism was permitted by the Islam, which, in that respect, has a completely different structure than Christianity. In Christianity, religion and theology are one and the same, that is, theology is the higher, more perfect shape of religion. It has the power to place itself between philosophy and the interpretation of texts from the Holy Scripture by defining *mysteries* which are impenetrable by reason. In the case there is a conflict, reason must submit to the belief, philosophy for theology. In Christian circles, the anti-theological criticism of Averroes, - to which he was entitled by Islamic religion - must have come across as an attack on religion. This explains the misunderstanding about the "secularist" Averroes, which

was spread by, amongst others, Renan and his school, and the slackened attention for Averroes's so called and probably well-meant orthodoxy.

Another reason for speaking about Averroes is the interest in Islam and Islamic philosophy which has increased during the past ten years. This, of course, in the context of the increased rivalry. A latest gain in this respect is the publication of a book by Michael Leenenberg, *Islamitische filosofie. Een geschiedenis*, at Uitgeverij Bulaaq in Amsterdam. For the Arabs, philosophy was a foreign element in their culture. Neither the Khoran, nor the Prophet, mention such a form of reasoning, aside from a few ambiguous sura's. This partly explains the hostility towards philosophy. On the other hand, they have a great interest and openness concerning the exact sciences of the Greeks and Indians: astronomy, medicine, algebra, physics, chemistry. Most philosophers were active in one of these areas, anyway. Just like the Christian world of the Middle ages is controlled by the intellectual clash between Reason and Revelation, so is Islam. Are they roads to the shared goal of the Truth? Can they be reconciled? How do come to the right knowledge? Is the soul immortal? Can philosophical reasoning be used to interpret the Khoran or to structure Law? The most inspiring pages Leenenberg's book are, in my opinion, the ones in which the travelling of thoughts is described: how ideas spread themselves geographically, how they transform, enter into relationships, lose keenness, sometimes dissolve completely or, the opposite: gain strength but in a different shape or with a different name. How ideas, sometimes with an official passport in full daylight, other times completely illegally, with false identity documents, cross borders in order to do their work. In this way, a fascinating landscape is mapped in which philosophy, theology, jurisdiction, science, mysticism and politics meet each other constantly in an intellectual adventure that encompasses the entire Mediterranean.

In the light of the current situation I will not evade in this lecture, a number of Averroes's inspired thoughts on notions such as natural order and counter-order, reason and destruction, destruction of the destruction, coherence and incoherence, negation of the negations, all of which take up a central role in a work like *Tahafut al-Tahafut*. In doing so, I will not hesitate to use certain anachronisms and parallels which, according to my friend Alfred Ivry, is improper in the history of philosophy, but is nevertheless often done with enlightening results. Approaching the Averroists like H el ene V edrine of the

Sorbonne, as pre-Kantians, has proved to be very fruitful because they too struggled with an inner rupture of reason (a pure, theoretical and empirical or practical one), a clash between freedom and causality. They too struggled with the insight that I cannot always bring my knowing in concordance with my being, and that I live in a broken and tragic world. The themes of contemporary philosophy are often embryonic, unconsciously present in the studies done by faraway predecessors. And the heirs often mirror themselves in the work of those who they regard as their authentic or imagined predecessors. Leibniz and Hegel did not always come to terms with the work of Averroes and Maimonides and sometimes found their own work to be prefigured by them and sometimes threatened. Santayana points out the fact that Plato's work can almost synchronously be read as a reading writer and a writing reader (like Sartre) and can thus as it were be seen as a contemporary. In a similar fashion, the historian Frank Ankersmit from Groningen asserts that next to the many interpretations which Derrida likes to attribute to texts about historical events, there is just as much an 'authentic historical experience'⁴ such as for example the graphic artist Escher's experience in the caves of Lascaux which encompassed a period of fifteen thousand years:

*'Yes, it is 'strange stuff', this human mind, that spark that has not extinguished, that seed stayed alive, that thread which we hold in our hands and which connects us, through the soundless, murky dark night, with those who are of the same kind as we, in the cave of Lascaux, a half-light by a kernel drenched in animal fat in a hollow rock. Do you see him sitting there, our brother? He murmurs a language? We don't know. But we know and see something different: he is holding a brush or plug made of animal hair or plant fibres, and rubs with it on a rough, rocky surface. See! A bull's head arises on the rocky wall, an image, so lively that it seems to really move, as if the moist nostrils quiver. Our brother portrays him with such a fierce poignancy that the difference of (a 150) centuries which divides us from them, shrivels to nothing. What difference does it make to us what he looks like; is he not our very own brother?'*⁵

⁴ Frank Ankersmit, *Represtatiecrisis en (historische)ervaring*, Studium Generale Universiteit Utrecht, 1995.

⁵ *Het oneindige. M.C. Escher over eigen werk*, Meulenhoff/Landshoff, 1986, pp. 14-15.

In short, nowadays there is much to say for Schopenhauer's insight 'that in the endless jumble of changes, one still deals with the same, similar and unchangeable being, which acts the same today as it did yesterday and at all times.'

Ernst Bloch, who exaggerates greatly but can also be very inspiring and creative, characterised Averroism as the Marxism of the Middle Ages. Thomas Müntzer attached great importance to Averroes's theory of the numeric unity of the intellect (Material and Active) in the light of the Pentecostal spirit of the Anabaptists. The French Enlightenment is fascinated by this concept of the Active Intellect and finally, Merleau-Ponty's phenomenology and Simone de Beauvoir's "morale de l'ambiguïté" are characterised strongly by Averroes's theory about language and religion in view of his insight about ambivalence and ambiguity. It is also marked by the doctrine of double truth of the Latin Averroists.

Another reason to read Averroes lies in another similarity with our contemporary world. He lived at a time of the advance of the *Reconquista*, with all the external and internal consequences for the Arab province of Andalus - but also with the internal developments within the Islamic world - all things considered, in an explosive world order. This explains the allusions to our contemporary time and the emphasis on Averroes as an important pawn in the Arab Renaissance - or better still: of the Islamic revival - and the ever so controversial modernisation of the Islam. This was already an issue at the time of Averroes, be it in a way of sharpened focus on the diversity and the dialogue within an intellectually layered and strongly monolithic society. Sometimes there is sufficient and sometimes insufficient space for freedom of thought, thought experiments, confrontation, conflict and dialogue. Even Derrida's view on deconstruction is treated, as it were, for the first time in Averroes's work. Finally, there is a source of inspiration for today in the French-Egyptian film *Le Destin* by Yusuf Chahine about the life and work of Averroes. It is a film about enlightened thought and tolerance, awarded a prize on the 50th festival of Cannes in 1997 and directed not only against fundamentalism in Andalus during the 12th Century, but especially against all its contemporary excesses in Egypt.

3. Manners of knowing a ruptured world

I come to a standstill at the apparently modern concept of destruction of the destruction (*Tahafut Altahafut*) or the fascinating coherence of the incoherence and incoherence of the coherence in the light of Ibn Rushd's approach to science. Furthermore concepts such as responsible science and boundaries of science are treated, more precisely the relationship between two manners of knowing a ruptured world. These have a central role in Averroes's work on the opposition between Revelation and Reason. One can also compare this with the rupture of Reason with Kant. Then we contemplate a number of themes and arguments which are remotely or closely related to Averroes's views on sustainability - the social and political-intellectual pillar especially (the ecological and economical, is not treated here) - and all things associated with this such as caution, acute attention for the public and the manner of discussing and debating, justice and fairness. Finally a number of themes will be further examined, especially Averroes's view on three, even four intellectual categories of people: the demonstrative (the philosopher and scientist), the dialectical (theologians) and the rhetorical (people of the superficial and manipulative reasoning). These are therefore the easiest victims of religious publicity and political propaganda.

B. Negation of the Negation

Tahafut al-Tahafut, Destruction of the destruction or incoherence of the incoherence is the title of an important work by Averroes directed against Gazali's *Tahafut Alfalasifa, Destruction of incoherence of the philosophers*. The defence of the latter by Averroes implies the forceful, yet tactful refutation of a reactionary, distorted, theological point of view that makes chaos rule, where first natural, understandable and reasonable order existed. In this world, there was a funded order and a society reflecting the hierarchy of this world within the minds of people: philosophers at the top, under them theologians and still lower the people who are easily influenced by rhetorical language. This order in thought needs to be re-introduced where the narrow and short-sighted implementation of religion has disrupted a natural, spontaneous order of both the world and society. When philosophy can be characterised as a reasonable and enlightening order out of the chaos of imagination, the conceptual and clarifying explanation of an originally incomprehensible and mythical world, theology often indulges in a chaos *ab*

ordine by means of its dialectical proofs, supported by plausible but never exact premises. Hegel's category of the negation and of the negation of the negation, can easily be traced to this remark by Ibn Rushd. This is also true for a whole philosophy of man as a cultural, order-creating creature, but also as a destroyer and an ignoring creature. Because creating order, or rather, new order, comes down to removal (destruction but also preservation at a higher level) of the previous order. The historical topicality can be seen in the dialectic of, amongst others, the recent tension in the economic world order between globalisation and anti-globalisation. The possibilities for destruction in our world have apparently increased enormously, in the light of the finiteness of the system, a thought we are more familiar with now. With our capacities for creating, for example forcing one and the same system onto all situations and cultures, destruction becomes enormous: each day, species, landscapes, cultures, languages, working methods, strategies, insights, schooling etc. disappear. As we remarked at the beginning of this exposé, modern science tries to objectify the world by gaining access to it with increasingly aggressive means. But the further one penetrates into the external world, the more fruitless it becomes. Even more clearly than in science, this Nietzschean shamelessness comes to expression in large-scale technical and industrial applications. In the area of economy and society, the problems that have arisen are still more harrowing: dualism of the world and of one's own society, increasing impoverishment, for Europe, the Schengen Treaty. Surely the awful acts of terror in New York and Washington and Western retaliation in Afghanistan, will mean an absolute turning point in our society, as Leopold Laarmans mentions in *Forum* (nr.12, Oct. 2001). In this precarious period of 2001, the world and all the conventions of society that existed so far, are brutally brought to a stand-still. The new world is going to be a world of darkness and complete impotence. A little bit like the Middle Ages, but with new parameters, like the opposition between poor and rich which has grown to a climax, the globalisation and fanatical religion in all its manifestations. With these three ingredients, "peace" will need to be defined differently, just like the concepts of safety primary needs, future, hope, war. These will all be words of a past order. In short, history starts anew today, and if this new history will also last thousands of years is a question that still needs to be answered. That is why we need to listen attentively to Averroes now, who lived in a comparable day and age and emphasises moderateness, justice, balance, dialogue, reciprocity, feedback, sustainability, as if we are listening to the clarifying language of the current

anti-globalist cultural critics: Noreena Herz and Naomi Klein. The mist of globalisation takes away man's clear view on matters and nurtures uncertainty and unrest. Long before that fear brought together masses of people in the so-called *anti-globalist movement*, the Canadian cultural critic, Naomi Klein, following in the footsteps of Vance Pacquard and Herbert Marcuse, Michel Chossudovsky and Susan George, had described its germs in her debut *No Logo*. Klein convincingly describes how, through the use of logo's, commercials have conquered society in its smallest pores, and how instead of products, they increasingly promote feelings and lifestyles. The increasing advertisement budgets for this *lifestyle branding*, were compensated by multinationals by cutting costs on employees and the care for the environment. The sad diagnosis takes up about half of Klein's book; the catching other half describes the growing protest against globalising injustice.

The concrete, tangible results of the vague, abstract globalisation, have become strikingly current since September 11th: the attacks on the WTC and the threat of biological weapons, have brusquely made an issue of securing food, water and transport. It is clear that the defence system of the U.S. has failed: an investment has been made in the military protection in space instead of in infrastructure. In the mean time, the public services are being rediscovered by the masses: one wonders if it is responsible behaviour to have private security businesses watch for the safety on airports, people cheer for the work of fire-fighters, policemen and doctors. This is a perfect chance to refocus our attention from the symbols of globalisation to the core of the problem. We have to make clear *why* the public services have eroded and then make clear how things can really change. In the context of the great migration problems and terrorism of today, we have to be reminded again of the politics practised by the IMF (International Monetary Fund) and the World bank which accompanied a politics of economic deterioration which formed the fundamentals for an explosive world order ⁶. The populist "word-

⁶ Explosive was what the world of Averroes was too (1126-1198). In 1775 Abdul Rakhman, the last survivor of the Omadjadan, landed when fleeing from the Abassids in Spain. He succeeded in starting a new dynasty. The climax of this dynasty was formed by the government of Abdal Rakhman (III) (912-961), who restored the power of the caliphate of Cordoba, partly due to a 'hired legion' of Slavic prisoners of war. It is known of his son that he collected more than 400.000 (!) books. From the 9th Century onward, the

violence” of our politicians concerns not only the results of an economic world system, which, from year to year contributes further to the disorder, misery, hatred and war. It concerns a future, desperate Europe, which now already looks like a concrete island, in which regions long to become new, small, simple, also concrete islands. An island protected by the “soldateska” who took up a post on the high walls on his border, shortly after the breakdown of the Berlin Wall. Small islands sometimes, who try to co-operate on the basis of distrust, but are imprisoned by their short-sighted egocentric politics of their national little dictators. We conclude this excursion with the considerations of Tahar ben Yellun about Fort Europe, with his remark that the Arab world needs to be helped out of its identity crisis and that Islamic fundamentalism does not appear out of the blue; it is mostly a reaction to the humiliation by the West. What the Arab world seeks is, above all, recognition, a new self-respect, a new dignity.

Richard Rorty, attributes far-reaching consequences to this splintered end of history and philosophy, not only intellectual, but also cultural and political ones. After the disintegration of the philosophy of rational truth, after the break-down of the large, encompassing framework, the only thing still standing, the last certainty on which we can fall back in chaotic times is the group to which we feel we belong, our own ethnic entity. With this remark, Rorty explains the current day revival of *Blut und Boden*-movements and the primitive violence that puts pressure on Western social-democracies and the U.S. from inside. He also explains the ethnic-religious blood-thirst which came to an explosion in former Yugoslavia, after the Communist house in which they previously lived peacefully, collapsed. In the same way, one could fall back, like now, on one’s own culture, one’s own religion, one’s

· cities strive more and more for autonomy: 23 city-states are founded of which some of the most important are Seville, Saragossa, Valencia, Toledo and Cordoba. Under the pressure of the Reconquista movement from the Christian North, lead by Alphonsus VI of Castile, Islamic Spain, ‘Alandalus’ is reunited in 1147 by the Berber dynasty of Almoravids, located in Marrakesh. It is followed in 1147 by the Almohads (“an even more intolerant sect, which, contrary to the Almoravids, had adopted kalam doctrines, influenced by al-Ghazali”, PINES, *Cambr.*, 815). Under the son of Yusuf Djakub (the “patron” of Ibn Rushd) the Reconquista will increase in speed: Cordoba falls in 1236, Seville in 1248. Only the kingdom of Granada will last another two Centuries (until 1492).

own qualitatively higher society, as it is regarded. This is Samuel Huntington's position in his book *Clash of Civilisations* which caused much ado. Derrida and Rorty speak about the dialectic between order and disorder: in their view, one philosophical truth that covers everything is impossible - just like there is no one physical truth or one political-economical truth - and partial truths, including their discrepancies, need to co-exist side by side. And again we end up with Averroes who revealed this truth to us 800 years ago, in a world order which was equally explosive as ours, on which I will not elaborate here.

C. Sustainability and Moderation: Themes and Arguments

When we speak of sustainability in the philosophy of Averroes, we refer to different aspects of his thinking in the light of the framework of a few of the important theses and arguments attributed to him and especially to his "political Averroism" as it was later called. In the middle ages the following five statements were considered characteristic of this philosophy: (1) The world is eternal; (2) God does not know particulars and there is no Providence; (3) There is no free will; (4) The possible intellect is one numerically, as is the active intellect; hence there is no individual immortality nor individual moral responsibility; (5) Philosophy and theology are contradictory to one another and the supernatural must be rejected. The fifth point - the 'theory of the double truth' - is simply a distortion from outside of Ibn Rushd's hierarchical conception. Its second aspect, like points (1), (2) and (3), is no more than an extrapolation drawn from the commentaries alone and presented not just as an explanation given on a specific point of Aristotle's work, but as Ibn Rushd's thought itself. Ibn Rushd gives very specific and entirely explicit solutions to points (1) and (2). As we have also seen, he gives a somewhat modified response on point (3) but clearly opposes Ibn Tumulat's idea of predestination. On the other hand it is more difficult to pronounce on the fourth point, described by Saint Thomas Aquinas as 'the most shameful error' amongst the theses attributed to Ibn Rushd. Readers of 'Averroes' have indeed found in the works translated under this name elements which permit the formulation of this 'technical solution' - which is no longer a simple general position like the theory of the double truth but a response to specific problems which are also not specifically Aristotelian. What is it, then, that leads Ibn Rushd to consider this question, and does his overall approach shed light on the solution he

gives - a solution on which, moreover, the specialists are far from being agreed?

As far as the themes are concerned, of which we will highlight a few here, the following are memorable:

1. Eternity, more so: eternal creation of the world and of thinking.
2. Eternity of philosophy: it is always realised in one or other current philosophy. According to Albertus Magnus, Averroes's worst mistake has been the position that not only the world is eternal but that also people, the sciences and philosophy are: "Averroes seems to assert that man, the arts and philosophy have never experienced an interruption and never will stop existing. Because, if by some movement of the celestial bodies they should disappear into one part of the world, then they have not disappeared out of another part: according to him, they have always been and always will be."⁷
3. Philosophers play an important role in reaching a consensus (*Idjma*) within the community. Philosophy is the only spiritual authority in solving difficult discussions and interpretations of the Qur'an. Philosophers constitute the decisive group that realises the consensus. This consensus implies a form of social pressure on the realisation of new interpretations of controversial texts. It is important to note in this respect, the relationship between the philosopher and the sovereign of the state: it is especially important to consider the requirements for the ideal statesman.
4. The harmonisation between belief and science implies the necessity of an enlightened community. Philosophers have to succeed in combining a personal perspective with the care for public wellbeing. A balanced approach of philosophy, science as well as religion is necessary, just like the realisation of a real community of researchers.

So when the Averroists argue for a 'double-truth' theory they have Averroes on their side to a degree. He would happily concede that there are different ways of establishing propositions in different universes of discourse. He would not be happy at being credited with the idea that these universes of discourse exist in splendid isolation, however. As we shall see throughout these lectures, Averroes did emphasize the differences between religious and philosophical language, yet also argued that both types of language describe the same reality. They describe it in different ways for different purposes for

⁷ According to Averroes, *De anima*, III, Comm.5 Crawford, p. 408, 613-619.

different audiences. But these different ways of talking are not autonomous activities which operate separately from each other. There would be little point to them if they had this character. For example, if it follows from Averroes's arguments that individual immortality of the soul is an unsatisfactory concept, it follows that some explanation must be given of how Islam can talk about such a form of immortality. And of course he provides such an explanation, in terms of the political relevance of the notion for the community as a whole and its role as representative of the more accurate and somewhat different philosophical notions of immortality. To argue that Averroes succeeds in disproving the coherence of the notion of individual immortality philosophically makes it puzzling to know what one is taken to believe in when one says that none the less one must believe in the truth of the individual immortality of the soul for religious reasons.

5. In order to be able to interpret Averroes's description of the diversity of paths to reach the truth, we must grasp his theory on meaning. Contrary to his philosophical predecessors (like Maimonides), he assigns a great deal of importance to the notion of ambiguity in language. The relatively free use of similar names allows him to discuss difficulties that people have in understanding what those names mean. Their meanings are different depending on the context in which they are used, even though they are not entirely different and distinct. Averroes has in mind the harmonic (despite the fact that it is a very difficult) convergence between three perspectives or approaches: the demonstrative (scientific, logical), the dialectical (especially socially important) and the rhetorical (sensitive, oratorical, artistic). Anyone trying to understand Ibn Rushd comes up against a major obstacle, namely the amazing variety of levels on which he stands. From the point of view of his own period, he was sometimes the jurist relying on traditional knowledge and at others the religious thinker addressing an enlightened public though of a principally Muslim educational background. Sometimes he was the scientist and sometimes the specialist in a knowledge passed down from Antiquity and, in a sense, esoteric. In his own view there were diverse modes of expression corresponding to the various intellectual levels, although the hierarchy was not totally fixed - sometimes the common people and the philosopher would unite against the dialectician while at others the latter is on an intermediate level between these two. Sometimes the level of expression of the common people is further divided into subsections (poetic or rhetoric). At times he emphasizes the divisions, and at others lingers on

one of these levels to define its possibilities envisaged in themselves. Finally, with regard to philosophy in general, he adopts three different perspectives (or perhaps even four including the 'questions') on the work of Aristotle, which is however almost presented as an absolute, and without this corresponding to different audiences ⁸.

6. Averroes, just like Plato and Aristotle, has an organically integrated view of society, of which the different parts or functions are attuned to a better flow and effective "circulation" of the whole. The first and theoretical part of this science proves that the human perfections are really of four kinds - speculative, intellectual, ethical, and practical - but these are not equal in status. The speculative virtues are the most important, and the others are steps on the ladder to their attainment. It is more or less impossible for an individual to excell in all the perfections, but it is possible for a combination of individuals to produce jointly all the perfections. Averroes makes the Aristotelian point that human beings are political animals in that they require others in order to acquire even one of the perfections. We need society not just in order to reach human perfections, but also to satisfy the necessities of life, and the very varied activities of different citizens constructs a social whole in which an acceptable life style is possible. Plato compares the parts of the state to the parts of the soul, so that the state is run wisely if the speculative citizens are in charge of the other less rational individuals, just as a person is wise if his rational faculties are in control of his other personality traits. Averroes understands Plato to be arguing that justice is a state of affairs where each citizen follows the activity for which he or she is most fitted by nature. But this is only possible if such citizens are under the authority of those most skilled in the speculative sciences, just as justice in a single person is dependent upon control by the intellect of the other aspects of personality. Wisdom and courage are restricted to particular groups in society, while justice and temperance (or prudence) are present in all classes of people. Some virtues are found more in some groups of people than in others, and the Greeks are credited with strength in the speculative sciences, while the Kurds and Galicians are predominantly courageous. Nature is important here, since Plato argues that everyone is provided by nature with a tendency to be skilful in only one form of activity. Those who are in charge of the security of the state, the guardians, should be chosen from those who

⁸ Urvoy, *Ibn Rushd (Averroes)*, p. 99-100

are physically strong and quick and shrewd; they must be naturally courageous and brought up from childhood to prepare for their martial role. Averroes runs through Plato's arguments here, as he does through his remarks on education, on the danger of listening to poetry and stories which excite physical desires and on the use of music pedagogically. Some of the Platonic arguments in favour of the abolition of private property, the desirable disappearance of gold and silver, the appropriate size of cities, not to mention the communal living arrangements for women and children, are very different from Islamic forms of life, and yet Averroes produces summaries of Plato's ideas for such social arrangements without much in the way of personal comment.

7. The active intellect as "realm of the truth", as "structure of the whole", as "soul of the world", as "objective mind" (Hegel) integrates the different individual insights and moments of knowledge, which interplay and reinforce each other when re-coupling. By means of a balanced integration of a multitude of viewpoints, perspectives and insights, we come to a permanent activation of thinking and to a realisation of what is called in semiotics, a "reserve of expressions": a whole of communicative possibilities in a person or a community, of which only a few are active at the same time. If divine wisdom produces an ordered world, by bringing into actuality potential forms which group concrete individuals into genera and species, so, inversely, through the act of abstraction the human spirit can make these forms exist separately. This is both the most characteristic act of man and that which brings him closest to divinity. While this may legitimately seem to suggest neoplatonism, the preceding discussion demonstrates that it should not necessarily be related to it but rather that it arises from within the Rushdian problematic itself. There is nothing real but the concrete, hence the intelligible being of forms cannot be conceived except as corresponding to a level in the hierarchical structure of existing things where they may have purely intellectual status. Ibn Rushd finds this in the hypothesis of separate intelligences moving the celestial bodies in a manner comparable to the movement of the lover by the loved one, but also of a universal and continuous movement since any individual character could only come from the senses and the imagination which are absent at this level. Thus the hierarchical structure of the universe and not a mystical type of perspective governs the status of the intellect. The latter, through the simple fact of understanding, i.e. conceptualizing the real, must go back from one

intelligible to another towards the organizing wisdom of everything. *Consequently, the diverse themes of Providence, the hierarchical structure of the universe and the pivotal role of the human intellect unite in what has come to be called the doctrine of the unity of the intellect.* The essential element of this doctrine is the notion of the eternity of the intelligible. To understand this, we have to return right to the very beginning in Aristotle's polemic against both the Megarians and Plato on the question of the appropriateness of conceptual language (universal) to concrete data (particular) (*Metaphysics* 1046, b30). Through this particular aspect, the entire problem of the soundness of thought is advanced. Why do all spirits function in the same way? When the individual stops thinking momentarily or definitively, does the truth cease to exist? The Megarians maintain that a concept can only be attributed to an object when the latter demonstrates it in actuality (the architect is only an architect when he actually constructs). Aristotle does not want to bring in the Platonic doctrine of 'participation' in the Idea. He therefore has to invoke the regression of the same being from potential to actuality, and then back to potential, etc. Thus the architect is always an architect from the moment he has learnt his profession, and even when he is not engaged in construction or when he momentarily forgets his skill. The Aristotelian solution is thus to expand' experience: momentary contact with the concrete is not enough to justify the attribution of a concept; what is needed is a repetition of this contact, the grasping of a process. If the spirit sticks' to this process, there can be no error. Ibn Rushd simply follows the same logic, extending the analysis to the level of the human species. The individual does not always think the intelligible, but the human species always thinks it, to the extent that Ibn Rushd considers it impossible for it to disappear⁹. The material intellect, so named because like the prime matter it can change into all things, is always thinking within the activity of the human species - hence the intelligible is eternal. The individual man only loses contact with it through the disappearance of the 'passive powers', i.e. the forms of the imagination, that are corruptible.

The theme of the unity of the intellect was already present in Ibn Bajja's work, but in a completely different context. Ibn Bajja principally describes a 'genesis of thought', whereas in Ibn Rushd's work there is 'la progression to

⁹ *Large commentary on De Anima*, ed. Crawford, p.448.

metaphysical analysis' ¹⁰. This theme enables us to understand not only the 'soundness' of thought, but also, as a result, the philosophical approach advocated by Ibn Rushd. The material intellect reaches perfection (*perfici*) through its own act of understanding material forms, and reaches it to an even greater extent in turning to immaterial forms 'intelligible in themselves', in particular the agent Intellect. Thus it reaches the level of the eternity of thought ¹¹. The term 'union' or conjunction' (*ittisal, conjunctio*) to the agent Intellect is used to describe the process by which the material intellect, which is nothing in actuality, becomes what it thinks and is united with the intelligible. It assumes a preparation involving the gradual acquisition of science, although the end of this process is itself beyond speculative science.

In this first lecture, we will direct our attention towards two of the themes mentioned:

1. The sovereign of the state
2. The difficult convergence of three kinds of people:
 - a. The scientists/philosophers, the people of demonstrative argumentation
 - b. The theologians or the people of the approximate, the probable argumentation
 - c. The rhetorics or impressionable people, who are barely able to analyse and approach reality critically.

D. Divine Law and Human Wishes

Averroes's discussion of Plato's *Republic* is an unusual aspect of his corpus. It is his only known treatment of Plato, and is difficult to classify as a text. It shares some of the characteristics of a paraphrase, since there is quite a lot of material which merely replicates and abbreviates Plato's text (as represented in Arabic), and there are many changes in the text to relate more easily the discussion to contemporary social and political conditions ¹². On the other hand, the text seems also to be rather like a middle commentary, with some

¹⁰ Jolivet, *Annuaire de l'E.P.H.E.* 1970-1, p.321.

¹¹ ed. Crawford, p.450.

¹² Oliver Leaman, *Averroes and his Philosophy*, Clarendon Press – Oxford, 1988, p. 119 sq.

analysis of Plato's arguments and a very definite selection of passages and exclusion of others on philosophical grounds. There is also the problem that there is no decent Arabic manuscript extant, and there are arguments about the reliability and integrity of the surviving Hebrew translations. The difficulties of the text and the consequent problems with translation have led to scholarly debates over the nature of Averroes's intentions which have reached heights of acerbity rare even within the restricted community of those concerned with *falsafa*¹³.

There is no lack of unity in Averroes's work. He begins his book by declaring as his intention the separation of demonstrative from dialectical arguments in Plato's text, and he finishes off on the same sort of note. In between he lays down his view of the nature of practical philosophy. Political science is part of practical philosophy, and regulates the appropriate behaviour of human beings in communities. The objects of political science are volitional acts which are produced by our free will and chosen after rational thought. By way of contrast with the theoretical sciences, political science does not have abstract knowledge as its goal, but practical action. This is not to say that reason does not enter into the working out of political science. Averroes produces within this context the well-worn example of medicine, which involves both a theoretical and a practical aspect. The theoretical aspect of political science involves the analysis of human conduct as such, and is, according to Averroes, covered in Aristotle's *Nicomachean Ethics*. The practical aspect can be found in his *Politics*, but, since this was not available to him, Plato's *Republic* had to do instead. The first and theoretical part of this science proves that the human perfections are really of four kinds - speculative, intellectual, ethical, and practical - but these are not equal in status. The speculative virtues are the most important, and the others are steps on the ladder to their attainment. It is more or less impossible for an individual to excel in all the perfections, but it is possible for a combination of individuals to produce jointly all the perfections. Averroes makes the Aristotelian point that human beings are political animals in that they require others in order to acquire even one of the perfections. We need society not just in order to reach human perfections, but also to satisfy the necessities of life, and the very varied activities of different citizens constructs a social

¹³ A prime example of orientalist waspishness is the review of Rosenthal's edition by J. Teicher, *Journal of Semitic Studies*, 5 (1960), 176-95.

whole in which an acceptable life style is possible. Plato compares the parts of the state to the parts of the soul, so that the state is run wisely if the speculative citizens are in charge of the other less rational individuals, just as a person is wise if his rational faculties are in control of his other personality traits.

Averroes understands Plato to be arguing that justice is a state of affairs where each citizen follows the activity for which he or she is most fitted by nature. But this is only possible if such citizens are under the authority of those most skilled in the speculative sciences, just as justice in a single person is dependent upon control by the intellect of the other aspects of personality. Wisdom and courage are restricted to particular groups in society, while justice and temperance (or prudence) are present in all classes of people. Some virtues are found more in some groups of people than in others, and the Greeks are credited with strength in the speculative sciences, while the Kurds and Galicians are predominantly courageous. Nature is important here, since Plato argues that everyone is provided by nature with a tendency to be skilful in only one form of activity. Those who are in charge of the security of the state, the guardians, should be chosen from those who are physically strong and quick and shrewd; they must be naturally courageous and brought up from childhood to prepare for their martial role. Averroes runs through Plato's arguments here, as he does through his remarks on education, on the danger of listening to poetry and stories which excite physical desires and on the use of music pedagogically. Some of the Platonic arguments in favor of the abolition of private property, the desirable disappearance of gold and silver, the appropriate size of cities, not to mention the communal living arrangements for women and children, are very different from Islamic forms of life, and yet Averroes produces summaries of Plato's ideas for such social arrangements without much in the way of personal comment.

In the second book of his discussion, Averroes starts by looking at the nature of the philosophers and the sort of education they ought to receive. The philosopher is intent on examining the truth without its material trappings, the pure forms or ideas which lie behind our use of concepts in the empirical world. The philosopher has to combine all the theoretical and practical virtues, and have the ability to teach both through the use of demonstrative reason and through rhetorical and poetic methods. The ruler of the state must

combine a number of qualities of king, lawgiver, and philosopher, all aspects of the nature of the *imam*. The ruler is expected to have the following natural traits: (1) he must be naturally disposed to the study of the theoretical sciences, thus enabling him to distinguish the essential from the accidental; (2) he must have good powers of retention of information; (3) he must be interested in all forms of theoretical enquiry; (4) he must love the truth and hate the false; (5) he must turn his appetites away from sensual pleasures; (6) he must not love money; (7) he must have noble sentiments; (8) he must be brave; and (9) he must always seek to attain the good and the beautiful. On top of all this, he should be a good orator, quick-witted in the sense of being able to seize rapidly the middle term of a syllogism¹⁴, and able to present his arguments in a simplified and accessible form. Yet, although kings ought to be philosophers, in existing cities they are not, as both Plato and Averroes admit. These states do not follow the example of those who are really wise, thinking that they can be governed by people who are not philosophers. In any case it is very difficult to find a philosopher who has the qualities appropriate for a leading political role in the state. Few philosophers possess the glowing list of attributes listed above.

In the third and last section Averroes discusses Plato's account of the constitutions of different states. The best kind of state is that which is ruled by the sort of ideal politician described in the second section. Next step down is timocracy, a state based upon the ideology of honor. Then comes oligarchy, rule by the few, and a few dominated by the desire for wealth. Fourth is democracy and fifth tyranny. The best kind of government can be either a monarchy or an aristocracy, while Averroes adds two other forms of regime, government by someone who only seeks to please himself, and government formed out of necessity. He repeats Plato's explanation of the transformation of one form of government into another, and analyses in some depth the nature of different kinds of state and the personalities of their citizens and rulers. Towards the end of his third section he makes some rather critical remarks about Plato's putative fondness for non-demonstrative arguments, and refuses to discuss the tenth book of the *Republic* or the first book due to their high dialectical content. He seems to think that everything else which Plato discusses is worth considering, albeit not necessarily to be

¹⁴ For more on this characteristic, see *Avicenna's Psychology*, ed. and trans. F. Rahman (Oxford University Press: Oxford, 1952), 36.

accepted as valid. There are points in the discussion in which he actually intervenes by correcting Plato by reference to Aristotle, but on the whole he does not do this. As we suggested initially, it is difficult to define the precise nature of this text, especially, as we shall see, since Averroes regarded it as a propaedeutic to the *Nicomachean Ethics*.

E. Intellectual Human “Races”

Ibn Rushd was not only a great commentator but also an original thinker. Yet, and that was most probably inevitable, his original philosophical production was negatively influenced by this activities as a commentator. His original works cover merely a limited field of philosophy, first and foremost the relation between philosophy and religion and his study of intellect. He has not written an encompassing presentation of his system (like Ibn Sina’s *Shifa*).

1. The Deal between Philosophy and Religion ¹⁵

In *Fasl al-Maqâl*, the tract that was dedicated especially to this theme, he starts by proving that the Law makes philosophy, as a striving for knowledge from the Creator and the Creator, binding¹⁶. (Ibn Rushd hereby works with the five traditional juridical categories, or judicial qualifications: mandatory, recommended, permitted, reprehensible, forbidden). Seeing as it is obvious that in doing so, one uses the most perfect methods of demonstration – the scientific-, one thus needs to study logic. Thereby it is not more than reasonable that one profits from the knowledge which earlier generations have acquired about this, even if they did not yet know the true religion; it is after all a means, an instrument. The same counts for philosophy in general. “From this it is obvious that the study of Ancient books is mandatory by Law”.

¹⁵ See Herman De Ley’s position in *The Philosophy of the Middle Ages*, Rijksuniversiteit Gent, 1977-1978.

¹⁶ He uses texts from the Qur’an in doing so. For example: “Summon for the road of the Lord through wisdom (*hikma*, synonymous for *falsafa*) and benevolent admonitions and when you discuss with them, use the most beautiful plea”, Soera 16.125,

But this counts only for those who are able to do so: Ibn Rushd, then continues by postulating “intellectual human races”. For this he uses Aristotle’s classification of the syllogisms and of the Qur’an texts cited earlier: he distinguishes:

1. the “demonstrative people”, namely the people of scientific proof, in other words, the philosophers, cf. “wisdom” in the Qur’an (with Aristotle: the “apodeic syllogism”, which departs from certain premises);
2. the “dialectical people”, namely theologians, cf. “the most beautiful plea” in the Qur’an (with Aristotle: “the dialectical syllogism” which departs from probable premises);
3. the “rhetorical people”, namely the mass, cf. “benevolent admonitions” in the Qur’an (with Aristotle: the “rhetorical syllogism”: primarily plays on emotions, the imagination etc. of people, in order to lead people to carrying out certain acts).

“Since all this is now established, and since we, the Muslim community, hold that this divine Law of ours is true, and that it is this Law that incites and summons us to the happiness that consists in the knowledge of God, Mighty and Majestic, and of His creation, than [end] is appointed for every Muslim by the method of assent that his temperament and nature require. For the natures of men are on different levels with respect to [their paths to] assent. One of them comes to assent through demonstration; another comes to assent through dialectical arguments, just as firmly as the demonstrative man through demonstration, since his nature does not contain any greater capacity; while another comes to assent through rhetorical arguments, again just as firmly as the demonstrative man through demonstrative arguments”
17

He continues by asserting that philosophy contains nothing that conflicts with the Islam:

“Now since this Law is true and summons to the study that leads to knowledge of the truth, we the Muslim community know definitely that demonstrative study does not lead to [conclusions] conflicting with what is

¹⁷ Ralph Lerner and Muhsin Mahdi (ed.), *Medieval Political Philosophy: a Sourcebook*, Cornell University Press, 1963, p. 169.

given in the Law; for truth does not oppose truth but accords with it and bears witness to it.”¹⁸

Abdurrahman Badawi¹⁹ hereby correctly remarks that this passage forms the cornerstone of Averroes’s complete theory concerning the relation between belief and religion: One cannot emphasize enough, its capital importance for the understanding of this theory”. According to Averroes, there *can* be no opposition between philosophy and religion, seeing as they both express the one Truth. In case a contradiction exists between the superficial, literal meaning of a Qur’an text and the conclusions of science, then the Qur’an text may or rather *should* be interpreted allegorically. He defines this “allegorical interpretation” (*ta’wil*) as :

“An extension of the meaning of an expression from the realistic to the metaphorical meaning, without thereby failing towards the standard practice of Arabic, by metaphorically naming something after something which it resembles, or after its cause or effect ...”

The Qur’an itself imposes it, cfr. Soura 3.7:

“It is he who has sent the Scripture, in which his becoming signs, which are the Mother of the Scripture and others still, contingent ... But not knows the explanation of them (of the contingent), another than Allah and those standing solidly in knowledge.”

The use of the *ta’wil* is restricted to the scholars by God. And where the jurists use it profusely, with how much more rights can the philosopher claim it, in using scientific arguments. The explanation for the fact that the Qur’an has a double meaning, should be sought in the different intellectual capacities of the people. But when a consensus exists (*idjma*) in the *oemma* that a certain text should be understood literally, then the philosopher should also keep to it, in case this consensus can be established with certainty. This is only possible concerning practical guidelines, not concerning theoretical problems. Consequently, Algazel condemnation of Alfarabi and Ibn Sina as “

¹⁸ Ibidem.

¹⁹ *Histoire de la Philosophie en Islam. Etudes de Philosophie médiévale*, 60 Vol. I-II, Paris, 1972, p. 778.

disbelievers” does not have a definitive character. For that matter, theologians also use God’s knowledge and the resurrection of the allegorical interpretation with regard to problems concerning the eternity of the world. Averroes reverses the positions here: often the *moetakallimoen* make inappropriate and unscientific use of the *ta’wil*.

The texts of the Qur’an are divided into three groups:

1. texts that everyone, also “demonstrative people,” should understand literally because they are demonstrable by means of three types of arguments: for example: the existence of God, the sending of the Prophet, etc.:
2. texts that the lower classes need to accept in their literal meaning, but must be interpreted allegorically by the “demonstrative” (“if such people take them in their literal meaning, it makes them disbelievers”!): for example the problem of God’s “place”;
3. texts of which the classification is uncertain and whereby mistakes made by philosophers are pardonable: for example life after death. Such allegorical interpretations may not be revealed to the lower classes:

*“Therefore interpretations ought to be set down only in demonstrative books, because if they are in demonstrative books they are encountered by no one but men of the demonstrative class. But if they are set down in other than demonstrative books and one deals with them by poetical, rhetorical, or dialectical methods, as Abu Hamid (Algazel) does, then he commits an offence against the Law and against philosophy, even though the fellow intended nothing but good.”*²⁰

Such books, that contain wisdom for all except the scholars, should be forbidden by the imams of the Muslims (this does not count for scientific works to such an extent, because they only go to the hands of philosophers.) The Holy Scripture has as its purpose: the proclamation of true knowledge (regarding God and creation) and the correct practice, that is the acts which lead to bliss for man. Seeing as it directs itself in the first place to the majority, it mainly contains dialectical and rhetorical arguments; the concepts are taught especially through symbols. The élite, which has to apply an allegorical interpretation, may not make it public to the people: diverting

²⁰ Lerner-Mahdi, p. 178

someone who can understand no better, from the letter of the law, means that his belief is being destroyed and thus his chance for bliss. Averroes wants to emphasize here the fact that there is but one Truth and that it is of capital importance that each every human, each on his level and with his intellectual capacity, turns to that one Truth:

*"Ibn Rushd's original contribution is to stress thus the importance of adherence to the truth. Men understand it through the ways which gain their assent; the majority consent to something because of what they themselves are, rather than because of what the thing itself is. Their truth is subjective. Incapable of adopting a rational objective attitude which would govern their personal reactions, they have to have their personal sensibility affected in order to accept what is proposed to them"*²¹.

Finally, the *moetkallimoen* get another lashing because they are responsible for rise of sects and the hatred and war amongst Muslims:

*"It was to be accounted for by the allegorical interpretations – especially untrue ones – and the supposition that such interpretations of the Scripture should be announced to everyone, that Islamic sects came into existence, with the result that each was accusing the other of disbelief and heresy. In this way the Moesalites interpreted many verses and traditions in an allegorical manner and announced their interpretations to the masses, and the Asharites did the same, although they used such interpretations less frequently. As a result of this, they plunged the people into hatred, mutual loathing, tore the Scripture to pieces and brought complete discord amongst the people"*²².

Until so far the main lines of the *Fasl al-Maqâl*. What should one conclude? That Ibn Rushd was a "rationalist" – cfr. the notion of thinkers of the Middle Ages that Averroes was a representative of disbelief and contempt for existing religions? Or that he, on the contrary, was a righteous and orthodox Muslim? Both interpretations have found their defendants²³. D. Gauthier,

²¹ Arnaldez, "Ibn Rushd", in *The New Encyclopedia of Islam*, III, New Edition, Leiden, 1960, pp. 913.

²² Ibidem, p. 183

²³ See Badawi, o.c. pp. 766 sq.

who dedicated a doctorate to the problem ²⁴, defends the first interpretation, but within the frame of Ibn Rushd's distinction between three intellectual categories of people: "la doctrine philosophique qui s'en dégage est un rationalisme sans réserve" (p.108); but this rationalism implies no open hostility towards religion and traditional belief ²⁵. On the other and, with regard to Averroes's positive comments concerning miracles, mysteries and the such, these were only intended as symbols for the people and concerned none of the adequate, philosophical knowledge that depends only on the demonstration based on rational evidence. According to Gauthier (o.c. pp. 179-181) one may therefore not ask if Ibn Rushd was a rationalist. But: with respect to whom is he a rationalist and with respect to whom is he not?

"Il est rationaliste absolu tant qu'il s'adresse aux philosophes, c-à-d à des hommes de démonstration, d'évidence rationnelle; ceux-là doivent interpréter tous les textes obscurs: il n'y a pour eux ni mystère ni miracles proprement dits. Il est antirationaliste, fidéiste, quand il s'agit du vulgaire, c-à-d des hommes d'arguments oratoires, ou comme il les appelle encore, des hommes d'exhortation, incapables de suivre une démonstration rationnelle: ceux-là doivent prendre à la lettre tous les symboles, tous les textes obscurs, sans exception. Quant à la troisième catégorie d'esprits, intermédiaire entre les deux autres, à savoir les hommes d'arguments dialectiques, les théologiens, capables d'apercevoir les difficultés des textes et d'épiloguer sur ces difficultés, mais impuissant à en comprendre la véritable interprétation, les philosophes doivent administrer, en quelque sorte, à ces esprits malades, comme seul remède dont leur mal dialectique soit susceptible, des interprétations d'ordre inférieur, appropriées à leur état d'âme, à leur genre d'esprit anormal et hybride: des interprétations semi-rationaliste, semi-fidéistes".

But *conditio sine qua non* for a deal between philosophy and religion is that the philosophers, in no case, may reveal their scientific interpretations to the other two classes ²⁶. In agreement with P.M. Alonso ²⁷, Badawi states ²⁸,

²⁴ L. Gauthier, *La théorie d'Ibn Rochd (Averroès) sur les rapports de la religion et de la philosophie*, Lecoux, Paris, 1909.

²⁵ Criticism on the view taken by E. Renan, *Averroes et l'Averroïsme*, 1882

²⁶ Gauthier in Badawi, o.c. p. 769.

²⁷ P.M. Alonso, *Teologia de Averroes*, Madrid-Granada, 1947, p. 109 sq.

questions this “rationalism”: it is beyond doubt that Ibn Rushd believed sincerely in the Qur’an as the book that was revealed by God to Muhammed, his Prophet – the Muslim witnesses confirm that he carried out the ritual commandments punctually. The character of the Qur’an is not questioned by him in a single text:

*“Il n’a jamais soumis le Qoran à une critique historique ou philologique ou doctrinale. Il ne ressemble à cet égard, ni de loin ni de près, à Muhammad, ibn Zakaryya al Razi, ni à Ibn al –Rawandi. Le considérer hérétique ou impie à la manière de ces deux penseurs serait une erreur capitale”*²⁹

Even though it is correct that *Fasl al-Maqâl* does not use a single word that would indicate a thought of the author in the direction of the subordination of philosophy to religion³⁰, then it still seems to little to justify qualifying him as “rationalist”³¹. But the greatest flaw of Gauthier’s interpretation lies in the fact that he is obliged to ignore the unmistakably fideic passage from the *Tahafoet* and the *Manahish*:

*“Ces textes ne sauraient offrir q’une importance secondaire pur la question de l’accord entre la philosophie et la religion, puisque le Fasl al–Maqal néglige les point qu’ils traitent; et puisqu’ils ne peuvent contredire la doctrine du Fasl, ils doivent admettre une interprétation rationaliste”*³²

In the two works – which are from the same period as the *Fasl*, - it seems that Ibn Rushd strongly tones down the independence and equality between philosophy and religion:

1. He emphasizes that the religion directs itself towards all people, and that its instruction is also of importance for the philosophers’ class which, after all, is brought up within a certain religion:

“The religions strive towards the same goal as philosophy, by means of a path that is accessible for all; therefore, according to philosophers, they are

²⁸ Abdurrahman Badawi, *Histoire de la Philosophie en Islam. Etudes de Philosophie médiévale*, 60, Vol. I-II, Paris, 1972, p. 774.

²⁹ Badawi, o.c. pp. 775 sq.

³⁰ Gauthier, o.c. p. 108.

³¹ Especially an “absolute rationalism” (Gauthier) implies the rejection of every godly revelation and of the supernatural in general.

³² Gauthier, o.c. p. 131, cited by Badawi, p. 774.

necessary. Because philosophy plays its role as master of bliss only for part of the intelligent people, namely those who study philosophy; the religions, on the other hand, have the intention of educating all people without exception. Seeing as the particular class (of philosophers) does not exist and cannot reach its happiness without participation of the general class, general instruction is necessary for the existence and the life of the particular class. As far as childhood and upbringing is concerned; no one doubts this. As for the time when it passes to its particular state, it is necessary for achieving excellence that it does not turn away from that in which it was raised and that it uses the best interpretations. It must realize that religious education is aimed towards the majority and not towards the élite. In case it expresses its doubts regarding principles of the religion in which it was raised, or if it brings forward an interpretation that is contradictory to what the Prophets teach, and leads them off their way, in that case, the person who does such things, deserves to be branded as a disbeliever and should be punished with the punishment which is intended by his religion for the godlessness.”³³

At the same time this work shows a tendency towards more understanding of the other religions: in the *Fasl*, Ibn Rushd still seems to regard the Islam as the only true religion, now he presents it as the last in a row and the most perfect of a series religions (of revelation) which are increasingly better adapted to their shared goal: realizing bliss for people in general in this life and hereafter. They do this through prescriptions, promises and warnings, based upon symbols, whereas the people-of-science are put on their way to the Truth through allusions which only they can understand. This approach, which are summarized in expressions as *omnes leges*, “all laws”, and *loquentes trium legum quae hodie sunt*, “the apologetics of the three laws that exist today”, should not be understood as “une généralisation hardie” and proof of religious indifference³⁴. As Badawi³⁵ emphasizes, this concerns “the pure doctrine of the Qur’an” regarding Christians, Jews and other ‘People of the Book’. Ibn Rushd also adds to this that although all religions seem true in the eyes of the philosopher, he should choose the best religion of his time:

³³ *Tahafut Altahafut*, pp. 582-3 ed. Bouyges, Badawi, pp. 783-4.

³⁴ According to Renan, o.c., p.166

³⁵ O.c. p.785.

*“That is why the philosophers who taught in Alexandria converted to the Islam when the Islamic Law came to them and the philosophers who came to live in Roman land converted to Christianity when the religion of Jesus came to them”*³⁶.

2. A number of texts from the *Tahafut* and the *Manahadj* also make Gauthier speak of *“un Averroès nouveau, qui fait profession de croire aux mystères, aux miracles, de subordonner la philosophie à la religion, l’évidence de la raison aux révélations de la prophétie”*³⁷:

- *“All those who accept that a religion can exist that is based only on reason, must recognize that it is inferior to the religions that are derived from both reason and revelation”*³⁸.
- *“When Algazali stated that one should turn to the divine law for everything that cannot be grasped with human reason, he was right. Because the science that comes forth from divine inspiration is only revealed to complement knowledge by reason. I mean that all that surpasses the span of reason, is taught to man by God Almighty through the revelation. Thus, the truths that remain inaccessible through reason, and for which knowledge is needed for life and the existence of man, are of two sorts: either absolutely inaccessible, that is, it does not belong to the nature of reason to reach them as reason, or inaccessible for the natural abilities of a category such as man”*³⁹.
- *“One should say of religion that its principles are divine and that they surpass human understanding; and therefore, one should accept them, even if one is ignorant of the reasons” (Tahafut Alahafut).*

Furthermore Ibn Rushd also recognizes the existence of *miracles*. Contrary to Ibn Sina, he states that they cannot be the subject of rational discussions and explanations due to the fact that they belong to the principles of religion just like the existence of God itself. He who does this deserves to be

³⁶ *Tahafut Alahafut*, p. 583.

³⁷ O.c., p.126, cf. Badawi, p. 785.

³⁸ *Tahafut*, p. 584.

³⁹ *Tahafut Alahafut*, cited by Badawi, p. 186.

punished. Prophecies are also defended by Averroes as super-rational⁴⁰. Gauthier⁴¹ attempts to lessen the impact of these texts by connecting them with the theory of the Eastern *falasifa*, especially Alfarabi and Ibn Sina regarding prophecies, particularly the theory of *emanation* and the *Active Intellect*. He must admit however that one does not find this theory made explicit by Ibn Rushd, at least not systematically (cfr. also the fact that Ibn Sina explicitly wants to give a rational explanation for miracles, prophecies and the like, while Ibn Rushd rejects any discussion on the subject). Herman De Ley (o.c.) joins Badawi⁴² in his conclusion that “the texts mentioned by Ibn Rushd indicate a fideism that is emphasized with increasing strength.

What to think of the unmistakably subversive effect of Averroes in the Christian West? This should primarily be attributed to the *difference in structure* of Islamic religion compared to Christianity, including a completely different role of *theology*. In Christianity, religion and theology are one and the same, that is theology is the higher, perfect form of religion: it has the authority to place itself between philosophy and the interpretation of the texts from the Holy Scripture by defining *mysteries* that are impenetrable for reason. In a case of a conflict, reason has to retaliate for belief, philosophy for *theology*. Ibn Rushd’s fierce polemic against theologians – for which the Islamic religion granted him full rights⁴³ – must have come across as an attack on religion itself in Christian circles. Another aspect which is related to Averroes’s theory, is the distinction he makes⁴⁴ between the lower people, for whom miracles and prophecies are primarily intended, and the philosophical élite. For a Christian philosopher, on the other hand, the dogmas are the same for all people. By this all, Ibn Rushd of course does not become an “apologist of the Qur’an”, that is, a normal “theologian” (see further on). Bloch⁴⁵ who expresses himself disapprovingly of the fideic interpretation of Averroes (and Avicenna) calls it “*kleine Philologie der Lesarten, sondern der Legende*” -, referring to the “pantheistische Zug” with Averroes (who, however, through his “return to Aristotle” and the rejection

⁴⁰ In the *Manahadj*, pp.99, 100, 102 Müller.

⁴¹ O.c. p.138.

⁴² O.c. p. 788.

⁴³ Islam is above all, a *practical* religion based upon concrete acts (the five pillars) much more than a *doctrine* (super 18).

⁴⁴ Following Alkindi, Alfarabi and Ibn Sina.

⁴⁵ O.c. p. 492.

of the emanation theory had undergone some weakening). He is, according to Herman De Ley, completely mistaken however, when he points to the persecution of which Averroes became a victim and to “die deutlich subversive Wirkung des Averroismus im christlichen Mittelalter”, as arguments to prove Averroes’s rationalism and anti-orthodoxy (cfr. comparable cases of “incomprehension” by society, for example the condemnation of Thomas).

A final point that should be mentioned in this context concerns the “teachings of the double truth” which were attributed to Averroes and the “Averroïsts” during the Middle Ages. The categorization of people into three classes could indeed lead to the proposition that there is a different truth for philosophers than for the people. But Ibn Rushd states explicitly that “the truth cannot be contradictory to the truth”; in his opinion there is only one truth. *In case* there is a contradiction, the religious text must be interpreted. As Badawi⁴⁶ remarks, this seems to be diametrically opposed to the views of those in favor of the doctrine of the double truth, which was condemned in 1270 and 1277 at the University of Paris. They attempted to resolve the incompatibility between the conclusions of philosophy and the teachings of Christian belief by making a restriction: “even if this conclusion was reached”, they say, “according to the method of Aristotle and his Commentators (that is Ibn Rushd), still, belief and truth confirm something different. In other words, in case of a conflict and opposite to Ibn Rushd⁴⁷, the belief is correct. In the “Condemnation of 219 propositions”, proclaimed by the synod of 1277, the following is written about them:

*“Because they say these matters are true according to philosophy but not according to the Catholic belief, as if there were two opposing truths and as if the truth of the Holy Scripture is was contradicted by the truth in that which was said by cursed heathens”*⁴⁸.

⁴⁶ O.c. p. 782.

⁴⁷ Still one can also find such a remark from him (concerning the unity of the intellect): *per rationem concludo de necessitate, quod intellectus est unus numero, firmiter tamen teneo oppositum per fidem* (cited from Gilson, p. 360)

⁴⁸ Hyman-Walsh, p. 542.

In conclusion, for Averroes, there is a religious truth, which is the same for all people. The worst misfortune that people could have is to lose their faith in that truth. Philosophy shocks the belief of most people, and should therefore be kept for scholars (their method to reach the same *practical* conclusion as normal people, is based upon theoretical demonstration and speculative knowledge). But theology, with its unscientific and sophistic arguments, is, as it gives the *impression* that it follows the holy scriptures, much more dangerous still, especially because it has the intention of presenting that one, single authentic *doctrine* in which *everyone* must believe. In all cases where the rational methods of demonstration are not applicable, philosophers find themselves in the same position as the normal man: just like him they have to follow the literal meaning of the Qur'an and beware of untrue statements of theology.

2. Averroes's Need for an Enlightened Community

a) *Critics of Enlightenment*

While some commemorating conferences and Symposia Averroica between 1976 and 1996 were focusing on Averroes and the Enlightenment, it would be helpful to briefly examine with original scholars as Timothy J. Madigan some of the main criticisms of the Enlightenment project, and see how Averroes's philosophy might address these⁴⁹. Critics of the Enlightenment such as the Frankfurt School scholars Theodor Adorno and Max Horkheimer have charged that its near-deification of human reason has totalitarian and repressive tendencies that are inimical to human freedom. There is an assumption - specially evident in Descartes' methodology - that all people reason alike and should arrive at the same conclusions. In their 1947 book *Dialectic of Enlightenment*, they write that, "The difficulties in the concept of reason caused by the fact that its subjects, the possessors of that very reason, contradict one another, are concealed by the apparent clarity of the judgements of the Western Enlightenment."⁵⁰ That is to say, the

⁴⁹ See Timothy J. Madigan, *Averroes and Inquiry: The Need for an Enlightened Community*, in Mourad Wahba and Aboussena Mona (ed.) *Averroës and the Enlightenment*, Prometheus Books, New York, 1996, p. 69-77

⁵⁰ Max Horkheimer and Theodor W. Adorno, *Dialectic of Enlightenment* (New York: Continuum, 1991), p. 83.

Enlightenment thinkers had a difficult, if not impossible, task of dealing with the fact that individuals seem to understand the world in different ways, by using different methods.

One of the most vigorous critics of the Enlightenment's adherence to rationalism was Arthur Schopenhauer (1788-1860). One area he dealt with particularly was the prevalence of religious belief. He scoffed at the Enlightenment notion that superstitions and false beliefs could be eradicated. We are metaphysical creatures by our very nature, doomed to ask unanswerable questions about the meaning of our existence. While a scant few may be able to overcome superstitions, the vast majority of humans take solace in their illusions - and it would be cruel to disabuse them of these, or encourage them to give them up. Rationalism is not a mode for the masses, who are unable to follow the dictates of truth tables or logical methodologies. This critique is best expressed in Schopenhauer's dialogue "On Religion." In it, two atheistic characters, Demopheles and Philalethes, debate the merits of ridiculing religious teachings. It is clear that Schopenhauer favors the views of Demopheles, who states that,

*Religion is the metaphysics of the masses; by all means let them keep it ... for mankind absolutely needs an interpretation of life; and this, again, must be suited to popular comprehension. Consequently, this interpretation is always an allegorical investiture of the truth.... Don't take offence at its unkempt, grotesque and apparently absurd form; for with your education and learning, you have no idea of the round about ways by which people in their crude state have to receive their knowledge of deep truths.*⁵¹

One sees here a sharp condemnation of the Cartesian dream of individuals following the exact same path to knowledge and arriving at a common belief system. Such a method could well lead to contempt for those who are unable or unwilling to use it. At first glance, the above passage seems to be similar to Averroes's views on the harmony of religion and philosophy. As Arthur Hyman and James J. Walsh point out in their *Philosophy in the Middle Ages*,

Invoking Aristotelian logical principles, he divided the citizens into the rulers who can follow demonstrations, the masses who are persuaded by rhetorical

⁵¹ Arthur Schopenhauer, *Essays and Aphorisms* (London: Penguin, 1970), p. 96.

*arguments, and, between them, the dialectical theologians who can understand dialectical discussions.... Averroes insisted that each of the three classes must be taught on its own level. General philosophical enlightenment, according to him, is proscribed.*⁵²

Is Averroes, then, a critic of the Enlightenment project's critique of superstitions and false beliefs? Certainly, like Schopenhauer, he valued the importance of symbolic and metaphoric language, and had a keen understanding of the ways in which people in general are motivated. But his presentation of this is far more nuanced than that of Schopenhauer. The irony of Schopenhauer's position is that it is he, and not the Enlightenment thinkers whom he castigates, who actually shows contempt for the masses. One cannot help but detect in the above-mentioned dialogue a sneering tone regarding the fools who cannot comprehend the world on rational principles. For all of his avowal of compassion, Schopenhauer seems to have little real regard for the majority of his fellow suffering creatures - at least of the human species. Horkheimer and Adorno are likewise guilty of the very sort of condescending attitude they criticize Enlightenment thinkers for having. For instance, in their discussion of what they call the "culture industry" - films, radio, television, magazines and other media that essentially sell the general public a false identity in order to keep them passive - they write that,

*As naturally as the ruled always took the morality imposed upon them more seriously than did the rulers themselves, the deceived masses are today captivated by the myth of success even more than the successful are. Immovably, they insist on the very ideology which enslaves them. The misplaced love of the common people for the wrong which is done them is a greater force than the cunning of the authorities.... It calls for Mickey Rooney in preference to the tragic Garbo, for Donald Duck instead of Betty Boop.*⁵³

While it is unclear what tragic element Horkheimer and Adorno see in Betty Boop which would make her superior to Donald Duck, one can sense an attitude of superiority. Unlike the masses they critique, Horkheimer and

⁵² Arthur Hyman and James J. Walsh, *Philosophy in the Middle Ages* (Indianapolis, Ind.: Hackett, 1973), p. 285.

⁵³ Horkheimer and Adorno, *Dialectic of Enlightenment*, pp. 133-34.

Adorno are not fooled by the system. Like Schopenhauer, they affect an air of detachment, an “above the battle” position which separates them fundamentally from the common herd. Indeed, Schopenhauer is often quite blunt in his estimation of the majority of human beings - “What the pathetic commonplace heads with which the world is crammed really lack are two closely related faculties: that of forming judgements and that of producing ideas of their own ... they are capable of only *subjective* interest. It is precisely this that makes card-playing the most appropriate amusement for them - card-playing for money.... To be sociable with them is to be degraded.”⁵⁴ He also adds that to expect most people to appreciate intellectual merit is like expecting a castrate to beget children.

It can be seen then that critics of the Enlightenment are themselves often prone to belittle the aspirations and intellects of the vast majority of human beings. On the one hand, we have an Enlightenment ideal of all people being encouraged to use rules and logical methodologies to lead their lives; on the other hand, we have an anti-Enlightenment, cynical view of most people being duped by their societies and a few intellectuals able to see the charade but unable to essentially change it. Neither of these scenarios (both of which are, of course, drastic oversimplifications) seem to fit the approach which Averroes himself advocated, for they each lack a sense of human beings attempting to learn the truth about their world by relying both on their own intellectual powers and by sharing information and freely discussing their points of view with others - in short, what is missing in these scenarios is the sense of a *community* of inquirers. This is an aspect which is perhaps best advocated by the American philosopher Charles Peirce (1839-1914). In his inspiring paper “Averroës and Inquiry ...” (o.c.) Madigan closes his presentation by briefly presenting Peirce’s views on the human practice of inquiry, and shows how these resonate with Averroes’s own discussion of the importance of philosophy.

b) A Strong Critic of the Cartesian Way

Like the Frankfurt School, Peirce was a strong critic of the Cartesian way of philosophizing. In his article “The Spirit of Cartesianism,” Peirce compared

⁵⁴ Schopenhauer, *Essays and Aphorisms*, pp. 127-29.

it unfavorably to the scholasticism it had sought to replace. He listed four key differences between these approaches:

1. Cartesianism teaches that philosophy must begin with universal doubt; scholasticism never questions fundamentals.
2. Cartesianism teaches that the ultimate test of certainty is to be found in individual consciousness; scholasticism rests on the testimony of sages and of the Catholic Church.
3. Cartesianism replaces the multiform argumentation of the Middle Ages with that of a thread of single inference.
4. While scholasticism has its mysteries of faith, it nonetheless undertakes to explain all created things, whereas Cartesianism ultimately relies upon facts that are themselves absolutely inexplicable.

While not advocating a return to scholasticism - which he recognized had relied far too heavily on the method of authority - Peirce nonetheless, called into question the supposed liberating element of Descartes's method of doubt. Doubts are not something that can be artificially generated. Rather, doubts cause us to question our previous habits of actions, or beliefs - they stop us in our tracks. Inquiry, then, is the struggle to attain beliefs. In order for inquiry to begin, there must be real and living doubts, which irritate us and which we struggle to free ourselves from. "Let us not pretend to doubt in philosophy what we do not doubt in our hearts," he writes ⁵⁵. In addition, Peirce questioned whether individuals on their own could arrive at conclusions that would truly satisfy this quest. "We individually cannot reasonably hope to attain the ultimate philosophy which we pursue; we can only seek it, therefore, for the *community* of philosophers. ... Philosophy ought to imitate the successful sciences in its methods, so far as to proceed only from tangible premises which can be subjected to careful scrutiny, and to trust rather to the multitude and variety of its arguments than to the conclusiveness of any one." ⁵⁶

⁵⁵ Charles Peirce, "The Spirit of Cartesianism", *Collected Papers*, vols. 5-6, Charles Hartshorne and Paul Weiss, eds. (Cambridge, Mass.: Harvard University Press, 1931-35), p. 157.

⁵⁶ *Ibid.*

Peirce was also sensitive to the different ways in which people arrive at their beliefs, and the methods they use to preserve them in the face of doubts. Like Averroes, he held that there are three universal classes of believers:

*If we endeavor to form our conceptions upon history and life, we remark three classes of men. The first consists of those for whom the chief thing is the qualities of feelings. These men create art. The second consists of the practical men, who carry on the business of the world. They respect nothing but power, and respect power only so far as it is exercised. The third class consists of men to whom nothing seems great but reason.... For men of the first class, nature is a picture; for men of the second class, it is an opportunity; for men of the third class, it is a cosmos, so admirable, that to penetrate to its ways seems to them the only thing that makes life worth living. These are the men whom we see possessed by a passion to learn.*⁵⁷

Descartes's error was to assume that all people were or could be capable of joining the third class, with a disinterested desire for truth for truth's sake, seeking explanations, laws, and fundamental principles. An empirical examination of society ably demonstrates that this is simply not the case. The aesthetically minded believer tends to rely on feelings, intuitions, and instincts, and generally holds on tenaciously to previously accepted postulates. This type of person is easily moved by poetry and rhetoric. The practical person focuses on concrete, short-term situations, and is only interested in examining fundamental principles if there is (in William James's famous phrase) some "cash value" to doing so. Such people seek order and opportunity, and often rely upon the method of authority to fix their beliefs. Unlike the third class of believers, the first two both fear and abhor uncertainty and chance. The aesthete and the businessperson distrust the thoroughgoing fallibilism of the scientific attitude, and are unlikely to be moved by appeals to reason.

Yet Peirce was by no means sympathetic to Schopenhauerian elitism and resignation. He remarked that the school of Schopenhauer contained philodoxers almost as narrow-minded as Italian monks and Thomists, and rather uncharitably described Schopenhauer himself as having a "diseased mind." Schopenhauer's misanthropy itself impedes inquiry. For Peirce, a

⁵⁷ Peirce, "The Scientific Attitude", *Collected Papers*, vols. 1 and 2, p. 19.

community of inquirers involves people of all three classifications of belief interacting with each other, attempting to understand their differing perspectives and endeavoring to forge mutually satisfying structures. Each type is likely to see aspects of the whole situation that the others might miss (scientists, for instance, in their quest for facts, often overlook a question that business-oriented people would immediately raise - "what will this cost?"). Peirce, like his colleague James, calls for intellectuals to come down from their ivory towers and mingle with nonintellectuals, seriously listening to their concerns and sharing observations with each other. As Philip Weiner points out,

*Most important of all for understanding the man and the deep humanistic undercurrent of even his abstruse speculations and technical researches is Peirce's view of higher education. A college or university should be a community of scholars devoted to study and to enlarging the sphere of knowledge so that teaching may spread the desire to learn how things really are, instead of aiming at increasing the prospects of financial or social success for its graduates.*⁵⁸

Peirce forswore Schopenhauer's intellectual self-satisfaction and would have had little patience for the Frankfurt School's highly specialized terminology and cliquish posture. In a sense, Peirce is far more sensitive to individualism, and sympathizes with Descartes's respect for the untapped intellectual powers of all members of society.

In a recent discussion of the book *Dialectic of Enlightenment*, Richard Rorty writes that, "Horkheimer and Adorno suspect that you cannot have a moral community in a disenchanted world because toleration leads to pragmatism.... They think that pragmatism was the inevitable outcome of Enlightenment rationalism and that pragmatism is not a strong enough philosophy to make moral community possible."⁵⁹ Interestingly enough, Peirce himself grew disenchanted with the ways in which some of his contemporaries - especially James - used the term "pragmatism," making it

⁵⁸ Philip P. Weiner, introduction to Charles S. Peirce, *Selected Writings* (New York: Dover, 1958), p. xvii.

⁵⁹ Richard Rorty, "The Priority of Democracy to Philosophy", in *Objectivity, Relativism, and Truth* (Cambridge University Press, 1991), p. 177.

seem as if it referred primarily to the second class of believers (the practically oriented). He disavowed the word, preferring to call his own philosophy “pragmatism” - a word too ugly for anyone to kidnap. Philosophy, Peirce felt, needs to combine the aesthetic, practical, and scientific elements, not treat them as separate and distinct. A moral community is one in which all members respect each others capabilities and try as best as possible to work together in a common search for satisfying and enriching beliefs. Peirce’s pragmatism attempts to steer a course between the Scylla of romantic cynicism and the Charybdis of Enlightenment deification of reason. Yet, when all is said and done, his commitment to the quest for objective truth is deeply evident - a quest he urges all people to attempt, for their own good and for the good of society as a whole. For Peirce, the ultimate commandment is: Thou shalt not block the road of inquiry.

c) Averroes’s Sensitivity to the Different Avenues of Knowledge and Belief

Such a commandment is one which Averroes would equally espouse. Dominique Urvoy writes that,

*In contrast to the haughty isolation of the mystics and the advocates of illumination like Ibn Tufayl or Ibn Bajja’s “solitaries,” the process by which philosophy is carried out is, according to Ibn Rushd, the concern of humanity as a whole.... In short, the men of religion, like the philosophers before Ibn Rushd, failed to combine a personal perspective with a concern for the public good. Ibn Rushd’s approach was more balanced.*⁶⁰

Urvoy points out that Averroes was not a marginal figure in his own time, but rather was fully involved in the affairs of his community as a physician and jurist. Even more importantly, he was both willing and able to communicate with and learn from the Christian and Jewish communities and appreciate the wisdom of the ancient pagans. He had a respect for all inquirers, and made it clear that even the educated elite must be receptive to the wishes of the masses. Reason should be used to harmonize society rather than enslave it. The Law has provided a way to truth suitable to every

⁶⁰ Dominique Urvoy, *Ibn Rushd* (London: Routledge, 1991), p. 110.

person's nature, and a good community is one where hatreds and misunderstandings are overridden by a shared love for the truth. "Indeed", he writes,

*God has already removed many of these ills, ignorant ideas and misleading practices, by means of this triumphant rule. By it He has opened a way to many benefits, especially to the class of persons who have trodden the path of study and sought to know the truth. This [he has done] by summoning the masses to a middle way of knowing God the Glorious, [a way] which is raised above the low level of the followers of authority but is below the turbulence of the theologians; and by drawing the attention of the elite to their obligation to make a thorough study of the principles of religion.*⁶¹

In a time of increasing culture clashes and renewed tenacity in belief-fixation, Averroes's espousal of collegiality is all the more relevant. He presents a method which avoids both Cartesian isolationism and Schopenhauerian contempt for the masses. The Enlightenment project, if it is to remain relevant to the present day, needs to be aware of Averroes's sensitivity to the different avenues of knowledge and belief.

3. Points of View and Variety of Paths

To understand Averroes's account of a variety of paths to the truth⁶² we have to grasp his theory of meaning. Unlike his philosophical predecessor (but curiously like his fellow-countryman, Maimonides) he places great weight on the notion of equivocation and ambiguity in our language. The relatively loose connection between the use of similar names permits him to discuss the difficulties involved in grasping what those names mean. Their meanings are different depending upon the context within which they are used, although they are not completely different and distinct. There is a thread of meaning connecting the different uses which extends from the divine exemplar to the temporal imitation. If we regard these terms as clear and univocal then we will get into the sorts of difficulties experienced by

⁶¹ Averroes, "The Decisive Treatise Determining the Nature of the Connection Between Religion and Philosophy", G.F. Hourani, trans., in *Philosophy in the Middle Ages*.

⁶² Cfr. Leaman, *Averroes and his Philosophy*, p. 193 sq.

Avicenna in explaining how a simple deity could embody a multiplicity of attributes, and of how the essence of a thing is independent of its existence. There will also exist a fatal difficulty in differentiating between the levels of abstraction which obtain between the ordinary thinking subject and the active intellect and beyond. Averroes accepts with Aristotle that there can be no priority or posteriority within the same genus, and so is led to develop an account of meaning which is based upon the *pros hen* rather than the genus-species relation. This relation is extremely useful in characterizing some of the most important theses presented by Averroes.

What are these theses? One is the significance of the notion of a point of view. In Averroes's philosophy there is a continual contrast between different points of view. There is not just a distinction between God's point of view and the human point of view, but also a differentiation of the standpoints of a whole variety of different human beings based upon their forms of reasoning. In the *Fasl al-Maqâl*, for example, there is a distinction between demonstrative, dialectical, rhetorical, and sophistical people (*FM*, ch. 3 *passim*). All these people are using similar language to describe what is important to them, namely, their religion, God, happiness, the next life, moral behaviour, and so on. This language is not identical regardless of its usage, but nor is it completely equivocal. There exist links between different applications of the same name, and these links are sufficiently strong for it to make sense to say that these uses are of the same term. In that case we can talk about a variety of routes to the same destination, a variety of views based upon the same principles and beliefs, and a variety of life-styles which together add up to something morally and religiously desirable. Commentators on Averroes tend to restrict his use of the notion of consensus (*ijma'*) to its theological role in sunni Islam, and this is valid in so far as it goes. But agreement in society has a more powerful role even than that of establishing religious orthodoxy and the definition of belief and heresy. Agreement also establishes what words mean. For Averroes the criterion of ambiguity is entirely social. If a group of people within the community come to regard a scriptural passage as ambiguous, then it is ambiguous, and has to be resolved in some way if practice is not to suffer. If a passage is clear to everyone, then it is clear in itself, and there is no need to speculate what lies behind it or how it justifies what it claims. It is clear and provides a definite route along which salvation eventually lies. When one group of people is satisfied that it understands a text, and another group is worried by

something in it, it is incumbent upon the latter to satisfy the theoretical problems without challenging the beliefs and practices of the majority of society, since any widespread challenge to the normal understanding of key terms would make such terms useless. It is crucial to grasp here that he does not just mean useless as a guide to action. In the example comparing spiritual and physical health he suggests that, if the theologians broadcast their confused thoughts about the meaning of the Qur'an, ordinary believers would come to doubt that they have an adequate grasp of the meanings of the texts which they know. They may come to doubt that those texts have any meaning at all, in the same way that the patients of the dialectical doctors might come to think that there is no such thing as health and sickness.

But there is such a thing as health and sickness, and religious texts do convey important information about how people ought to behave. Averroes argues that, in addition to these significant facts of what he takes to be common-sense experience, we have to pay attention to the different ways in which different people relate to these facts. A doctor has a different view of disease than an ordinary unsophisticated patient, and an ordinary believer has a different view of the grounds of his belief than a philosopher. Rather like Aristotle, Averroes respects a whole gamut of different views on a common topic, refusing to select some as more privileged or accurate than others⁶³. This variety of views is represented by the variety of language available to characterize a whole continuum of views, ranging from the entirely demonstrative to the most poetic and expressive. In his work Averroes spends a good deal of effort in trying to disentangle this variety and order it along the grid of demonstrative argument and its less stringent but still rational and related argument forms. It follows that equivocation in language is not something to be rejected as such. This feature of language must be accepted because it is a feature of our lives as different people living in a community with a whole range of ends and interests in prospect.

Ghazali condemns the suggestion that equivocation is a feature of the relationship between our language describing God and our language describing the ordinary world. He sees this as an attack upon the notion of God as a powerful and all-encompassing individual. In his reply to Ghazali,

⁶³ See on this topic the very interesting 'Good Repute' by M. Burnyeat, *London Review of Books* (6 Nov. 1986), 11-12.

Averroes argues that equivocation is an inevitable aspect of our language, since that language has to describe a wide gamut of views using the same name. We must respect the different uses of the same word because they represent different points of view, different points of view of the same thing. It is an error to represent some uses as essentially more accurate than others. At one time it was popular for philosophers to argue that, when a physicist and an ordinary person talk about a table, they have in mind different objects. The physicist knows that a table is 'really' a collection of immaterial atoms, while ordinary people think of it as something solid and stable. Averroes would argue that, when we talk about and observe a table, we are looking at one thing from a variety of points of view which are equally valid. The physicist is right because the table does have an atomic structure, and the ordinary person is right because he can eat his dinner on it. Our language is flexible enough to capture this diversity of views. In his philosophical methodology Averroes tries to show how it is possible for one thing to be described in a variety of ways. The arguments which have subsequently arisen concerning his 'real' views fail to grasp the philosophical approach he has constructed. When he tries to reconcile apparently contradictory views his strategy is to argue that all these views are acceptable as different aspects of one thing. The Averroist movement provides a useful focus for this idea, the precise nature of the apparent conflict between reason and religion. In his tentative remarks on language Averroes suggests that this conflict comes down to a stress upon different aspects of one thing, namely, the way the world really is. This is an intriguing interpretation of a longstanding philosophical dilemma, and may well be, according to Leaman, Averroes's most important contribution to philosophy itself.

(Bibliography at end of next paper)

AVERROES'S DIALECTIC OF ENLIGHTENMENT. SOME DIFFICULTIES IN THE CONCEPT OF REASON

Hubert Dethier

A. The Unity of the Intellect

This theory of Averroes is to be combated during the Middle ages as one of the greatest heresies (cfr. Thomas's *De unitate intellectus contra Averroystas*); it was active with the revolutionary Baptists and Thomas Münzer (as Pinkstergeest "hoch über allen Zerstreungen der Geschlechter und des Glaubens" ⁶⁴), but also in the "Aufklärung". It remains unclear on quite a few points ⁶⁵. As far as the different phases of the epistemological process is concerned, Averroes repudates Avicenna's innovation: the *vis estimativa*, as being unaristotelian, and returns to the traditional three levels: senses, imagination and cognition. As far as the actual abstraction process is concerned, one can distinguish the following elements with Avicenna.

1. The intelligible forms (*intentiones* in the Latin translation) are present in aptitude and in imaginative capacity, that is, in the sensory images which are present there;
2. The forms are actualised by the working of the Active Intellect (the lowest celestial sphere), that works in analogy to light ;
3. The intelligible forms-in-act are "received" by the "possible" or the "*material intellect*", which thereby changes into *intellect-in-act*, also called: *habitual* or *acquired intellect*: the perfect form of which – when all scientific knowledge that *can* be acquired, has been acquired – is called *speculative intellect*.
4. According to the Aristotelian principle that the epistemological process and knowing itself coincide, the state of intellect-in-act implies – certainly as speculative intellect – the conjunction with the Active Intellect.

⁶⁴ Cited by Ernst Bloch, *Avicenna und die Aristotelische Linke*, (1953), in Suhrkamp, Gesamtausgabe, 7, p. 498.

⁶⁵ Cf. Herman De Ley, *De Filosofie van de Middeleeuwen*, Deel I: *De Islam*, pp. 118 sq.

So far there aren't too many problems. They start to appear, however, when Averroes not only recognises the Active Intellect as a distinct, and immortal substance which is the same for all of mankind (as was traditionally done), but also the Material Intellect. (based on Aristotle, 429a18: "seeing as it thinks it all, it must, as Anaxagoras says, be unmixed;" and *ibid.*, 429b24v.: "in the case that, as Anaxagoras says, the *nous* is singular and unmoved and shares nothing with anything"). The question arises how, if the Active Intellect *and* the Material Intellect are eternal, the intellect that comes into existence out of their bonding, that is, our human intellect -in-act, can then be individual and transient? Just like

*"But the second question which states: in what way is the material intellect numerically one in all individual human beings, not generable nor corruptible, while the intelligibles existing in it in actuality (and this is the speculative intellect) are numbered according to the numeration of individual human beings, and generable and corruptible through the generation and corruption of individual (human beings) – this question is extremely difficult and one that has the greatest ambiguity – Haec quidem quaestio valde est difficilis, et maximam habet ambiguitatem."*⁶⁶

Averroes's "solution" consists of the identification of Aristotle's *nous pathetikos*, of which Aristotle says that it is transient, not with the "receiving," "material intellect" - which was Aristotle's intention -, but with the imagination. "Et intendit per intellectum passivum virtutem imaginativum" (*ibid.*, 151r), see also 165r., where he concludes: "The word 'intellect' is used here in four ways: the material intellect, the intellect that is in habitus, the active intellect and the imagination." The conjunction of the intelligibilia with our human spirit, takes place through the images, which, as intelligibilia- in-aptitude, shape the conditions for knowledge *and* individual being. In so far the intelligibilia are received by the one Material Intellect, they are immortal, in so far they are abstracted from the sensory images, they are created. Our speculative intellect is thus, in a certain sense, transient (but it is everlasting in the sense that humankind, when it is viewed as the total of all individuals at one time, actually thinks all intelligibilia at one time). Each person's individual thinking is, as it were, a part which is accidental, and

⁶⁶ Comm. on *De Anima*, 146v-147r Venice, Hyman-Walsh, p. 318)

temporarily separated from total thought. The Material Intellect is thereby not unified with us in the same manner as it is with the Active Intellect (namely by itself): it is unified with us through its unification with the sensory images, at least those that are effectively present in us. On the other hand, we are merely unified with the Active Intellect through the Material Intellect.

“Now Themistius was of the opinion that we are the agent intellect, and that the speculative intellect is nothing but the conjunction of the agent intellect with the material intellect. And it is not as he thought, but one must be of the opinion that there are three kinds of intellect in the soul. One of these is the receiving intellect, the second is the producing (agent) intellect, and the third is the produced (speculative) intellect. Two of these intellects are eternal, namely the agent and receiving intellects, the third, however, is generable and corruptible in one way, eternal in another way.

Since as a result of this discussion we are of the opinion that the material intellect is a single one for all human beings and since we are also of the opinion that the human species one for all human beings and since we are also of the opinion that the human species is eternal, as has been shown in other places, it follows that the material intellect is never devoid of the natural principles which are common to the whole human species, namely, the first propositions and individual concepts which are common to all. For these intelligibles are one according to the recipient (the material intellect), and many according to the received form (the imaginative form).

Hence according to the manner in which they are one, they are necessarily eternal, for existence does not depart from the received object, namely the moving principle which is the form (intentio) of the imaginative forms, and there is nothing on part of the recipient which prevents (its reception). For generation and corruption belongs to them only according to the multitude which befalls them, not according to the manner according to which they are one. Therefore, when in respect to some individual human being, some knowledge of the things first known is destroyed through the destruction of the object through which it is joined to us and through which it is true, that is the imaginative form, it does not follow that this knowledge is destroyed absolutely, but it is (only) destroyed in respect to some individual human being. Because of this we can say that the speculative intellect is one in all (human beings).

If one considers these intelligibles insofar as they exist absolutely, not in respect to some individual (human being), they are truly said to be eternal, and (it is not the case) that they are known at one time and not known at another time, but they are known always. And that existence belongs to them as intermediate between absence of existence and permanent existence. For in accordance with the quantitative difference (literally: according to the increase and decrease) which comes to the intelligibles from the ultimate perfection (of human beings) they are generable and corruptible, while insofar as they are one in number they are eternal.

This will be the case if it is not set down that the disposition in respect to the ultimate perfection in man is as the disposition in respect to the intelligibles which are common to all (men), that is, that the world (literally: worldly existence) is not devoid of such an individual existence. That this should be impossible is not obvious, but someone who affirms this must have an adequate reason and one that puts the mind at rest. For if knowledge belongs in some proper fashion to human beings, just as the various kinds of crafts belong in some proper fashions to human beings, one should think that it is impossible that philosophy should be without any abode, just as one must be of the opinion that it is impossible that all the natural crafts should be without any abode. For if some part (of the earth) lacks them, that is, these crafts, for example, the northern quarter of the earth, the other quarters will not lack them, since it is clear that they can have an abode in the southern part, just as in the northern.

Thus, perhaps, philosophy comes to be in the major portion of the subject at all times, just as man comes to be from man and horse from horse. According to this mode of existence the speculative intellect is neither generable nor corruptible⁶⁷.

Despite his sharp criticism of Ibn Sina, Ibn Rushd agrees with him concerning the subject of human perfection and bliss. His two Spanish masters, Ibn Bajja and Ibn Tufayl, had both learned that man is destined to be liberated from the imprisonment of his body and, by realising the conjunction (*ittisal*) with the Active Intellect, a state of intellectual bliss is experienced, comparable to that enjoyed by the separate Intellects. Ibn Rushd wrote no less than three tractates about the topic of "coniunctio" or *ittisal*, and explicitly states that man's eternal bliss exists in the "conjunction" of the

⁶⁷ *De Anima*, 149v-150v, Hyman-Walsh, p. 321-322.

(impersonal) material intellect with the Active Intellect. There is no room for personal immortality and bliss here - he also corrects Ibn Sina's deviation from Aristotle here: "the passive intellect", that is, the imagination that forms the basis for the (temporary) "individualisation" of the intellect, belongs to the *soul*. As a physical expression of the body (cf. Aristotle) it is transient along with the body.

*This state (sc. of ittisal) is a kind of divine perfection of man. Natural perfection, on the other hand, exists in the acquiring of natural states of proficiency in the theoretical sciences which are mentioned in the Book of Proof (that is Analytica Posteriora). That is the reason why these two proficiencies, that is, for natural and for divine perfection, can not be derived unambiguously from these sciences, because the aptitude for the ultimate divine perfection has no part in the material ability for personal individuality."*⁶⁸

It need not be said that for Ibn Rushd, reaching that part of intellectual excellence, is the privilege of a small minority. The mass can only reach a certain level of moral excellence by taking part in a life of practical virtue, for which the condition is not a theoretical grasp of truth, but sooner that orthodoxy of the soul, of which the conditions are defined in the Qur'an.

Concluding this discussion of Averroes's teaching of the unity of the intellect - or of "monopsychism" - as it is usually and somewhat imprecisely called by most-, one can note that " thus, in the relationship between God and the world, pantheism is excluded, and his monopsychism again has a monistical character"⁶⁹.

Along with the denial of the immortality of the soul it will cause scandal in Christianity: "His monopsychism was to be the single greatest danger to Christian thinking"⁷⁰.

⁶⁸ Paraphrase by *De Anima*, cited by Fakhry, *A History of Islamic Philosophy*, Columbia University, 1970, p. 325.

⁶⁹ H. Dethier, *Summa averroïstica. I. Het averroïstisch-nominalistisch front en de leer van de dubbele waarheid*, Brussel, 1977, p. 26.

⁷⁰ Gordon A. Leff, *Medieval Thought, from St. Augustine to Ockham*, Chicago, 1958, p. 161.

B. What makes us Know?

Though all knowledge must “come from” experience, it comes from a rational experience with an intelligible world. What experience conveys can be put into language, *logos*: it can be expressed in words, propositions, and demonstrations. And though man cannot say all that the world is, what he can say is truly said. The world has the power of being understood, and man’s understanding, his intellect, *nous*, is the operation of that cosmic power, the expression of the world’s intelligibility. In the act of knowing, the power of *nous* to understand, and the power of the world to be understood, receive a common fulfilment, a common operation. Human knowledge becomes one with what the world really is: the intellect, *nous*, becomes itself the intelligible structure of things⁷¹. Yet Aristotle recognises certain difficulties. If *nous* is really so self-contained and insulated from everything else, as it must be if it is to know, “if *nous* is simple and unaffected and as Anaxagoras says has nothing in common with anything else, how will it think, if to think is to be acted upon?”⁷² If *nous* has really no form or nature of its own, how can *nous* know itself? Perhaps *nous* is in a sense already all objects of thought potentially like the wax tablet. Aristotle had already stated, in contrasting “nousing” with sensing: “Actual sensing is always of particulars, while knowledge is of universals; and these universals are, in a manner, in the rational *psyché* or *nous* itself. Hence it is in our power to think whenever we choose; but sensing is not in our power: for the presence of the sensed object is necessary.”⁷³ Why then do we not think all the time? Why do we not think all things at once? Why are not all universals continuously present to *nous*? What “makes” us think and know? What actualises certain universals at certain times? Is the efficient cause of “nousing” like the efficient cause of sensing? What “makes” us see is light: in seeing, it is light that actualises particular colours, and light is the outcome of the motion of a medium. Throughout Aristotle, only motion can be an agent, “make” things happen, and serve as an efficient cause. So we should expect Aristotle to answer his question, What makes us know? “Some motion makes us know.” So far, the whole consideration has been biological and completely

⁷¹ John Herman Randall Jr., *Aristotle*, Columbia University Press, New York, 1960, pp. 98 sq.

⁷² *De Anima* III, ch. 4: 429b 23-25.

⁷³ *De Anima* II, ch. 5: 417b 22-26.

naturalistic: and some motion is the only answer consistent with the rest of the *De Anima*. Perhaps it might be some motion of the nervous system: that was the answer to the same question of the efficient cause of knowing given by Spinoza, who on this point was a consistent Aristotelian. Perhaps it might be some motion of discourse, of language and communication: that is the answer given by moderns like George Herbert Mead and John Dewey. The whole discussion certainly implies an answer in terms of some particular experience - some particular *phantasma*, perhaps: that was the answer of Zabarella, the ablest of all the Aristotelian commentators. But instead of giving any of these answers, Aristotle turns Platonist in the end, as he so often does. What he actually says is: besides the power of knowing and becoming all universals, *nous* as *pathétikos*, "passive intellect," there must be "another distinction in the *psyché*," *nous* such that it makes all things, a kind of quality (*hexis*) like light. And it is this *nous* that is, in the words of Anaxagoras, separable (*choristos*) and unaffected (*apathés*) and unmixed (*amigés*). It does not become, but is a deathless and eternal activity, and knows "no intermittence," and without it the *nous* that becomes all things would not think at all. And it is such *nous* that makes us know, just as light makes us see: Aristotle falls back on Plato's metaphor, that knowing is like an illumination by an intelligible light, and resorts to a Platonic myth - he certainly employs in this paragraph the "likely language" of myth.

What on earth does Aristotle mean? The problem of interpreting what came to be called the *poiétikos nous*, the "Active Intellect" - the phrase does not occur in Aristotle himself at all, though *pathétikos nous*, "Passive Intellect," does - has determined men's whole view of Aristotle's thought. The problem really belongs, not to Aristotle himself, but to the history of the Aristotelian tradition in Hellenistic and medieval times; for it became deeply involved in one question clearly not intended in Aristotle himself, religious issues.

Aristotle's pupil and successor, Theophrastos, held that what makes us know is "in the *psyché*," a part of us, one of the human functions of our life, something that man does. It is a spontaneous "active intellect," part of the human *nous*, another function or way of acting of the human organism. The Hellenistic commentator Alexander of Aphrodisias held that it is the same for all men, an eternal activity in the world: it is God himself, the Unmoved Mover. The human intellect, man's "passive intellect," the capacity to know, is illuminated by the cosmic *nous*, by God. This is a Platonizing

interpretation; since it was largely adopted by St. Augustine, we can call it an "Augustinian" interpretation. Averroes held that man does not really think himself at all. The "passive intellect" is also the same for all men, one and single. Only "intellect" ever thinks - in us! The "rational intellect," *nous*, both active and passive, is not the form of the human body, it is not a human function at all. It is the lowest of the "intelligences" informing the heavenly spheres: its proper "sphere" is the entire human race. Man has a form and function of his own, the "cogitative soul," which is the passive power of the *phantasia* or imagination to serve as the instrument of this single "rational intellect" of all mankind in knowing. Averroes thus construes intellect, *nous*, not as a personal human activity, but as a kind of "realm of truth," in which men "Participate," a realm which actualises itself *in* men as knowledge, but not *by* men. This view strikes the student of modern philosophy as quite Spinozistic: that is, Spinoza is in many respects in the Averroistic tradition, or at least in the tradition common to Averroes and Maimonides, who held rather similar opinions on the unity of the intellect. At this point Thomas Aquinas and the Christians appeared upon the scene, anxious to combat this Averroistic doctrine of the "unity of the intellect." They were not pantheistic, but fairly humanistic in their emphasis; and they were greatly concerned with the individuality of particular souls. Thomas held that the "active intellect" is the highest "part" or function of the individual human rational soul, and that it requires no bodily organ. We are thus back with Theophrastus once more. Finally, Pomponazzi and Zabarella, Italian Aristotelians of the beginning and end of the sixteenth century, of all professed Aristotelians probably the closest to the elusive "Aristotelian spirit," held that intellect or *nous* is indissolubly united to the individual body in its existence, and perishes when the body perishes. But in its functioning it can rise above the body's limitations. It needs sense images as its necessary materials, but in knowing *nous* lifts itself to universals, for a mortal intellect can nevertheless know eternal truth. It is in the act of knowing that *nous* is "separable and unaffected and unmixed," but not in its existence. The human or passive intellect is mortal, and dies with the body. The active intellect is alone immortal, for it is the intelligibility of the universe itself, its intelligible structure. So to Aristotle's question, What makes us know? Zabarella answers, It is truth itself, the logical structure of the World, joined to images as their "intelligible form".

The difficulty is that Aristotle's meaning cannot be found in his words alone. He does not press the point: there is a single concise, very elliptical paragraph. He then goes on in a thoroughly naturalistic vein as before. The "active intellect" is thus really the least important or significant part of the *De Anima*. To mix the metaphor, it is a Platonic wild oat coming home to roost: that is, it seems to be all that is left in the present text of the *De Anima* of what had been in his early dialogues a much more important part of Aristotle's youthful Platonism. This is the view of Werner Jaeger, A. E. Taylor, and most present Aristotelian Scholars: it is documented in F. Nuyens, *L'évolution de la Psychologie d'Aristote*, which follows Jaeger's methods. Perhaps it is best to leave it at that. Such a view of recent scholars transforms the logical problem of harmonising the active intellect with the rest of Aristotle's thought into the psychological problem of his intellectual "development"; and we moderns somehow feel that when we have abandoned logic for psychology we have "solved" a problem.

Of course, what Aristotle ought to have meant by "the *nous* that makes all things," the active intellect, in terms of his own thought, is clear enough. To his question, What makes us know? What actualises universals? the answer is, it is *logos*, discourse, language and communication. The "active intellect" is actually *logos*. Moderns like Mead and Dewey seem not only to be right - they are also thoroughly Aristotelian. But it is striking that, important as Aristotle makes *logos*, what things call be said to be, he never treats *logos* itself in biological and functional terms, as an activity of organisms with the power of *nous*: he never treats *logos* as a "part" of the *psyché*, as one of the functions making up life. Such a treatment is not in the *De Anima* at all, but it ought to be. What Aristotle himself actually meant cannot be learned by torturing this brief paragraph. One can get farthest by noting carefully the problems to which it is presented as an answer. The judgement of some scholars as John Herman Randall jr. for instance, is that the most probable answer arrived at by such a method is that of Pomponazzi and Zabarella. It seems clear that for Aristotle the "active intellect" must be something that is more than merely human. It may well be "the greater" or the cosmic "*nous*" of Anaxagoras⁷⁴, to whom Aristotle specifically refers throughout. Thus it is likely that as an Aristotelian interpretation Thomas Aquinas' is inaccurate. In any event, the "active intellect" is quite impersonal: Aristotle leaves no doubt

⁷⁴ Diels, fragment 12.

on that score. It is immortal and eternal, but has no memory. It is thus of little help to a Christian theologian, but it is very much like Spinoza.

If this really be Aristotle's own view, what can this mean? Accepting the account of Aristotle's intellectual development away from Platonism, we still have to ask: Why did he retain this early Platonic view? If we know what Santayana has called "The Secret of Aristotle,"⁷⁵ that he is a naturalist through and through, we can, I think, see in the "active intellect" a recognition of the cardinal difficulty in any naturalistic theory of knowing and intelligence. If we grant "knowing" to be a fact - if we hold that intelligence is not merely an organ of adjustment and adaptation, but a means of arriving at what may fairly be called "truth" - then mind does seem to rise above the limitations and conditions of its bodily instrument, and to be, as Aristotle puts it, "unmixed and separable," and in its vision "deathless and eternal." This is Plato's insight. It is not so much a theory about the ontological status of *nous*, as an appreciation of what *nous* can do.

Aristotle seems to be pointing, as always, to facts: here, to paradoxical facts. When we think, it is we men who are thinking: this is the individual and creative aspect of human living, in which our minds do seem to be able to lift themselves by their own bootstraps, and to become at once more self-contained and more self-sufficient, and more universal, more unlimited more penetrating, than anything connected with a particular animal organism has any right to be. The human mind is "unmixed with," "unaffected by," "separable from" its bodily conditions: it does seem to be in some sense "free" to seize on truth. Yet - we could not think at all if the world were not thinkable, if it had no intelligible structure, if it were not, in some sense, the embodiment of "reason," of *logos* - if it were not what can be aptly called a "realm of mind."⁷⁶ The hardheaded Spinoza, a consistent naturalist, displays the same "Platonism": "Man thinks, therefore God is." That is, the world is an intelligible system or order, a "realm" of reason and mind. And when we think, in spite of all our limitations, in spite of all the "perturbations" of our individual human minds, it is more than just we men thinking. It is more than just particular animal organisms doing something by themselves. It is the

⁷⁵ See Santayana, *Dialogues in Limbo*, X, "The Secret of Aristotle."

⁷⁶ See F. J. E. Woodbridge, *The Realm of Mind* (New York, 1926)

actualisation of that system and order, of that "greater and cosmic *nous*," as Anaxagoras calls it.

Thinking and knowing is the "thought" embodied there in the world, "potentially," Aristotle would say, being actually thought by us mortals. It is the world reason or *nous* flowering in our human knowing. The farther you push the human mind, as Aristotle does, to "pure potentiality," to the power to know all truth, the closer you come to "pure actuality," to that perfect truth itself. In other words, Aristotle seems to be saying something very much like what Spinoza said. The human mind can free itself, is "separable from," *choristos*, determination by the mere play of the mechanical actions of the body, to be determined by the "reason" of the world-system - by the "*nous* that makes all things," by embodied truth. It is a metaphor, perhaps, in both cases. But it is a Platonic metaphor into which all the great "Knowers" - those who make sheer knowing their aim - seem to fall in the end. It is a metaphor that points to facts. The "active intellect" is clearly a Platonic myth, like the very similar Platonic myth of Book Lambda of the *Metaphysics*. It is clothed in the language of Platonic myth, the "likely language" of the *Timaeus*, not in the normal Aristotelian language of exact statement. Such language always points to human experience; and if taken too literally always turns out to be nonsense. But it expresses the "Platonism" in which all sincere naturalisms - like Aristotle's - seem to culminate. The implication of the myth, the point of the metaphor, is that thinking is not something alien to the universe. "Mind" is not a kind of cosmic accident. It is rather a natural and inevitable development in a universe with the character ours displays, reaching its "highest" actualisation in the minds of men.

In conclusion, it is worth stating the significance of Aristotle's functional approach to knowing. He treats knowing as a function of the human organism responding to its environment, as a way of dealing with its world, a way of functioning in a context. He treats it as a natural process: there is no gulf between "mind" and the rest of nature. Mind is an intelligible interaction between a knowing organism and a knowable world. There is no problem of "How knowledge is possible, and why it isn't." For Aristotle, "knowing" is not a problem to be solved, but a natural process to be described and analysed. In the light of our experience of many other approaches to the construing of the fact of knowledge, the approach of Aristotle, it is here submitted, is the only sensible and intelligible, the only fruitful attitude.

Indeed, any construing of the fact of “knowledge,” whether Kantian, Hegelian, Deweyan, Positivistic, or any other, seems to be consistent and fruitful, and to avoid the impasses of barren self-contradiction, and insoluble and meaningless problems, only when it proceeds from the Aristotelian approach, and pushes Aristotle’s own analyses farther, as in the light of our scientific knowledge they must be pushed farther today - only, that is, in the measure that it is conducted upon an Aristotelian basis. Indeed, in some respects Aristotle’s functional and contextual behaviourism seems to be superior to our own biological and mechanistic behaviourism, because it views human experience, not as the interaction between a “merely” biological organism and a wholly illogical world, but as a co-operation between an intelligent biological organism and an intelligible world.

C. Political Averroïsm

During the very late Middle Ages (14th Century), Italian thinkers, more than all other European thinkers, have “averroïsed”: the history of Averroïsm is entangled with the cultural history of Italy. Even now, there is no unified picture. There are periods and milieus. And in the background of scholastic traditions, there were also individuals.

Dante Alighieri (1265-1321) and Marsilius of Padua (1275/1280-1342/1343). – If the legend of a Siger, who flees Paris, who is a defeated dialectic, a philosopher snapped by the beatings of Albertus (!) and of Thomas, has prevailed from the 1300’s onward, then the rehabilitation came at the same time, and with still more impact. Dante has made him enter into the fourth heaven of Paradise⁷⁷. The bearing of the six verses of the *Divina Commedia* (in which Saint Thomas himself introduces the philosopher to the travelling poet) remains contested. Which are then, the “obstructing truths” Dante mentions? Is he a personal adherent to them? In other words: is his praise a sign of “Averroïsm”, and if so, which “Averroïsm” does he mean? In order to answer these questions one has to investigate the works themselves.

⁷⁷ He, whose gaze you find regarding me, is the light of a ghost, with which serious thoughts, death slowly strides towards. It is the eternal light of Siger, which, during the teachings in the street of Fourra, syllogizes inappropriate truths.

Since the “Opinions of the inhabitants of the virtuous City” by Farabi, there is a political dimension to the “encounter” in Arab-Islamic thinking. In a certain sense it develops along with the critical dimension and the reformed intention of the *Decisive Treatise* by Ibn Rushd. Even if Dante, like all Latinists of the 1300’s, knew no political works of Arab peripateticism, one finds with him, the undisputed traces of what could be called a “politicisation of Aristotelism”, more than a “political Averroism”. It is senseless to emphasise here that Alighieri shared the ideal of philosophical life with the Parisian “Averroists”: in the Middle Ages he is the first who makes a systematic theory out of it with an unprecedented bearing, the first that resounds as a program: nobility (*nobiltade*). If the *Symposium* is the manifest of this intellectualist Aristocratism and if it profoundly theorises the notion of “intellectual bliss” (*felicità mentale*), launched earlier by Albertus the Great in the tracks of the farabo-Averroism, one should remark that, as with John of Janduno, the presence of philosophy in Dante’s *Universal Monarchy* is regarded as the ultimate end of society: “Due to the fact that the power of the intellectual faculties of man, cannot be realised completely and simultaneously, neither by an individual, nor by special communities, it is necessary that there is a multitude in the human kind, due to which this entire intellectual power can be realised. (...) This is indeed, Averroes’s opinion in his *Commentary on the Books De Anima*. (...) The task, taken as a whole and specific for human kind, is to activate the entire power of the potential intellect without pause, in a first period with the aim of reflection, then, as a consequence, with the aim of action”. This may not suffice in order to speak of a “Latin Averroism” in the traditional sense of the term- because Dante does not seem to proclaim the division of the potential intellect (*stricto sensu*), but it suffices to link Dante with both a transpersonal and a political understanding of the philosophical activity characteristic for Averroes⁷⁸. And there is more. Is the confirmation of the *necessity* of the “realisation of the intellectual power” for him, not a confirmation of the necessity of the “arts”? It is quite likely, and even more so because the passage of Ibn Rushd, cited by Dante, is precisely one in which he formulates the thesis of a

⁷⁸ Actually, the notion of a “collective” realization of science is an Averroistic thesis, well illustrated by John of Janduno, *Quaest. In XII libros Metaph. I, quaest. 4 cited, Edition: f° 279a-285a and 375b-383b*.

necessary “realisation” of the philosophy in *omni tempore*.⁷⁹ Indeed, more than searching for the unity of the intellect in the cosmos, Dante searched for it in the city-state, or more so in the Empire. His *Universal Monarchy* is monopsychism, as a social doctrine, as political life, as history. It is with the same theoretical gesture that at the same time Alighieri commemorates the political figure of Frederic II and the philosophical figure of Siger of Brabant. Dante is an “Averroist” to the extent that he is an empirical theologian, a theoretic of the necessity of the unity of temporary power, in short that he comes from political Laicism. But not in the details of a philosophical psychology and of a theory of the soul which is equally indebted to Albertus the Great and the Arab philosophy in general as to Averroes alone. The paradox of Dante’s thinking is that he has recovered one of the authentic meanings of Averroism- the political - without having been able to view the texts in which this is discussed.

Political Averroism, though born with Dante, did not die with him. One finds its essence in the work of Marsilius Mainardini, a fervent follower of the emperor Louis of Bavary, a determined adversary of popedom, a theoretic of the autonomy and unity of political power (in opposition to religious power), better known under the name of Marsilius of Padua. Ghiblin, but also student and master in Paris (he was rector in 1313), a personal friend to John of Janduno, banned by John XXII, fled to Munich (like the other opposer of the “fullness of pontifical power”, *plenitudo potestatis*, namely William of Ockham), Marsilius leaves behind an oeuvre, that is justly viewed as the fleuron of empirical transposition of monopsychism: *Defensor Pacis* (1324), *Defensor Minor* and the *Treatise on the Translation of the Empire*⁸⁰.

D. Comparison with Hegel’s Dialectic of Nature. The Unity and Distinction of Nature and Culture

1. Introduction

⁷⁹ Cf. Averroes, *In Aristotelis De anima*, III, comm. 5, ed. Crawford, p.407, I.605-623.

⁸⁰ Cf. *Le Défenseur de la Paix de Marsile de Padoue*, transl.J Quillet, Vrin, 1968; *Marsile de Padoue Oeuvres mineures (Défenseur mineur. Traité de la translation de l’Empire)* eds, translation and notes by J. Quillet and C. Jeudy, Paris, 1980).

If one wants to try to thoroughly understand man's culture, one cannot but confront it with its opposite: nature. After all, culture is the effect of the special position human kind has in the midst of other species. Differently said: his exceptional position in nature is that he is both part of nature and also a special part of nature, namely the part that is productive and receptive towards nature as a whole ⁸¹. Regarding the unity and the distinction of nature and culture, only the first step has been taken towards insight into the dialectic of culture. In order to get a grip on the further tread of culture it is useful to distinguish three aspects of moments in the relationship between man and culture. We propose to distinguish between 'objectification', 'self-sufficiency', and 'estrangement'. Anticipating on the theme of the rest of this paragraph: man is a creature who objectifies himself; whose objectifications become self-sufficient and whose self-sufficient objectifications estrange him from himself. 'Estrangement' is, then, the experience of man who loses himself as it were, in the world of culture that he created himself, instead of feeling recognised by that world and able to develop in it. As a realisation of the failure or at least the failing of self-fulfilment by culture, estrangement is an important concept to understand the whole process of the dialectic of culture, the process in which man develops via the detour of the cultural world which he himself created.

2. Objectification

The first aspect we would like to distinguish in this process is that of *objectification* or externalisation. The specificity of man is not that he is a creature that expresses itself - because animals also express themselves - but lies in the circumstance that he can express himself in a specific manner (symbolising, changing, "intellectually") and that he can shape his expressions into a more or less lasting form. Man disposes of the ability to express his impressions in more or less solid forms that have a certain objectivity and that exist autonomously apart from him. In anthropology ('material culture': economy, technology, housing etc.), it is immediately clear what can be meant by these more or less independent and sustainable forms in which man expresses himself. As far as the 'immaterial' culture (language, art, religion etc.) is concerned, the objectivity of these cultural

⁸¹ Ton Lemaire, *Over de Waarden van Kulturen. Een inleiding tot de kultuurfilosofie*, Ambo, Baarn, 1976, pp. 380 sq.

expressions is much less tangible. Their objectivity lies in the fact that they are continuously present in the behaviour and consciousness of participants in the culture. They let themselves be guided, in for example speaking, by the given grammatical and other rules, which are common in their society and necessary in order to reach understandable expressions. When they marry, they again, follow common rules for marriage which in general, they do not make up ad hoc, but which are in force in the tradition of their society. From an elementary perspective, culture is nothing other than the whole of these objectified expressions of a society; a whole of in fact, conventional forms, in which a society, traditionally organises a lifestyle for its members. As 'objective forms' they are the precipitation or deposit of the interaction of generations of people who wanted to speak, work, marry, think, pray, etc, within that society. Their 'style of being' at first seems somewhat mysterious, not only because it is so often hardly tangible, but especially because it is self-evident and its effect takes place beyond the consciousness of those involved. It is the dimension of reality that is neither organic nor purely 'intellectual' but the embodiment of a collective way of living; the fixing of patterns of behaviour of many subjects in the tradition which the community requires. According to Durkheim, these patterns betray the individual. White defines them as an 'extra-somatic continuum of symbol-borne events' whereas Kroeber prefers the term 'the superorganic'.

3. The Process of Self-Sufficiency

The second moment in the dialectic of culture is that of the process of *self-sufficiency*. The objectified expressions of the cultural community can exist by themselves, apart from and in opposition to the subjects whose externalisations they were at first, and the objectified expressions withdraw more and more from their creators' control. In fact this aspect is a further precision of what 'objectifying' means; all established cultural forms have this self-sufficiency; only from an analytical perspective, the process of self-sufficiency is a next phase in the objectification of man's expressions. Precisely because the objectifications are a collective product of many subjects and because man inevitably connects himself with nature, they obtain a weight of their own, their own inertia and 'facticity'. From this can be concluded that they should not be reduced to the human psyche, to individual and even collective intentions or needs, but represent a dimension with its own logic and its own objectivity which the subject has no access to.

Starting from Hegel, one calls this realm of human products, externalisations of the (subjective) mind the 'objective mind'; a concept that anticipates an understanding of culture but is then pushed aside by it. In this context this concept can be useful because it expresses man as a 'subjective mind' (as a longing, striving and thinking creature) objectifies his intentions and actions to an 'objective mind' so that he surrounds himself with a world of self made things, self-installed rules and self thought-up ideas, in which his mind is as it were sedimented. Once the mind has been objectified in the objective mind, man, from then on exists twice: namely immediately as a subjective mind and medially in his own expressions, as objectified mind. This doubling of human existence, made possible due to the fact that his expressions become self sufficient, turns out to be of vital importance for the development of mankind. Because once surrounded by an objective mind, a dialectic is created between man as subjective and man as objective mind. In this sense the objectifications of man as subjective mind now retroact his subjectiveness and influence it. This means that man firstly shapes, creates and produces but then is shaped, determined and produced by his own products. That man is indeed the creator of culture but at the same time its creation; that man produces but that he is also a product of his own product. Once the objectifications become self-sufficient with respect to man as a subject, following his own 'extrasomatic' and 'superorganic' development, man lives in and from a world brought forth by himself, but with its own logic and forcing the subject into certain directions. He is then shaped and controlled by that world of cultural forms. This means that, seeing as these shapes already embodied the cultivation of nature, man becomes 'cultivated' through his own treatment and symbolisation of nature. That man, by humanising nature, indirectly humanises himself, namely through his own externalisations. Man produces but thereby indirectly produces himself, and he, in the true sense of the word, is his own product: he is the product of his product. He is mediated by his own mediation; he is humanised by the humanising of nature.

4. Estrangement as a Bad Form of Self-Sufficiency

Finally, the third moment which we would like to distinguish is that of *estrangement*. It is not easy to get a grip on the concept of 'estrangement' since it recently has become such a trendy word in all kinds of sciences, philosophy and even daily speech. We want to stay with the original,

succinct meaning of the concept of 'estrangement' when we try to describe it as the state of man in which he experiences the objectified spirit as a *strange power* before him which hinders him to completely be himself. This definition is still somewhat vague, but it draws our attention to the possibility that is hidden by the dialectic in our culture, namely that man not so much develops and realises himself in and through his products but that he loses himself in them, is dominated by them and through his objectified mind he becomes a stranger for himself. The estrangement reminds us that the real meaning and 'intention' of culture is precisely to make life humane for the subject. This presupposes that man has 'fallen' from the immediacy of nature and that he has to mediate his life continually in and through the cultural shapes that he, himself creates. It is no less true that this detour which man must make via his objectifications, - and implicitly then, also via nature- in the end should lead him back to himself. If man can only realise himself via the detour of the objective mind, then this objective mind should in any case, allow him to recognise himself in his own work, to reaffirm him, in short: allow him to enjoy his own identity in them, even if it is mediated.

Estrangement comes down to a loss of identity: the circumstance in which man, as a subject cannot find his identity in his own objectifications. The concept 'identity', indeed allows us to penetrate deeper into the meaning of what estrangement really is. As opposed to an animal, which as far as we know, is immediately identical to itself, the identity of man is a necessarily a mediated, or more precisely: continuously in the process of being mediated. Due to the fact that man is an 'excentric', 'nicht-festgestelltes' animal, he does not immediately correspond with himself, but he must identify with himself, he must ascertain himself, and he has to do so via the detour of the other and others. Man appears to be a creature that has to *acquire* his own identity in a process that covers both his individual biography as the history of the species. This process of self-identification and self-ascertainment, indicates that man's identity is mediated, that it will always encompass both himself and the other. Therefore the subject, in order to become himself, in order to realise himself, must take the detour via the objectified mind and also take the detour over the world and the others.

One can speak of 'estrangement' when a human being cannot find and acquire his identity as a subject through his own objectifications, but that he, as it were loses himself in the self-sufficient world of his own objects.

Apparently a certain implicit norm is created when the concept of estrangement is used, namely the norm that man indeed has to acquire his complete identity in and through his products. If all estrangement means a loss of identity, if it expresses that the dialectic of the cultures which man completes has partially or completely failed, then the norm for a state of non-estrangement is the following: the subject must come to an entire and completed self-ownership, because he enjoys his own objective mind as his own exteriorisation. It appears that the norm is that the subject indeed confirms his autonomy through the detour across the objects. The victory over the estrangement then lies in the fact that the subject tries to regain ownership of the objectifications that have withdrawn themselves from his authority and have started living a life of their own over which he has no control, and thus also regain his autonomy.

5. The notion of the Eternity of the Intelligible

If divine wisdom produces an ordered world, by bringing into actuality potential forms which group concrete individuals into genera and species, so, inversely, through the act of abstraction the human spirit can make these forms exist separately. This is both the most characteristic act of man and that which brings him closest to divinity. While this may legitimately seem to suggest neoplatonism, the preceding discussion demonstrates that it should not necessarily be related to it but rather that it arises from within the Rushdian problematic itself: there is nothing real but the concrete, hence the intelligible being of forms cannot be conceived except as corresponding to a level in the hierarchical structure of existing things where they may have purely intellectual status. Ibn Rushd finds this in the hypothesis of separate intelligences moving the celestial bodies in a manner comparable to the movement of the lover by the loved one, but also of a universal and continuous movement since any individual character could only come from the senses and the imagination which are absent at this level⁸². Thus the hierarchical structure of the universe and not a mystical type of perspective governs the status of the intellect. The latter, through the simple fact of understanding, i.e. conceptualising the real, must go back from one intelligible to another towards the organising wisdom of everything. Consequently, the diverse themes of Providence, the hierarchical structure of

⁸² Urvoy, *Ibn Rushd (Averroes)*, p. 106-115

the universe and the pivotal role of the human intellect unite in what has come to be called the doctrine of the unity of the intellect. The essential element of this doctrine is the notion of the eternity of the intelligible. To understand this, we have to return right to the very beginning in Aristotle's polemic against both the Megarians and Plato on the question of the appropriateness of conceptual language (universal) to concrete data (particular) (*Metaphysics* 1046, b30). Through this particular aspect, the entire problem of the soundness of thought is advanced. Why do all spirits function in the same way? When the individual stops thinking momentarily or definitively, does the truth cease to exist? The Megarians maintain that a concept can only be attributed to an object when the latter demonstrates it in actuality (the architect is only an architect when he actually constructs). Aristotle does not want to bring in the Platonic doctrine of 'participation' in the Idea. He therefore has to invoke the progression of the same being from potential to actuality, and then back to potential, etc. Thus the architect is always an architect from the moment he has learnt his profession, and even when he is not engaged in construction or when he momentarily forgets his skill. The Aristotelian solution is thus to 'expand' experience: momentary contact with the concrete is not enough to justify the attribution of a concept; what is needed is a repetition of this contact, the grasping of a process. If the spirit 'stick' to this process, there can be no error.

Ibn Rushd simply follows the same logic, extending the analysis to the level of the human species. The individual does not always think the intelligible, but the human species always thinks it, to the extent that Ibn Rushd considers it impossible for it to disappear⁸³. The material intellect, so named because like the prime matter it can change into all things, is always thinking within the activity of the human species - hence the intelligible is eternal. The individual man only loses contact with it through the disappearance of the 'passive powers', i.e. the forms of the imagination, that are corruptible.

The theme of the unity of the intellect was already present in Ibn Bajja's work, but in a completely different context. Ibn Bajja principally describes a 'genesis of thought', whereas in Ibn Rushd's work there is 'a progression to metaphysical analysis'⁸⁴. This theme enables us to understand not only the

⁸³ Large commentary on *De Anima*, ed. Crawford, p.448

⁸⁴ Jolivet, *Annuaire de l'E.P.H.E.* 1970-1, p.321

'soundness' of thought, but also, as a result, the philosophical approach advocated by Ibn Rushd. The material intellect reaches perfection (*perfici*) through its own act of understanding material forms, and reaches it to an even greater extent in turning to immaterial forms 'intelligible in themselves', in particular the agent Intellect. Thus it reaches the level of the eternity of thought ⁸⁵. The term 'union' or 'conjunction' (*ittisal, conjunctio*) to the agent Intellect is used to describe the process by which the material intellect, which is nothing in actuality, becomes what it thinks and is united with the intelligible. It assumes a preparation involving the gradual acquisition of science, although the end of this process is itself beyond speculative science.

The details of the Rushdian concept of the intellect are extremely complex, and Renan himself was appalled by them. In fact, as mentioned, Ibn Rushd generally looks for the simplest solutions, since he considers complexity a source of error. However, on this particular problem he had to deal with an essential point on which the layers of commentaries and hypotheses had accumulated without it being possible to draw a clear opposition between the perspectives because, as J. Jolivet correctly points out, Aristotle's own perspective is tinged with Platonism. If Ibn Rushd's solution has been seen as neoplatonic in tone, it is because he wishes to take into account all the interpretations and do justice to each one, not through syncretism, but by integrating the particular aspect that justified its formulation. He distinguishes thought, which is passive, from abstraction, which is active and anterior to the former in our will. We understand the 'primary propositions' (*primae propositiones*) in a natural way through the action of the agent Intellect, and 'knowledge acquired' (*intellecta acquisita*) from the primary propositions' in voluntary fashion both from the former and from the agent Intellect. The agent Intellect acts towards these primary propositions in a manner analogous to the cause efficient in relation to the instrument, or form in relation to matter, but this manner remains autonomous. This explains the capacity of the material intellect to grasp eternally both material forms and separate forms. In 'engendering' intelligibles, which is an action of the material intellect, but assumes the intervention of the agent Intellect, the latter becomes a form of the former. This is what constitutes union, but it takes place through a whole series of mediations: material intellect - images -

⁸⁵ ed. Crawford, p. 450

potential speculative intelligibles - speculative intelligibles in actuality - agent Intellect. The Latin text (which is the only one known) speaks of 'movement towards junction' (*moveri ad continuationem*, p.500) and shows how Ibn Rushd was attracted - but not more than attracted - by the mystical perspective of Themistius. The treatise *De animae beatitudine* goes into even greater detail concerning the action of the agent Intellect. Since it renders material forms intelligible, it must be superior to them in intelligibility and there must be a mediator - the acquired intellect, which is that which is capable of thinking itself and which develops in time. The *intellectus-intellectio*, the *intelligibile* and the *intelligens* are thus united in a quasi religious perspective.

E. Scholar of the Philosophical Tradition

Breaking new ground in an environment that was intellectually unprepared, Ibn Rushd had to build up an audience. His own society did not recognise the status of the philosopher, acknowledging only that of the scholar or the politician (*faqih* or counsellor to the prince). These two figures were permitted - within the limits of orthodoxy - to construct their own vision of the world although, whatever its merit, it did not endow them with any moral authority. Such authority only existed in the ancient world. To gain an audience, the thinker had to turn himself into a scholar of the philosophical 'tradition'. Malik Ibn Wuhayb's success in this respect - despite his failure to produce anything of his own - earned him the title of 'philosopher of the Occident' amongst his contemporaries. If Ibn Rushd goes so far as to subject himself to the discipline of the commentary which is not only detailed but coherent, it is because he saw the principal danger to lie in the temptations of syncretism ⁸⁶.

Above all, he had a very humble conception of his role as a philosopher, as Ibn Sab'in was later to confirm, despite his stern attitude towards Ibn Rushd. Ibn Rushd believed that wisdom transcends individuals. The wise man finds happiness in being the subject in which it is momentarily realised. Ibn Bajja had declared that the union of the human intellect with the agent Intellect is possible and that this is where supreme happiness lies. Knowledge of separate substances denied in certain texts, notably al-Farabi, is attained if

⁸⁶ Urvoy, *Ibn Rushd (Averroes)*, pp. 115 sq.

the quiddity of the intelligibles is individualised in the act of recognition and is multiplied in accordance with the different thinking subjects. Ibn Rushd objects that it is not possible to talk in the same way about the quiddity of material things and the quiddity of intelligible things. Furthermore, Ibn Bajja believes that the material intellect is subject to generation and corruption, which makes it impossible for it to think the incorruptible; and in conceding that it is not subject to it and thinks eternally, this makes it impossible for intellection to take place within a determined time. Ibn Rushd's solution is to state that the material intellect is eternal and belongs not to each corruptible individual but to the whole of the human species – which like all species is eternal (as a corollary of the Aristotelian doctrine of the eternity of the world). This material intellect is able both to conceive material forms, hence the existence within it of ideas subject to evolution, and separate forms, which permits union with the agent Intellect which forms these intelligibles. Speculative knowledge, with which individuals can help one another through a process of accumulation, prepares the way for this final knowledge which in turn transcends it since it is no longer dependent on sensible experience.

In contrast to the haughty isolation of the mystics and the advocates of illumination like Ibn Tufayl or Ibn Bajja's 'solitaries', the process by which philosophy is carried out is, according to Ibn Rushd, the concern of humanity as a whole. Both are eternal, and philosophy must always be being enacted in one part of the world or another. On the other hand, any personal elements in the thought of the individual spring from the imagination and are therefore perishable. This keen awareness of the insignificance of man and the greatness of thought is a continuation of the doctrine of the Mahdi described by the traditionalists as 'the doctrine of the *Logos*'. It was violently repudiated in the period of tension resulting from the problems of the Almohad regime and from the Christian threat. In the panic that set in well before the towns actually fell one after the other, the men of religion were far more attracted to a legalism which favoured accommodation and the search for the 'best', and to a mysticism giving precedence to the individual endowed with supernatural powers.

In short, the men of religion like the philosophers before Ibn Rushd, failed to combine a personal perspective with a concern for the public good. Ibn Rushd's approach was more balanced. Unlike Ibn Bajja he did not play the role of counsellor, nor did he compose a wholly circumstantial work like Ibn

Tufayl. Instead he applied himself to the commentaries on Aristotle's *Nichomachean Ethics* and particularly, in the absence of Aristotle's *Politics*, to that on Plato's *Republic*.

F. Averroes's Compromis

Ibn Rushd's approach can be seen as a continuation of al-Farabi who had dealt with the two ancient thinkers in a similar way. Unlike his predecessor, Ibn Rushd does not attempt to reconcile the two at all costs, and he is generally aware of the differences between Plato and Aristotle. However, in the discussion of politics, he rarely opposes the two. Al-Farabi also serves as model for the way in which he envisages the links between this political philosophy and religious Law, particularly Islamic *Shari'a*. However, he is more conscious than al-Farabi of the supremacy of the *Shari'a* - a fact explained by his position as a jurist and by the climate of Almohadism. He generally accepts the basic conclusions of Plato's politics, though corrected by Aristotle, and considers synthesis not just applicable (whereas for Plato this would require almost impossible conditions) but applicable to his own society as long as enlightened leaders succeed one another. Ibn Rushd's defence of philosophy, which distinguishes him as a thinker from the other *ulema*, may even be seen as an adaptation to Islamic norms of the Platonic requirement that government be just in its beliefs and convictions. However, the political situation of his own time features in his formulation of this doctrine which is both Islamic and Platonic. Defining injustice as a situation in which 'each of the citizens prospers by means of more than one occupation', he adds, 'as happens in our country'. He envisages the ideal city and its degeneration as described by Plato, and opposes the Golden Age of the Prophet and his successors to the later Muslim states which, while theoretically maintaining the ideal structure and constitutional practices of early Islam, are in fact a distortion of it.

To an extent the political thought is a synthesis of Ibn Rushd's diverse investigations. He sees the common people as the recipient of rhetorical arguments aiming initially to instil adherence to sound beliefs and later to achieving good behaviour. Whereas Aristotle (*Nichomachean Ethics* 1179 a-b) considered it impossible to achieve the latter through argument alone, we have seen how Ibn Rushd benefited from analysis of the Almohad propaganda methods to challenge his master on the subject of the citizens.

With regards to enemies, the use of coercion is necessary, and on this point Ibn Rushd challenges Plato who only envisages war against the Barbarians and merely 'fraternal reprimands' amongst the Greeks: there are various levels of virtue even within the community based upon sound opinions, as Ibn Tumart's *tamyiz* taught. This is revealed in the practice of war which supposes an apprenticeship to discipline and, as already stated, this must be continuous since the exercise of the virtue of courage requires continuous conflict. For the 'guardians of the city' this conflict extends onto the intellectual level. Summoned to become leaders, they must struggle against the persuasive arguments that have shaped them initially, in order to raise themselves to the level of demonstrative arguments. There is thus a gradation starting with poetic arguments which aim solely at imitation even if this is false - as in certain children's fables - then rhetorical arguments which give possible imitation, dialectical arguments giving correct imitation, and finally demonstrative arguments, reserved for the elite, which are the only ones that give reality and above all lead to the truth.

The shift from dialectical arguments to demonstrative argumentation is represented in particular by the criticism of the atomist theory of the Mutakallimun, a theory intended to prove that there is no efficacy except in God. Besides the theoretical consequence that there must then be a principle of evil, Ibn Rushd draws from this the practical conclusion that there is no stability of good and evil. It is not only necessary to reject fables promising punishment or reward, which only incite action if the reward appears adequate or the fear is enough to act as a deterrent; it is also necessary to reject everything that prevents a grasp of that which is specific to each being. Classification by genus and species is the only method that enables the world to be put in order, or at least most of it, and it is naturally re-enacted in the political divisions which must be clear and unambiguous so as to avoid the risk of disorder. Dialectical argument is doubtless superior to poetical or rhetorical argument, but it is more perilous as it can lead to deception if it becomes sophistical. In presenting itself as exclusive and unsurpassable it leads to the fragmentation of the collectivity. The Platonic affirmation of the need for a stable form of knowledge in order to safeguard a common language and thus a social community is clearly at the root of Ibn Rushd's thought. Hence the third part of the commentary on the *Republic* gives a lengthy description of the different forms of social degeneration. This work can thus correctly be described as a 'pedagogical treatise'. Because it relies

on the objectivity of ethics, politics becomes the basis for the entire edifice of commentaries designed to provide an ideal picture of human knowledge. It in turn is guided by the model provided by theological reflection, making it possible for each person to achieve happiness according to his own capabilities, and through its main conclusions. Finally, like Plato, Ibn Rushd compares the acts of the political leader to those of the doctor. We have seen in the discussion of the *Kulliyat* how he envisages the latter: the doctor acts in accordance with each case, but bearing in mind the order of nature, and in a manner that reconciles the one with the other following a procedure governed by the laws of the discovery of the truth.

III. Bibliography

- Samir Amin, *La nation arabe. Nationalisme et luttes de classes*. Paris 1976.
- Perry Anderson, *Lineages of the Absolutist State*. Note B. The "Asiatic Mode of Production", p. 463v, ch.IV, pp. 496-520. London 1974.
- L. Apostel, De Ley, H., Doom, R., Kruithof, J., Mortier, F., Pinxten, R., Raes, K., Vandamme, F., Van Mensel, A., Voordeckers, E., 8 juni 1994, *Erkenning van de Islam als cultuur*. (open letter)
- L. Apostel, De Ley, H., Doom, R.; Kruithof, J., Mortier, F., Pinxten, R., Raes, K., Vandamme, F., Van Mensel, A., Voordeckers, E., le 13 juillet 1994, *Reconnaissance d'Islam en tant que culte*. (open letter)
- Mohammed Arkoun, *La pensée arabe* (Que sais-je? 915), Paris 1975.
- R. Arnaldez, "Ibn Rushd" in *The New Encyclopedia of Islam III*, New Edition, leiden, 1960.
- Karen Armstrong, *Islam. A Short History*, Weidenfeld & Nicolson, London 2001.
- Averroës (Ibn Roesjd), *Tafsir ma ba'd at-Tabi'at* in P.M. Bouyges "Inventaire des textes arabes d'Averroës. Mélanges de l'Université Saint-Joseph", 8 (1), 1922 en 1924.
- Averroës (Ibn Roesjd), *The Decisive Treatise Determining the Nature of the Connection Between Religion and Philosophy*, G.H. Hourani, vert. in *Philosophy in the Middle Ages*.
- Averroës, *Aristoteles opera ... cum Averrois Cordubensis variis in eosdem commentariis* (Juntas: Venice, 1562-74; repr. Minerva, Frankfurt a.Main, 1962).
- Averroës, *Averroes Cordubensis commentarium magnum in Aristotelis De anima libros*, ed. F.S. Crawford (Medieval academy of America: Cambridge, Mass., 1953).
- Averroës, *Averroes Cordubensis sermo de Substantia Orbis, Destructio Destructionum Philosophiae Algazalis, De Animae Beatudine seu Epistola de Intellectu* (Juntas: Venice, 1573).
- Averroës, *Averroes on Aristotle's De generatione et corruptione Middle Commentary and Epitome*, trans. and int. S. Kurland (Medieval Academy of America: Cambridge, Mass., 1958).
- Averroës, *Averroes on Plato's 'Republic'*, trans. and int. R. Lerner (Cornell University Press: Ithaca, 1974).

- Averroës, *Averroes on the Harmony of Religion and Philosophy*, trans. and int. G. Hourani (Luzac: London, 1961; repr. 1967 and 1976).
- Averroës, *Averroes' Commentary on Plato's 'Republic'*, ed., trans., and int. E. Rosenthal (University of Cambridge Oriental Publications, I; Cambridge University Press: Cambridge, 1956; repr. 1966 and 1969).
- Averroës, *Averroes' Epitome of Aristotle's parva Naturalia*, trans. and int. H. Blumberg (Medieval Academy of America: Cambridge, Mass., 1961).
- Averroës, *Averroes' Middle Commentaries on Aristotle's Categories and De interpretatione*, ed., trans., and int. C. Butterworth (Princeton University Press: Princeton, 1983).
- Averroës, *Averroes' Tahāfut al-tahāfut (The Incoherence of the Incoherence)*, trans. and int. S. Van den Bergh (2 vols.: Luzac: London, 1954; repr. 1969 and 1978).
- Averroës, *Averroes' Three Short Commentaries on Aristotle's 'Topics', 'Rhetoric' and 'Poetics'*, ed., int. and trans. C.E. Butterworth (State University of New York Press: Albany, 1977).
- Averroës, *Bidāyat al-mujtahid wa nihāyat al-muqtaṣid (The Beginning for him who interprets the sources independently and the End for him who wishes to limit himself)* (Muṣṭafā al Bābī al Halabī: Cairo, 1960).
- Averroës, *Damīma* (Appendix to the *Faṣl al-maqāl*) in *Philosophie und Theologie von Averroes*, ed. M.J. Müller (Munich 1859).
- Averroës, *Die Epitome der Metaphysik des Averroes*, trans. and int. S. Van den Bergh (Brill: Leiden, 1924).
- Averroës, *Discourse on the Manner of the World's Existence*, MS Paris, Cod. Hebr. 988 (89a-91a); trans. B. Kogan, 'Eternity and Origination: Averroes' Discourse on the Manner of the World's Existence', in M. Marmura (ed.), *Islamic Theology and Philosophy: Essays in Honor of George F. Hourani* (State University of New York Press: Albany, 1984).
- Averroës, *Faṣl al-maqāl (Decisive Treatise)*, ed. G.F. Hourani (Brill: Leiden, 1959).
- Averroës, *Jihad in Medieval and Modern Islam (The chapter on jihād from Averroes' Bidāyat al-mujtahid)*, trans. R. Peters (Brill: Leiden, 1977).
- Averroës, *Kitāb al-kashf 'an manāhij al-adilla (Exposition of the Methods of Argument concerning the Doctrine of Faith)*, in *Philosophie und Theologie von Averroes*, ed. M.J. Müller (Munich, 1859).
- Averroës, *Middle Commentary on Aristotle's Nicomachean Ethics* (Hebrew), Camb. MS Add. 496, Cambridge University Library.

Averroës, *Middle Commentary on Porphyry's Isagoge and on Aristotle's Categoriae*, trans. and int. H.A. Davidson (Medieval Academy of America: Cambridge, Mass., 1969).

Averroës, *Rasā' il ibn Rushd* (Dā' irat al-ma'ārif al-'Uthmānāyah: Hyderabad, 1947).

Averroës, *Tafsīr mā ba'd al-ṭabī'ah* (Long Commentary on the Metaphysics), ed. M. Bouyges (4 vols.: Bibliotheca Arabica Scholasticorum, Série Arabe; Imprimerie Catholique: Beirut, 1938-52).

Averroës, *Tahāfut al-tahāfut*, ed. M. Bouyges (Bibliotheca Arabica Scholasticorum, série Arabe, 3; Imprimerie Catholique: Beirut, 1930).

Averroës, *Talkhīṣ kitāb al-naḥs*, ed. F. Ahwānī (Maktabat al Nahdah al Miṣrīyah: Cairo, 1950).

Averroës, *Talkhīṣ mā ba'd al-ṭabī'ah*, ed. U. Amin (Muṣṭafā al Bābī al Halabī: Cairo, 1958).

Abdurrahman Badawi, *Histoire de la Philosophie en Islam* (Etudes de Philos.médiévale, 60), vol. I-II. Paris 1972.

J. Berque, *Averroës et les contraires. L'ambivalence dans la culture arabe*, ed. J. Berque en J.P. Charnay, Paris, 1967.

Ernst Bloch, *Avicenna und die Aristotelische Linke* (1953), in: Suhrkamp Gesamtausgabe 7.

Rudolph Boehm, *Thomas von Aquino, Philosophie u. Theologie*, in: Anamnesis, Gedenkboek E.A. Leemans, Gent 1970, 95-105.

Emile Brehier, *La philosophie du moyen âge*, Paris (1937) 1971.

The Cambridge History of Islam, ed. by P.M. Holt, Ann K.S. Lambton and B. Lewis, Cambridge 1970, vol. 2B: *Islamic Society and Civilisation*, o.m.

1. The Geographical Setting, by X. De Planhol

2. The Sources of Islamic Civilisation, by G. E. Von Grunebaum

3. Economy, Society, Institutions, by C. Cahen

4. Law and Justice, by J. Schacht

5. Religion and Culture, by L. Gardet

10. Science, by G. Anawati

11. Philosophy, by S. Pines

The Cambridge History of Later Greek and Early Medieval Philosophy, ed. by A.H. Armstrong. Cambridge 1967.

Hendrik Casimir, *Natuurwetenschap en wapenwedloop*, in "Universitaire Vredesdagen", Polemologisch Instituut, Groningen, 1988.

Lucas Catherine, *Islam voor Ongelovigen*, Epo, 1997.

- Marshall Clagett (ed.), *The History of Science*, Madison, University of Wisconsin Press, 1959.
- Ronald Commers, *De Wijzen en de Zotten. De Moderniteit en haar Filosofie*, VUB Press, 1995.
- Ronald Commers, *Het vrije denken. Het Ongelijk van een Humanisme*, VUB Press, 1991.
- T.J. De Boer, *The History of philosophy in Islam* (1903). N-Y 1967.
- Herman De Ley, *De Filosofie van de Middeleeuwen. De Islam*, Rijksuniversiteit Gent, 1977-78.
- Herman De Ley, *Historische Inleiding bij de "Defensor Pacis" van Marsilius van Padua*, Rijksuniversiteit Gent, 1984-1985.
- Herman De Ley, *De Ioniërs*, Band I: Polis en filosofie van de cursus "Geschiedenis van de Wijsbegeerte der Oudheid", Rijksuniversiteit Gent – Vrije Universiteit Brussel, 1983-1984.
- Emile De Strycker, *Beknopte Geschiedenis van de Antieke Filosofie*. Antwerpen 1967.
- Hubert Dethier, *De Beet van de Adder. De leerstoelen der deugd. Heterodoxen en kettters van de middeleeuwen*, deel I, VUB Press, 1994.
- Hubert Dethier, *De Beet van de Adder. De onbevleete kennis*, deel II, VUB Press, 1995.
- Hubert Dethier, *De Beet van de Adder. De Tafel van Smaragd. Filosofieën van de Eros en het Goudland*, deel III, VUB Press, 1997.
- Hubert Dethier, *Summa Averroïstica I. Het averroïstisch-nominalistische front en de leer van de dubbele waarheid*. Vrijdenkerslexicon, Studiereeks 4, Brussel 1977.
- Hubert Dethier, *Summa Averroïstica II/I. De opkomst van de burgerlijke geest*. Vrijdenkerslexicon, Studiereeks 5, Brussel 1979.
- Hubert Dethier, *Summa Averroïstica II/II. Coelum philosophorum. Kenmerken en Dominanten van de Renaissance filosofie*. Vrijdenkerslexicon, Studiereeks 6, Brussel 1979.
- Hubert Dethier, *Summa Averroïstica II/III. De School van Padua. Pomponazzi, Cardanus, Cremonini*. Vrijdenkerslexicon, Studiereeks 7, Brussel 1981.
- Pierre Duhem, *Le Système du Monde*, Paris, Hermann, 1958.
- The Encyclopedia of Islam*. New Edition, Leiden 1960. Already published: I (A-B), II (C-G), III (H-IRAM), IV, -fasc. 76 (Khanikin).
- Gerhard Endress & Jon. A. Aertsen (ed.), *Averroes and the Aristotelian Tradition. Sources, Constitution and Reception of the Philosophy of Ibn*

Rushd (1126-1198). Proceedings of the Fourth Symposium Averroicum (Cologne 1996), Brill, Leiden-Boston-Köln, 1999. (For a complete bibliography of editions, see the contribution of Gerhard Endress, *Averrois Opera. A Bibliography of Editions and Contributions to the text*, pp. 339-381. See also the Bibliography of this volume, pp. 385-407.)

Majid Fakhry, *A History of Islamic Philosophy*, Columbia University, 1970.

Leopold Flam, *Protest tegen de catastrofale werkelijkheid*, Acco Leuven, 1981.

Carlo L. Galino (ed.), *Galileo Reappraised*, Berkeley, University of California Press, 1966.

Louis Gardet, *La cité musulmane. Vie sociale et politique*, 4ième éd. Paris, 1976.

L. Gauthier, *Ibn Rochd (Averroès)*, Presses Universitaires de France, Paris, 1948.

L. Gauthier, *La Théorie d'Ibn Rochd (Averroès) sur les rapports de la religion et de la philosophie*, Lecoux, Paris, 1909.

Susan George, *A Fate worse than Debt*, London, Harmondsworth, Penguin, 1988.

Etienne Gilson, *La philosophie au moyen-âge; des origines patriotiques à la fin du XIVe siècle*, Paris, 1952.

Alvin W. Gouldner, *Anti-minotaur: the myth of a value-free sociology*, in: *For Sociology*, Pelican 1975, 3-26.

P. Guyer (ed.), *The Cambridge Companion to Kant*, Cambridge, Cambridge University Press, 1992.

Maurice-Ruben Hayoun & Alain de Libera, *Averroès et l'averroïsme, Que sais-je?*, P.U.F. 1991.

M. Hernandez, *Filosofia Hispano-Musulmana II*, (Asociacion Española para el progreso de las ciencias: Madrid, 1957).

M. Hernandez, *Filosofia Hispano-Musulmana*, Asociación Española para el progreso de las ciencias, Madrid, 1957.

Douglas Hofstadter, *Gödel, Escher, Bach. An Eternal Golden Braid*, Vintage Books, 1980.

Max Horkheimer en Theodor W. Adorno, *Dialectic of Enlightenment*, New York, Continuum, 1991.

Arthur Hyman & James J. Walsh (ed.), *Philosophy in the Middle Ages. The Christian, Islamic and Jewish Traditions*. Indianapolis 1973.

Islam und Abendland. Geschichte und Gegenwart. Hrsg. v.A. Mercier, Bern 1976.

- Allen Janik en Stephen Toulmin, *Het Wenen van Wittgenstein*, Boom, 1976.
- J. Jolivet (ed.), *Multiple Averroès. Actes du Colloque International organisé à l'occasion du 850^e anniversaire de la naissance d'Averroès*, Paris, 20-23 septembre, 1976, Les belles Lettres, Paris, 1978.
- André Klukhuhn, *Een inleiding tot de 21^{ste} eeuw. Sterf oude wereld*, uitg. De Arbeiderspers, Amsterdam-Antwerpen, 1995.
- Koran*, translated by J.H. Kramers, Amsterdam, 1976⁵.
- L'averroïsme in Italia* (Atti dei Convegnaie Lincei, Roma, 1979).
- Oliver Leaman, *Averroes and his Philosophy*, Clarendon Press - Oxford, 1988. (for a complete bibliography, see in this work: Select Bibliography, pp. 197-201.)
- Gordon A. Leff, *Medieval Thought, from St. Augustine to Ockham*, Chicago, 1958.
- Ton Lemaire, *Over de Waarde van Kulturen. Een inleiding tot de kultuurfilosofie. Tussen europacentrisme en relativisme*, Ambo, Baarn, 1976.
- Ralph Lerner & Muhsin Mahdi (ed.), *Medieval Political Philosophy: a Sourcebook*. Cornell Univ. Press 1963.
- Alistair MacIntyre, *After Virtue*, London, Duckworth, 1981.
- Ibrahim Madkour, *L'Organon d'Aristote dans le monde arabe*, 2ème éd., Paris, 1969.
- Muhsin Mahdi, *Alfarabi's Philosophy of Plato and Aristotle*, Translation with an introduction, Cornell Paperbacks, 1969.
- Aly Mazaheri, *Zo leefden de Moslims in de Middeleeuwen*. Baarn 1958.
- Arthur Cushman McGiffert, *A History of Christian Thought*, New York, Charles Scribner's sons, 1954.
- Jean Paul Migne, *Patrologia Latina*, vol. 122.
- Etty Mulder, *Freud en Orpheus*, Hes, 1987.
- S. Munk, *Mélanges de philosophie juive et arabe*, Franck, Paris, 1859.
- S.H. Nasr en O. Leaman, *The Routledge History of Islamic Philosophy*, London, Routledge, 1995.
- Alexander Nehamas, *Nietzsche: Life as Literature*, Harvard University Press, 1985.
- Jabra Nicola, *Nation Arabe et Mode de Production Asiatique* (introduction), in: Quatrième Internationale, 20-21 (1975), 31-36.
- Friedrich Nietzsche, *De vrolijke wetenschap*, De Arbeiderspers, 1976.
- Charles Peirce, *Collected Papers*, vols. 1, 2, 5 en 6, Charles Hartshorne en Paul Weiss (eds.), Cambridge, Mass.: Harvard University Press, 1931-35,

daarin resp. *The Scientific Attitude* (1 en 2), *The Spirit of Cartesianism* (5 en 6).

F.E. Peters, *Aristotle and the Arabs: the Aristotelian Tradition in Islam*, New York, London, 1968.

Ilya Prigogine/Isabelle Stengers, *Orde uit chaos*, Bert Bakker, 1985.

Marcel Proust, *De kant van Guermantes*, De Bezige Bij, 1986.

G. Quadri, *La philosophie arabe dans l'Europe médiévale, des origines à Averroès*. Paris 1947.

John Herman Randall, *Aristotle*, Columbia University Press, New York, 1960.

Ernest Renan, "Averroès et l'Averroïsme" in *Oeuvres Complètes de Ernest Renan*, vol. 3, Paris, Colmann-Levy, 1949.

J.C. Risler, *Geschiedenis van de Arabische Cultuur*, Aula 262, 1966.

Maxime Rodinson, *Islam and Capitalism*. London 1974.

Maxime Rodinson, *Mohammed*. Pelican 1971.

Richard Rorty, *Objectivity, Relativism and Truth*, Cambridge, Cambridge University Press, 1991.

Louis Rougier, *Histoire d'une faillite philosophique: la Scolastique*, Paris, 1966.

Ferd. Sassen, *Wijsgerig denken in de Middeleeuwen*, Haarlem, 1965.

Arthur Schopenhauer, *Essays and Aphorisms*, London, Penguin, 1970.

Henri Serouya, *La pensée arabe* (Que sais-je? 915), Paris 1960.

Herman Shapiro (ed.), *Medieval Philosophy. Selected Readings from Augustine to Buridan*, New York, 1964.

Charles Singer, *A Short History of Scientific Ideas to 1900*, London, Oxford University Press, 1959.

René Taton, *History of Science*, New York, Basic Books, 1957.

Christopher Toll, *Arabische Wissenschaft u. hellenistische Erbe*. In: *Islam u. Abendland*, 31-57.

W. Totok, *Handbuch der Geschichte der Philosophie, II: Mittelalter*. Frankfurt/Main 1973.

Dominique Urvoy, *Ibn Rushd (Averroes)*, Routledge, London and New York 1990. (for a complete bibliography, see in this work: Bibliographical Guide, pp. 134-148.

Dominique Urvoy, *Ibn Rushd (Averroes)*, Translated by Olivia Stewart, London and New York, 1991.

- F. Vandamme, Thibau, R., Plancke, M., Pinxten, R. & Willemen, A., 1984, *Godsdiensten in verandering - Islam en Boeddhisme*. Communication and Cognition, Gent.
- F. Vandamme, Thibau, R., 1983, *Inleiding : godsdiensten in verandering*. In : F. Vandamme et s.p.s., uitgave, pp. 24-45, Gent.
- F. Vandamme, 1984, *Averroës, grondlegger van het rationalisme, fundament van het moderne christendom; nominalisme, atheïsme en wetenschap*. In : F. Vandamme et alii, *Godsdiensten in verandering*, Communication and Cognition, pp. 97-134, Gent.
- F. Vandamme, 1985, *Logic, Discourse, Discovery : an averoistic Register Approach*. In : Hintikka *Logic of Discovery and Logic of Discourse*, Communication and Cognition, Vol. 18, nr. 1-2, Gent.
- F. Vandamme, 1989, *Omtrent vrije meningsuiting*. In : *Islamitische nieuwsbrief*, jrg. 1, nr. 2, pp. 45-48.
- F. Vandamme, 1989, *Rechten, plichten en integratie. Gelijkheid of de lat gelijk leggen, ja maar* In : *Islamitische nieuwsbrief*, jrg. 1, nr. 3, pp. 33-35.
- F. Vandamme, 1990, *Skinheads, voorhoede in een evolutie in de Westerse cultuur ?* In : *Islamitische nieuwsbrief*, jrg. 2, nr. 6, pp. 9-12.
- F. Vandamme, 1982, *Averroës, grondlegger van het Westers rationalisme, het moderne christendom, het modern atheïsme en de moderne wetenschap*. Communication and Cognition, werkgroep wetenschap, kennis en samenleving, nr. 8, werkdocument nr. 61, Gent.
- F. Vandamme, 1985, *Averroïsme en de ontwikkeling van de Westerse religie*. Communication and Cognition, werkgroep religie en moderniteit, nr. 12, werkdocument nr. 126, Gent.
- F. Vandamme, 1990, *Het initiatief van de Islamitische nieuwsbrief*. *Islamitische nieuwsbrief*, jrg. 2, nr. 7, p. 18.
- Interview Prof. Dr. F. Vandamme*, Rezzak Cakar, *Islamitische Nieuwsbrief*, jrg. 9, nr. 22, pp. 27-29, zomer 1994.
- P.S. Van Koningsveld, *Sprekend over de islam en de moderne tijd*, Prometheus, Utrecht/Amsterdam, 1993.
- Fernand Van Steenberghen, *Histoire de la Philosophie. Période chrétienne*, Louvain-Paris, 1964.
- G.E. Von Grunebaum, *Medieval Islam. A Study in Cultural Orientation*. Chicago 1946.
- A. von Kugelgen, *Averroës und die arabische Moderne*, Leiden, Brill, 1994.

Mourad Wahba and Aboussena Mona (ed.) *Averroës and the Enlightenment*, Prometheus Books, New York, 1996.

R. Walzer, *Early Islamic Philosophy*, in *Cambr.Hist.Early Gr.Phil.* (see lit. in introduction).

Philip P. Weiner, introduction to Charles Peirce, *Selected Writings*, New York, Dover, 1958.

Joseph Weizenbaum, *High Technology and the Human Predicament*, in "Universitaire Vredesdagen", Polemologisch Instituut, Groningen, 1988.

Ken Wilbur (ed.), *Quantum Questions*, New Science Library, 1984.

F.J.F. Woodbridge, *The Realm of Mind*, New York, 1926.

For more detailed bibliography see Oliver Leaman, *Averroes and his Philosophy*:

"The Works of Averroes", pp. 197-198.

"Averroes's Metaphysics", pp. 199-200.

"Averroes on the Soul", p. 200.

"Works in Arabic on Averroes", pp. 200-201.

See also Dominique Urvoy, *Ibn Rushd (Averroes)*, Bibliographical Guide, pp. 134-148.

SARTON CHAIR LECTURES

LAUDATIO ROBERT VAN HEE

Michel Thiery

It is my privilege and pleasure to present the Sarton Memorial Medal recipient of our medical faculty, my colleague and friend Professor Robert (Bob) Van Hee. This privilege I share with another Bob, Robert Rubens, our professor of endocrinology and representative of our faculty in the Sarton Committee. It was in fact his turn to act as “collega proximus” on this occasion but wrightly or wrongly he declined the proposal, on the basis that Van Hee in his brother-in-law and that my discipline – I am a gynaecologist – is more closely related to that of our medallist. No conclusive arguments if you ask me, but I do appreciate the elegant gesture.

Robert Van Hee was born in Antwerp in 1943. Having completed his humanities there, he decided to become a physician, exchanging his home town for ours and Ghent University, where he graduated an M.D. in 1967. From the late sixties to 1975 he specialized in surgery at the Catholic University of Nijmegen, The Netherlands, where he obtained a second doctorate with the thesis, entitled “Pancreaticoduodenal preservation and transplantation”.

On his return to Antwerp his luck star served him well. He joined the staff of the surgical department of the recently founded Universitaire Instelling Antwerpen (U.I.A.) where he was promoted Docent and, in the nineties, full Professor and Head of the department of general, endocrine, vascular, and thoracic surgery.

Professor Van Hee pioneered transplantation and endoscopic surgery in Belgium, was elected president of the Royal Belgian Society of Surgery, organized the Eurosurgery Congress and the World Congress of Surgery in Brussels, in 1992 and 2001 respectively. He is a member of the International Society for Surgery, the European Society for Surgical Research, the European Society for Organ Transplantation, and the Belgian Group for Endoscopic Surgery. So far his medical Career.

His second scientific career, which ran in parallel with the former, is devoted to the history of medicine. Bob’s interest, aroused by his chief and thesis promotor Professor Daniël de Moulin, the founder and first director of

the Nijmegen Institute for the History of Medicine, was stimulated further by his wife, a professional historian who became his close and faithful associate.

What had started as a hobby became a passion, finally a second profession after Van Hee was appointed professor of medical history at his Alma Mater where he established the Nonnius Institute for the History of Medicine and the Natural Sciences in 1990. With characteristic energy and dedication he organized congresses and symposia, established the Dutch-Flemish journal "Geschiedenis der Geneeskunde" (History of Medicine) with his Leyden colleague Harm Beukers, participated in Medical-historical corporate life, established the Nonnius Vereniging voor Geschiedenis der Geneeskunde in het Verleden (Nonnius Society for History of Medicine in the Past) with his Antwerp colleague and friend Jean-Pierre Tricot, published an impressive number of articles on a wide variety of medical-historical topics, mostly related to surgery, edited books, e.g. a lavishly illustrated volume on the history of surgery in Flanders.

Our belief that George Sarton, the Father of the history of science, would have appreciated Van Hee's approach to the history of medicine was an extra motive for the Ghent faculty in proposing him as a recipient of the Sarton Memorial Medal. On behalf of our university, our faculty, the members of the Sarton Committee and its president I wish to extend our congratulations to Bob and Christiane Van Hee. We wish them all the best and a successful continuation of their endeavours.





THE EVOLUTION OF SURGERY IN THE LOW COUNTRIES DURING THE SIXTEENTH CENTURY.

Robert Van Hee

I. Introduction

A discussion of the evolution of surgery in sixteenth century Flanders may be devoted to various aspects of surgery during this period such as: What was the extent of knowledge of surgical science at the beginning of the sixteenth century and how did it evolve during this century? Who were the surgery practitioners, how was their work arranged and how did their working conditions evolve during the restless periods of Reformation and Counter Reformation? What surgical knowledge did the various practitioners possess and how did their training evolve? Finally, how did the surgical profession receive the anatomical and surgical renaissance changes in our Low Countries?

Quite a number of questions that we shall attempt to answer in this paper.

II. The evolution of surgical science during the 16th century

Medical knowledge at the end of the Middle Ages was still primarily based on the humoral concepts of Hippocrates and Galen.

These concepts formed the basis of knowledge not only about internal pathologies but also external surgical conditions for the majority of surgeons. Middle Age surgeons like Lanfranchi (? - 1315), Henri de Mondeville (ca. 1260-1320), and shortly thereafter, Guy de Chauliac (1298-1368), had laid down the foundations of surgical knowledge in their manuscripts, which could be acquired by both university educated doctors and most of the uneducated surgeon-barbers.

It was mainly Guy de Chauliac, who in an unprecedented way left his mark on surgical science from the late 14th century until well into the 17th century.

The "*Chirurgia Magna*" by de Chauliac was already available in handwritten form in Middle Dutch (1) as well as in French before 1450, whilst after the introduction of printing, at least four of the 56 known editions were printed in Dutch, between 1507 and 1646 (2). Apart from the surgical topics from the Canon of Avicenna, de Chauliac's "*Chirurgie*" was the most important subject matter for future doctors and surgeons at both the Universities of Louvain and of Paris (3).

If we wish to evaluate the reforms in surgery during the 16th century, we have to examine them in the light of de Chauliac's textbook.

The "*Grande Chirurgie*", as was customary after Avicenna (4), comprised the 5 great divisions (5) that were later referred to by Fabricius di Acquapendente (1533-1619) as the Pentateuch, in analogy to the Moses story (6).

In these chapters illnesses were no longer described from head to feet, as in ancient times, but were divided into tumours, wounds, ulcerations, fractures and dislocations (7).

In accordance with the definition by Celsus, the chapter on tumours covers both swellings and lumps, and includes descriptions of the treatment of cysts, abscesses, furuncles and buboes. In addition, thyroid enlargement or goitre, the swelling of limbs, including elephantiasis and varices, and the true tumours such as breast lumps and other cancers are described in this chapter. Cancer treatment is mainly conservative, in the manner of Hippocrates. Indeed, the age old theory was upheld that an operation on a cancer patient would have a detrimental influence on the prognosis.

For inguinal swellings (8) de Chauliac states the conservative treatments and also the six common surgical treatments of the time. Two methods described by Albucasis (936-1013) comprise castration on the same side as the hernia, either through an incision or by means of a red-hot cautery. De Chauliac also chooses the technique used by Theodorico Borgognoni (1210-1298) with a cauterium potentiale, based on an arsenic-containing solution.

As well as these, de Chauliac refers to two techniques for transcutaneous tying of the spermatic cord, one using fixation to a piece of wood until the spermatic cord is torn through, and the other with a golden thread and more controlled pressure, intended only to prevent the intestines from entering the hernial pouch.

It is this latter technique that was recommended once again in the 16th century and set out in detail by Pierre Franco (1500-1561) in his publication entitled "*Petit traité contenant une des parties principales de chirurgie, laquelle les chirurgiens hernières exercent*". This work, which appeared in 1556 and was re-printed in 1561, and which was adopted by Ambroise Paré (1510-1590) in his "*Dix Livres de Chirurgie*" without mentioning Franco's name incidentally, received attention from Flemish surgeons after Carel Baten had translated Paré's work into Dutch in 1592.

Apart from this technique, which still had its roots in the Middle Ages, Franco introduced a major innovation to the treatment of inguinal hernia by describing a method for obstructed or strangulated hernias. For this, using a

probe introduced via an incision in the scrotum, the hernial sac is opened to expose the internal inguinal ring, and the trapped piece of intestine can then be replaced in the abdominal cavity.

The fact that this new technique could be published in 1556 is no coincidence: indeed, Gabriele Falloppio had described the anatomy of the inguinal canal for the first time in great detail (9) several years before his "*Observationes Anatomicae*" appeared in 1561.

This operation for incarcerated hernia was equally made widely known by Paré and could thus reach the Low Countries via the translation.

A similarly innovative reform was introduced in lithotomy.

The perineal incision for stone extraction from the neck of the bladder referred to by Aulus Cornelius Celsus became well known and was handed down at the end of the Middle Ages. Most medieval surgeons, including de Chauliac, did not attempt it.

In 1522 the Italian, Mariano Santo (1488-1577), a pupil of Giovanni da Vigo, published a monograph, entitled "*Libellus aureus de lapide in versica per incisionem extrahendo*", in which he made an incision, also through the perineum, and with the help of a metal urethral probe which gave access to the bladder above the sphincter, then extracted the stone with the aid of a number of probes, dilators and forceps (the so-called great apparatus). This technique caused fewer complications than the Celsus method and rapidly became popular in France, in particular around the middle of the century thanks to Laurent Colot (1519-1559), the founding father of a family of lithotomists, which was to remain famous until the 18th century.

In the Low Countries we had to wait for the translated works of Paré before being able to see the introduction of the Santo method. The previously mentioned Provençal, Pierrè Franco, had described another method of stone removal, different to the Santo technique. In his quoted work from 1556, Franco does indeed describe the supra-pubic cystotomy, a method for entering the bladder that remains to this day.

A separate chapter from the *Grande Chirurgie* by Guy de Chauliac is devoted to the treatment of wounds.

For small wounds a simple bandage was considered sufficient, sometimes soaked in white of egg.

In the Galenic tradition, larger wounds were sutured with separate sutures or with a fibula, possibly also with supporting sutures or even with a type of metal clip.

Abdominal wounds were closed with a double running suture or else with a type of mattress stitch.

Relatively few changes were made to this treatment of wounds in the 16th century. The trauma- surgeons from Strasburg, Jeronimo Brunschwig (1450- ca. 1512) and Hans von Gersdorff (fl. 1500) adopted de Chauliac's techniques virtually unchanged.

Their contemporary, Paracelsus, on the other hand was much more conservative: he used ointments and powders, plasters and cataplasms, also for larger wounds. His 1536 "*Grosse Wundarzney*" was published in Dutch twenty years later in Antwerp and had an immediate impact on the Flemish surgeons. Thus the Brussels surgeon Peter Haschaert (10) was for instance to use the Crocus Martis for large and deep head wounds, prepared, according to him, "*after the manner of Doctor Paracelsus*" (11).

An even more important evolution was seen for foreign bodies that found their way into wounds, especially bullets and shot.

The theory of poisoning by firearms was introduced in 1460 by the German military surgeon Heinrich von Pfolzspeundt and the Strasburg surgeons mentioned earlier agreed with it. The theory was further substantiated by the Roman surgeon Giovanni da Vigo (1450-1525) in his "*Practica in arte chirurgica copiosa*" of 1514. The appearance of its Dutch translation in Antwerp in 1533 (12), made the poisoning hypothesis, including its treatment with boiling oil or red-hot cautery, common knowledge here as well.

The story of Paré's shortage of such oil during the campaign in the Italian Piedmont in 1537 is well known and led to his revolutionary publication in 1545. This last publication appeared just two years later in Dutch, once again in Antwerp.

Nevertheless, hot cauteries would still be used for quite a time in this country to treat these "poisoned" wounds. Possibly the symptoms of sepsis that usually appeared after such wounds, caused the surgeons not to dismiss the poisoning theory out of hand.

However, this was finally to happen towards the end of the 16th century, as the text by Jacques Guillemeau shows (13), in a translation by Carel Baten of Ghent, in 1598.

"Speaking of the power of lead shot, I have for so long not wished to believe that gunshot could poison, since until now no poisonous gunshot wound has been treated by any surgeon of our time and described by him ..." (14).

"Sprekende van de cracht der Busclooten ick en hebbe dus langhe noch niet connen ghelooven datmen de Busclooten soude connen verghiften overmidts tot

noch toe gheene gefenijnde geschoten wonde eenige vermaert Chirurgijn binnen onsen tijde is in handen gecomen, die daer van geschreven heeft..... ”

Chronic wounds are classified as ulcers in a separate chapter of de Chauliac's "*Grande Chirurgie*". In the manner of Avicenna, who was the first to dedicate one of the five books of surgery specifically to ulcers, de Chauliac also used the red-hot iron many times to treat ulcers. Haemorrhoids, peri-anal abscesses and fistulae, which are also included in this chapter, were also cauterised in the same way.

New at the beginning of the 16th century were syphilitic ulcers. These were not immediately cauterised; conservative treatment for them was described by the Spanish doctor Francesco Arceo (ca. 1493- after 1574) in his "*De Recta curandorum vulnerum ratione.*", a work that was published in 1574 with the help of Alvaro Nuñez of Antwerp, and which was translated into many languages, including Dutch.

In the 16th century a progressively more conservative point of view was equally adopted with regard to non-syphilitic ulcers. Paracelsus, in particular, set himself firmly against the use of painful cauterisations.

According to Arceo, ulcerous fistulae and abscesses were best drained, by means of a hollow leaden tube. Nevertheless, the Hippocratic technique using a seton, and the incision of the fistula canal above a probe, as suggested by Paul of Aegina, remained in common use in the 16th century and even to the present day.

A fourth book of the de Chauliac Pentateuch deals with fractures and dislocations.

The Hippocratic tradition of limb immobilisation for fractures has remained throughout the ages and is even described in detail by the Flemish Middle Age surgeons Jan Yperman and Thomas Scellinck. The immobilisation is done using splints along the straightened limb, as described in the Dutch version of Paracelsus' "*Grosse Wundarzney*".

For upper leg fractures de Chauliac even suggests limb extension with a lead weight hanging from a cord, attached to the foot.

The Renaissance surgeons had little to add to this treatment. Nevertheless the illustrations in the textbooks of the Strasburg surgeons gave the first perfect visual representation of such fracture treatment. If there was a deviation in the alignment of the fracture, Jeronimo Brunswig followed the advice of Celsus: to break the bone again at the site of the callus and immobilise it in the correct position (15).

Von Gersdorff, on the other hand, suggested a new technique to help joint contractures, caused by long-term immobilisation after an open fracture. In

this the contractures are mechanically stretched until the correct position is reached.

The 1517 book by von Gersdorff was soon published in Dutch but under the incorrect name of Brunschwig. The real "*Veldt Boeck*" by von Gersdorff was fortunately re-printed in a Dutch version in 1593, under the correct author's name.

The German, Fabry von Hilden, also reproduced von Gersdorff's technique for the treatment of contractures in his work.

Traumatology books were without doubt keenly read by our surgeons. They also included the treatment of skull fractures. In the same way as other broken bones, skull fractures were already described in the brilliant treatises of Hippocrates and Galen. For example, Galen was a strong advocate of trephination for depressed fractures. De Chauliac also describes in detail the instruments necessary for this, including the elevator, file, and especially the trephine.

Our surgeons were very familiar with these instruments, for example the previously mentioned Peter Haschaert, who illustrated them so brilliantly in his commentary on Hippocrates' treatise on head wounds.

The trephine was also perfectly illustrated by Haschaert with the accompanying crowns.

Peter Haschaert even pointed out some typical symptoms of cerebral concussion that were missing from Hippocrates' work on head injuries. After introducing "*loss of consciousness*", the feeling "*as if the head is spinning*", the fact that "*they fall down*", and the sight that "*was taken away from them*", Haschaert adds:

"We must also add the nausea and vomiting, which Hippocrates does not mention here... since that vomiting gives us a sure sign that the brain or its membranes are damaged".

"Wij moghen oock hier bij doen datse braecken ende overgeven, daer af Hippocrates hier niet en vermaent...., want dat overgeven geeft ons een seker teecken dat de herssenen oft zijn membranen ghequeist zijn".

Haschaert also dares to go further with the treatment than Hippocrates. Where the latter advised not placing the trephine on a suture line for fear of drilling into the dura mater, Haschaert writes:

"But it sometimes happens that once the master is called and has gone to the patient, that he is already caught by illness that inhibits the dissection of the wound: then one should choose the lesser of the two evils rather than leaving the

patient without any treatment, and set the trephine on the suture, which I have done in some cases and the patient has recovered".

"Maer het gheschiet somtijts dat den meester van eerst daer toe gheroepen en is gheweest, ende dat die patient alreede met korsten ende accidenten bevanghen is, die de dissectie vander wonden beletten: dan so moet men van twee quaden 't beste kiezen ende setten die trepane op de suture, liever dan die patient sonder eenigen troost te verlaten, 't ghene dat ick somteyds gedaen hebbe ende sy zijn genesen geweest".

In the 16th century von Gersdorff invented a special instrument for trephination, with which the depressed bone fragment could be more easily reduced.

Von Gersdorff later improved this instrument to make a three-legged trephine.

Francesco Arceo even suggested the correlation between a progressive coma in the patient and an internal subdural haematoma. He was to be the first to use a trephine for subdural haemorrhage.

In the 16th century the advice of the Old Masters was, for the most part, followed for the treatment of dislocations and fractures. The famous Hippocratic reduction of a shoulder dislocation was expertly illustrated by both the Strasburg surgeons and Jean Tagault (?-1545).

During the 16th century strong traction was usually achieved by means of wooden implements, both for shoulder and hip dislocations.

For recurrent shoulder dislocations, the Arabs had devised a skin-searing cauterisation that was applied to the joint, resulting in a skin contracture that reduced joint mobility, thus preventing recurrence of the dislocation.

There is very little to be found about this in 16th century Dutch texts.

In general it can be said that the techniques for fractures and dislocations of the olden days were followed undiminished, and that in the 16th century it was mainly the instruments concerned with them that changed.

A further book by de Chauliac puts together a number of surgical diseases that are mentioned here and there throughout the Pentateuch by other authors, including eye diseases, tooth decay, gout, various skin diseases, including scabies, leprosy and burns, and finally also amputations.

Here too the 16th century surgeons made some important achievements.

The credit for the considerable improvements in amputation techniques went to Ambroise Paré.

Similarly to de Chauliac and the Strasburg surgeons, Paré took the limb off at healthy tissue, but in contrast to his predecessors, he did this by sliding the skin and muscle much further back, which reduced pain and bleeding.

After sawing through the bone, Paré moved away from de Chauillac's use of the red-hot cautery for haemostasis and brought the vessel ligation back into favour, something that had been encouraged by Celsus in olden times and had also been used by Yperman for bleeding wounds. The results of Paré's amputations were apparently better than those of his predecessors.

As well as various haemostatic ointments and cataplasms, Carel Baten of Ghent nevertheless still first used the cauterising iron in cases of severe bleeding. Only when this did not help, he wrote in his "*Handboeck der chirurgien*" from 1590, "*If one sees that the damaged vein or artery cannot be closed with one of the aforementioned means, then a curved needle should be used to stitch through the healthy tissue and thus bind it, rather than let the patient bleed to death*" (16).

"Alsmen siet dat de ghequetste ader of arterye met geene van dese voorgaende middelen en is te stelpen, soo salmen de ader met een kromme naelde ondersteken door 't gesonde vleesch, en also toe binden, liever als den patiënt te laten doot bloeden".

It should be said that Paré, as a military surgeon, treated mainly trauma patients and generally performed amputations of the lower leg. In contrast, von Gersdorff performed many of his amputations on victims of St Antonius' fire, who suffered limb gangrene caused by grain mildew infections. The accompanying narrowing of the vessels certainly influenced the healing of the stump.

The surgeons in the 16th century Low Countries had to battle mainly with shot wounds: extensive injuries, open, mainly multi-fragmentary fractures, frequently combined with tissue loss, caused by bullets and shells from muskets and canon.

The havoc caused by this was usually enormous and the mortality high.

In 1575-76 the surgeon Niklaes Egbertsz described a consecutive series of 176 patients, according to a bill he presented to the governors of Zierkzee for surgical treatments (17). Almost all of the patients were soldiers who had been wounded during the attack on that city by the Spanish-Flemish troops of Requesens.

Of the 176 cases, Mister Claes lists at least 28 deaths, which means a total mortality of at least 16%.

The most serious were certainly the chest and abdominal wounds: 6 of the thoracic bullet wounds, and all 5 of the abdominal wounds, were fatal.

Nevertheless, like Paré, Egbertsz found himself forced to perform bullet extractions, arm and leg amputations, fracture treatments, wound care etc. A

significant number of these treatments were successful, since 5 of the 176 patients were listed by name twice, each time for different battle wounds. A few examples will suffice to show that the surgeons in this country not only had the enthusiasm and skill of their foreign colleagues, but also kept up with recent developments of the time:

“On the 9th January (1576) as the fleet came in to Zierikzee, there was shooting, and a soldier under Captain Renoy, named Harman van Breemen was wounded. He was shot a hand's width above his right breast and out again behind his shoulder blade. I cut it out from there” (18).

“Op ten neegenste Jannevarius (1576) als die vloot tot Zircxzee inquam, soo wordt ghescootten en ghewondt noch een soudaet onder cappeteyn Renoy, ghenaeamt Harman van Breemen. Dees was daer ghescooten een hantbreet boven zijn rechterer borst in, ende after tot zijn scoerblat weder uut. Daer hebbe ickket uitghesneden”

It is possible that the bullet did not go through the chest cavity but around under the skin of the ribcage. Anyway, the soldier recovered, only to have worse luck two months later:

“On the 11th of March Harman van Breemen was wounded during a skirmish on the Meel Dyke. He was shot in his right thigh into the bone, and I cut the lead out of his groin, and he died on the 15th of March” (19).

“Den 11den Maert wordt ghewondt op een scarmutsinge op die Meeldijck ... Harman van Breemen. Dees was ghescooten in zijn rechter diebeen, buytensbeen in, ende ick hebbe dat loot in zijn lies uitghesneden, ende hij is ghesturven op den 15den Maert”

In the case of another victim, Mister Claes was able to fully demonstrate his technical skill:

“There is a soldier under Captain Jasper called Heyndrick Diericksz from Coomen in Flanders. He had his thighbone shot into pieces with a large musket ball. This is the most difficult work that one could be faced with, as someone had a similar gunshot in the year 1574 that cost the state two hundred guilders or more, apart from the doctor's fee, and he still died. But, thanks be to God, the aforementioned Heyndrick did recover” (20).

“Een soudaet onder cappeteijn Jasper is ghenaeamt Heyndrick Dierricksz van Coomen uit Vlaenderen. Dees was die fosile van zijn diebeen an morselen

ghescooten met een groot mosketloot. Dit is het moijlijkste werck dat men onder handen soude mogen krijgen, want er alsoe een ghescooten was in 't jaer 1574, die den stadt wel twe hondert daelders costen ende noch meer behalven het meesterloon, ende hij is daer noch of ghesturven. Mar desen Heyndrick voorscr. is wel ghenesen, god sy lof"

Finally, one more otherwise rare example of a remarkably successful amputation:

"On the 22nd February (1576) a seaman under Captain Heyndrick Manneken van Alteren, was shot. His name is Jan Zeegersz. He was shot here in the harbour in the burning ship and his right arm was taken off above the elbow joint, the upper bone was exposed and there were a number of pieces of flesh hanging from it. I had to remove his arm a wide hand's span of his shoulder. Moreover the ball of his left hand was shot away and the first joint of his finger, and his pain was excruciating, and he was so badly hurt internally that he coughed bloody phlegm for a long time" (21).

"Opten XXIIen Februarius (1576) worden ghescooten een bootsghesel op cappeteijn Heyndrick Manneken van Alteren. Dees is ghenaeamt Jan Zeegersz. Dees was ghescooten hier voor die haeven in 't verbrande wrack zijn rechter arm tot boven sijn ellebooch gnep of, ende die bovenste scijnckel was bloot sonder vlejende daer hijngen noch veel lappen van vleijs aen, ende ick mostse ontrent een grote hantbreet van sijn scoer ogsetten, ende noch was die slinker hant sijn muis ofghescooten, ende sijn goudtvinger het voorste lidt of, ende sijn pijn heel te barsten, ende hij hadde hem zoo zeer ghedaen van binne in 't lijff, dat hij een tijt lanck bloedighe fluyme spooch"

Thus, some examples of the classical multiple traumas that 16th century surgeons had to deal with.

The surgeons of the 16th century were also ready for new techniques in eye surgery. Here too it was the relevant instruments that improved considerably. The cataract operation had been known since olden times, although many surgeons hesitated to attempt it out of fear of the frequently fatal septic ophthalmia. Even though the Flemish surgeons Yperman and Scellinck had described cataract operations in great detail, it was mainly eye doctors or oculists who performed this operation on the squares and marketplaces.

The array of instruments that the German surgeon Georg Bartisch developed, combined with his anatomical knowledge of the eye, as he had learnt it from the Fabrica by Vesalius, enabled him to not only perform cataract operations more precisely, but also to carry out the first successful enucleation of the eye and to suggest treatments for squints, ectropia and conjunctivitis.

Bartisch's "*Augendienst*" was published in 1583 and was immediately hailed as the first great basic textbook of ophthalmology (22).

The surgeon could also help internal illnesses, namely the infectious diseases. Typical examples are the incision of buboes caused by bubonic plague, or the treatment of thoracic empyema, which was a complication of pleuritis and pneumonia.

The Hippocratic technique of thoracocentesis and partial rib resection for the drainage of purulent pleuritis was re-introduced in the 16th century by the famous Brussels doctor Andreas van Wesel, or Vesalius, who described several examples in his *Consilia*.

When looking briefly at surgical pathologies and their operative treatments during the 16th century I have almost deliberately omitted the revolutionary developments in anatomy starting with Berengario da Carpi, through Vesalius and his pupils, to Fabrizio di Acquapendente.

These anatomical discoveries have, without doubt, influenced the surgical developments previously outlined. As I recently covered the influence of Vesalius' work on medicine and surgery in the 16th century, I will limit myself here to one example, that is related to the above mentioned thoracocentesis for pleural empyema, in which the anatomy of the intercostal blood vessels and nerves is described in detail by Carel Baten in his translation of Guilemeau's "*Chirurgie*":

"In as far as there is no swelling on the outside of the chest [otherwise this should be incised], one should make an opening into the cavity of the chest between the third and fourth rib counting from below, around the middle of one side, six or seven finger widths from the back bone, with a curved lancet, not in any direction but always going from up to down, pushing the point of the lancet from under the fourth rib, the cutting side of the edge pointing towards the upper part of the third rib so that it does not cut into a vein, artery or nerve, hidden under the lower curve of the rib" (23).

"Ende so verre als men geen swellinge oft heffinge gewaer en wort buyten in de Borst [anders moet men daar insnijden], so salmen tusschen de derde en vierde van de warachtige Ribben beginnende van onder te tellen omtrent het middel der eener sijde ses of seven vyngerbreet van het Rugghebeen met de cromme Lancette een openinge maken tot inde hollichheit der Borst, niet t' eender reysen, maer allenskens beginnende van opwaerts nederwaerts, dwingende den punt van de voors. Lancette van onder de vierde Ribbe, de snijdende sijde der selver streckende op de opperste partie van de derde Ribbe op dat men niet en snijde in een Ader, Arterie ofte Senne die onder de onderste hollichheit der Ribbe gelegen ende verborgen zijn".

III. The evolution of the organization of the surgical profession in the 16th century.

The medical-historical investigation concerning the organization of the surgical profession in 16th century Flanders is still far from complete.

In contrast to the situation in the Northern Netherlands, where attention has already been given to barber-surgeons, their organization, guilds, activities and training for many decades (24), in Flanders this is only the very fragmented case.

This may not be true for the 17th and 18th centuries where a number of historians have already investigated the corporation of surgeon-barbers (25). For the 16th century however, one must look either to summaries that span several centuries (26) or to bibliographical details of specific surgeon-barbers out of our former regions. (27).

In this section, therefore, the 16th century surgical profession is looked at in more detail with emphasis on regions that belong to present day Flanders.

III.1 Surgeons and barbers trades in the Low Countries during the 16th century.

The social situation in which surgeons and barbers found themselves in the Low Countries during the 16th century still remains fairly unclear for the present-day medical historian.

This is for two important reasons. On the one hand, during the 15th century both trade groups more or less merged but at different times and to different degrees in various Dutch and Flemish towns and villages. On the other hand, various activities that these two groups practiced were also frequently carried out by other traders, whether "specialists", village healers or quacks.

The regulation of surgeons and barbers' activities was in the hands of the trades of the two professions. Since the late Middle Ages the two diverse groups of traders had been able to join the same trade, that of the surgeon-barbers. This was one of the so-called small trades, sometimes part of one of the other guilds such as mitten-makers or linen-traders (28), sometimes a small trade in itself, like in Ghent. (29)

The establishment of these trades seems to have occurred somewhat later in the Low Countries than in the surrounding countries (30). Nevertheless in Bruges for example there was already mention of a barbers' trade in the course of the 13th century (31), more or less at the same time therefore as the

establishment of the Confrérie de Saint Côme in Paris (32). Relative source documentation is however scarce (33).

One of the oldest decrees that gives an idea of the activities of the barbers' trade in our area dates from 1357 and was granted in Ghent, on the Sunday following St Peter's Day, by the city's aldermen.

The decree describes the structure of the trade organization consisting of a dean, committee, a number of overseers and the members. It also stipulates a number of prohibitions for the members. The following, for example, were forbidden: the keeping in the barber's shop of blood from blood letting; the displaying of blood on the window ledge if ten beakersful had not been let; the acceptance of annual subscribers; shaving, haircutting or blood letting below a certain tariff; imbibing in alcoholic beverage and working on Church holidays. In short, a number of regulations that, if ignored, could lead to a suitable fine being imposed (34).

In 1411 the barber's trade in Bruges was in possession of statutes similar to these. That of Mechelen followed in 1438 (35).

In this way real corporations came into being (36) whereby the feeling of belonging was emphasized by both religious and military activities (37). This feeling was undoubtedly strengthened over the years.

Once trade books started to be published, namely in Ghent in 1433, it became possible to retrieve information about the trade's members. The names of the so-called "*free-masters*" of the trade were registered in this book.

In this way we know the names of around a hundred surgeon-barbers that practiced in the City of Ghent in the pursuing years (38).

The activities of the barbers and surgeons were, in the pre-corporative phase of the late Middle Ages, for the most part different. The former were primarily involved in beard shaving, hairdressing and blood-letting whilst the surgeons concerned themselves more with the health of their clients and carried out smaller or larger operations on them.

This group of Middle-Age surgeons consisted of, on the one hand, those like the famous Jan Yperman (39) who had a university education and on the other hand those who had worked their way up through the barber's trade and were primarily concerned with the treatment of small surgical pathologies (40).

At the moment when the two types of care-assistants in the Low Countries went to enroll in their trade, this then concerned both the simple barbers as well as surgeons (41). Initially there was a clear distinction between the two. In the Brussels' trade for example a differentiation was made between the so-

called “*whole masters*” and “*half masters*” (42). The first were really barbers who carried out surgical as well as barbers’ activities. The second group was the surgeons, who only performed surgical activities (43).

There was also a clear difference in the training of the two sorts of craftsmen, not only in Brussels but also in other cities (44).

Quite early on, the trade provided training for the apprentice barbers (45).

The knowledge, which this training had to impart, was stipulated some years later in a byelaw dating from 1466. This byelaw immediately listed the specific knowledge that surgeons were meant to have: “*those who in future wish to practice in cutting, cauterizing and corrosive treatment of the human body*”

“zij, die voirtaen Cirurgiën hantieren wil als van snijden, barnen en corrosieve hantieren in des menschen leden”

will be questioned by the sworn master of medicine and the sworn trade master about “*everything concerning the body parts both inward and outward; they would then judge who was competent in anatomy*” (46).

“alle die 't samenzettinge der leden van bynnen en buyten; na uutwijsinge der anathomen en van de voorsz. personen, die bequaeme daer toe sijn”.

A different training was therefore required in order to gain the required knowledge necessary to become a surgeon as opposed to a barber: In the supplement to a decree from Utrecht dated 1434 it can be read that the apprenticeship for a barber was 3 years whilst that of a surgeon was 4 years (47)!

In the apprentice contract that the guardians of Claiskin Boele of Ghent signed with surgeon Jooris van Poelvoorde in 1469, it appears that the above mentioned Claiskin had to serve an apprenticeship of 5 years, despite the fact that the contract was signed outside the jurisdiction of the corporation of surgeon-barbers (48).

The fact that this was possible indicates that, at the end of the 15th century, there was no regulation neither given by the council to the trade nor endowed on the trade.

The decree issued by Charles the Bold on 5 July 1473 to the barbers in Brussels brought about the first change in this situation (49).

This decree stipulated that without exception, blood letting, tooth extraction and small surgical operations were the exclusive domain of the surgeon-barbers (50). There was only one exception to this, namely the university

trained doctor, irrespective of whether he lived in- or out- side the city. The surgeon-barber who was admitted to the profession had to be a member of the trade and on admission to this trade had to have fulfilled all scientific and financial obligations. If any discussion arose about his qualifications or recognition the advisory councillor or the chairman of the council of Brabant could deal with any complaints. (51).

Similar decrees were certainly meant to increase the importance and standing of the various municipal barbers' trades.

The surgeon-barbers also wanted to increase their importance by using separate guild houses for their meetings as well as for teaching and giving demonstrations to their pupils. In Ghent, a few years after Charles the Bold's decree, i.e. in 1477, there is mention of such a house on the Bennesteeg (52).

In addition we see the "more developed" surgeons now obliged, as it were, to join the trade in order to enjoy the same privileges. Even some of the university *doctores medicinae*, who had dedicated themselves to surgery, joined the trade. A typical example is a certain Jakob de Stuckere, freeman in surgery, who for this reason joined the surgeon-barber's trade in Ghent in 1485 (53).

When joining a trade a sort of "entry fee" had to be paid. This formed one of the most important sources of income for the trade (54).

One of the first patron saints of the surgeon-barbers' trade was Saint Bartholomew. He is already mentioned in one of the oldest decrees referring to this trade, the previously quoted Ghent decree of 1357. His attribute is a scalpel that points to his martyr's death by flaying. After first being worshipped in the Augustine church in Ghent he was then worshipped in the St Nicholas church where in 1471 a separate chapel was dedicated to him (55).

In the meantime St Cosmas and St Damian had also been given the title of patron saints of this trade.

The barbers' corporation in Bruges held a solemn mass on these saints' days, as early as 1427, in a separate chapel in St James church. In 1432 they even became the owners of this chapel and paid the sum of 12 pounds parisus per year to be allowed to hold services there (56).

A change came about to this earlier mentioned situation in Ghent when, in 1533 "*the trade choose St Cosmas and St Damian over St Bartholomew*" (57).

The reverence of Bartholomew seems to have finally stopped in the 17th century (58).

In addition to the fact that all the craftsmen surgeon-barbers had a solid religious foundation, from the start of the Habsburgs reign their "legal" role

became more important. The new members were required to swear an oath of allegiance to the trade and the city as was stipulated in Ghent in 1525 (59).

The trade was able to rent property according to the needs of its members. In this way members were able to open a barber's shop. This happened, for example, in Ghent with the barber's shop "*In den Sampsoen*" in the Hoogpoort, where, according to an act dating from 1516, barber Lieven Rogghe rented a shop that formed part of a property intended for the goldsmith's trade (60).

In this Ghent decree of 1516 even the detailed contents of the barber's shop are described (61).

In this fashion the trade brought about a process that is described within medicine as the professionalizing and institutionalising of surgery (62).

In the same way as the decree of Charles the Bold had now given a clear institutional importance to the trade of surgeon-barbers, this change, as stated, simultaneously brought about an important mingling of the two groups, that now already belonged to the same trade, which in turn blurred the Middle Age division between barbers and surgeons (63). This is clear ten years later when, in 1483, in Brussels a certain Lieven van 't-Zenneke (64) used the dual title of barber and surgeon and apparently carried out both professions at the same time. Half a century later, towards the middle of the 16th century, we see that a fusion of both groups has occurred, not solely in title but also in activity (66). In the Brussels registry of the "*boxes for the poor*" we see that in a 7-year period between 1556 and 1575 (67) the already limited number of "half masters" had fallen from 4 to 1 whilst the number of "whole masters" was many times greater and numbered a fairly constant 36 (68) (69) (70).

At the beginning of the 16th century there were however, from North to South, still considerable differences in the mingling of these two trade groups that varied from place to place (71). This resulted in large differences within the diverse local trades, both with respect to the protection of their authority as to the competence of their members in both cities and the countryside (72).

On top of that is the fact that, apart from the recognized practitioners, a whole range of other health workers were active; their services were to a great extent called upon by the poorer section of the population.

One of the oldest of these particular groups was that of bath master. This group enjoyed certain renown, particularly in Germany, even though their statute was inferior to that of barber. This was apparent from the fact that they were not allowed to use any coat of arms and that their children were not allowed to learn certain trades (73).

In Germany, from the 14th century, barbers and bath masters belonged to different trades (74).

The fact that the activities within the bathhouses frequently led to promiscuity certainly did not do the name of these houses nor their tradesmen any good! In particular, by the beginning of the 16th century venereal disease was rife in Western Europe, especially in the neighbourhoods of these bathhouses, which were condemned by both the Roman and the Lutheran church as centres of depravity. It should however be said that although the convergence of large numbers of guests frequently gave rise to epidemic illnesses, they were the only place where any attention could be given to personal hygiene.

The fact that hygiene played an important role in the maintenance of general health is apparent from the fact that on the "Reichstag" of 1548, held in Augsburg, the trade of bath master was elevated to be equal to that of barber (75).

What the situation of the bathhouses was in the Low Countries in the 16th century is less well known. In our areas there were in any case fewer similar bathhouses available. In addition, they were, just as in other parts of Western Europe, frequently closed out of fear for the spread of the dreaded syphilis (76).

No one less than Desiderius Erasmus expressed his regret at the closure of bathhouses and indicated their relationship with the Naples illness:

"25 years ago nothing was more fashionable with the Brabanders than a visit to a public bath. Now they have died out because this new leprosy (syphilis) has taught us to stay away" (77).

Another group of tradesmen was that of the travelling "tooth extractors". Extracting teeth was an activity that was performed solely by barbers in the Middle Ages. It is not completely clear from what point in time travelling "tooth extractors" arrived at the Flemish markets and cities. The fact that this sort of competition was possible is due to the fact that during markets and fairs in our towns there was complete freedom to sell and deal, also thus for the trade in "medical" products and treatments. This was the reason why, in 1448, Bruges allowed barbers from Brussels to extract teeth for the 3 days of the annual market on the condition that they could present proof that this same arrangement was possible for Bruges barbers in Brussels (78). These tooth extractors were obliged to respect a minimum tariff so as not to create unfair competition with respect to the Bruges barbers. A 1517 decree from the same city confirms this in detail (79):

"It shall be so that those at the fair who are accused of or caught red-handed offering to pull or pulling a tooth for less than two shillings parisis will be fined a sum of twenty shillings parisis for every tooth that they pull as often as it occurs, in addition they will also be required to pay the same fine to the almoner for the poor"

"Voordt dat ooc gheenen van den voors. ambochte voordan gheorloven en zal eeneghen tand min te treckene of doen treckene danne twee scellinge parisis up de boete van 20 scellinge parisis van elcken tand die hij min trecken zal, alzo dickend als dat geschiede, ende daermede bevonden of daerof bedraghen worde bij der ghoeder waerhede; emmer dat elc van hemlieden ghehouden word den aermen levende up de aelmoesene als vooren dat te doene omme godswille up ghelike boete"

It was impossible to earn a living by tooth extraction.

So, in 1531, there is talk of a Frenchman in Antwerp, Erard de la Vallée, who, originating from Paris, lived in the metropolis for 2 years together with his wife Jehanne and children Verdette, Imbert and Anne," *for the purpose of drawing teeth and cutting stones in children*". One witness, a certain Jehan Maillart, mentions that de la Vallée cannot earn a living doing this and plans to return to Paris or elsewhere in France (80)!

Travelling tooth extractors and real charlatans are frequently lumped together so that a few decennia later their activities were forbidden on the streets and squares of Antwerp on Sundays and Holy days. This is witnessed in a decree, passed in Antwerp in 1572, and renewed there in 1580 and 1581 (81).

Apparently a number of cheats and charlatans disguised themselves as travelling tooth extractors and they knew how to pull the wool over the eyes of the well meaning public.

A third separate group of traders that were most likely working solely as travelling "specialists" were the "stone cutters".

Precisely when this age-old treatment came into being in the Low Countries is unclear. These were most likely "specialists" from France, where the technique had existed for a long time, who fled here in the middle of the 16th century led by Laurent Colot (1519-1559) the first in a family of famous lithotomists (82).

In 1545 in French-Flemish Rijsel (Lille) the magistrate granted permission to Jehan Dumares to "*cut the poor people inflicted with stones*"; for a fixed fee of 12 pounds parisis per operation (83).

The fact that the patients operated on were frequently children is confirmed in the afore mentioned evidence of Jehan Maillart of Antwerp in 1551 (84).

As well as this more or less recognizable group of surgical "specialists" there existed an even larger group of quacks and folk healers.

Who were these charlatans and what were their activities to which the gullible population so readily turned?

An Antwerp decree of 1572 describes them clearly:

"various vagabonds, tramps and unemployed, quacks, rat-poisoners, etc. who sell waters, ointments, pepper, drugs, herbs and spices within the city on tables or sometimes on horse-back, what brings the population in various perils, sickness and illnesses that resulted in death or other inconveniences" (85).

"diversche vagabonden, lantloopers ende ledichgangers, quacsalvers, rattecruytvercoopers, enz." die "wateren, salven, poyeren, droogen, cruyen ende andere specerijen" binnen de stad verkopen op "taffelen ofte oick te peerde", waardoor de bevolking gebracht wordt "in diversche periculen, siecten ende cranckeden ende oick mede sterften ende meer andere inconvenienten".

The university-trained physicians also complained about the quacks as this text from Peter Haschaert states with respect to trephination: *"I had a patient who I was called to; when I arrived he lay speechless and unconscious with constant and burning sores, and when I had trephinated him I found a large quantity of material under the cranium; and when that was out he recovered consciousness and lived for many years afterwards.*

In such situations, even though such openings do not always guard against death, they do not hinder or shorten life; the least they do is lengthen it.

It therefore amazes me the faith that men have today in cheats, quacks and fast-talkers who place strange ideas in others (who are unaware of their lies and illiteracy) and who tell the people that everyone who is trephinated will die and that no-one should bring about a wound to the head; yet we read in this book that the prince of medicine, Hippocrates, has taught us how important it is to do so." (86).

"Ick hebbe eens eenen (patiënt) ghehadt daer ick gheroepen was; de welcke als ick daer quam, lagh sonder verstandt ende sprake, met continue ende bernende korsten, ende als ick hem ghetrepaneert hadde, ick vondt groote menighte van Materie onder het Cranion; ende als die uyte was, hij kreegh terstont weder sijn verstant, ende heeft daer naer gheleeft noch veel Jaren.

Want in sulcker noot, al is 't dat sulcke openinge hem van der doot niet altydts en behoedt, nochtans en hindert sij niet, noch en verkort hem oock 't leven niet, maer het minste daise doen mach, is datse 't leven verlenght.

Daeromme verwondere ick my seere dat men hedensdaeghs soo groot gheloof gheeft sommighe Bedriegers, Quacksalvers ende Mondtspeelders, die van vreemde plaetsen in ander, daermen hun valscheydt ende ongheleertheydt niet en kent, loopen, wijsmaeckende de Ghemeynte sonder eenighe redene noch experientie, dat alle de ghene die ghetrepaneert zijn, sterven moeten, ende dat men gheensins in eenighe gewonden in 't hoofd en behoort te ghebruycken; ende nochtans hooren wij in desen Boeck, hoe neerstelyck ons dat te doen, bevolen heeft den Prince der Medicijnen Hippocrates."

During the whole of the 16th century (and also later) the authorities tried very hard to limit the activities of these charlatans and to protect the people from this sort of "illegal" medicine.

As van Lieburg correctly commented, quack healing in the 16th century was not necessarily seen as reprehensible treatment and it was up to the authorities to do more to limit the disruption that the competitive nature of quack healing brought about; in other words quack healing was not forbidden but regulated (87).

As early as 1510 Emperor Maximilian and his young son Charles issued in Leuven an edict (88) in which it was decided that:

"No-one is allowed to practice surgery or medicine in Leuven or within a two mile radius without being accepted by the faculty, except court physicians or those who receive permission from the king" (Brussels, 16 July the year of our Lord, 1510).

Some 30 years later, in the emperors decree prepared by Charles V on 8 October 1540 the general conditions for the practice of medicine are even more clearly defined (89):

"Given the fact that we have been informed, that in our City of Brussels people of both sexes live and work, who for the most part do not speak or read Latin, Flemish or French, who permit themselves to practice medicine in our city of Brussels and who attempt to visit and treat the sick; that this is above their knowledge and competence and in addition gives rise to many accidents to the disadvantage of the sick and therefore of our whole population; this as a result of the fact that these masters and mistresses do not have any real experience nor can they give the name of any person or place where they could have gained medical experience; from this it appears that these same masters and mistresses have prescribed for some illnesses very dangerous and intolerable medicines as a result of which only death or other serious physical deformities would have resulted if certain apothecaries of this afore mentioned city had not improved or

at least tempered it; this to the disadvantage of the inhabitants of this city, and this in increasing quantity, if we were not to take any action"

decided that:

"no-one may call or present himself a doctor unless he or she is a doctor of, or licensed in, medicine by a recognized university, has either been examined by the doctores medicinae of the University of Leuven or by doctors who live and practice in the City of Brussels, and this on the provision they can produce a certificate of competence."

In 1569 the Duke of Alva decreed that all students of medicine were only allowed to study at either this same university of Leuven or at the, in 1559 established, university of Dowai (Douai) (90). In 1577 the General States rescinded this restriction.

In the mean time the emperor's decree of 1540 had ensured that a medical committee had been established whose duty it was to describe the rights and duties of the medical and pharmaceutical professions.

The decree ended with the announcement that an appropriate "*Placard*" would be issued. Despite the fact that this "*Placard*" was never issued this decree did considerably limit quack healing, although it protected the university-trained doctors more than the surgeon-barbers.

Nevertheless this decree, albeit in a round about way, did ensure that so called *Collegia Chirugica* (Colleges of Surgeons) were established in many cities that could provide an officially recognized training for surgeon-barbers and thus also protect this group from charlatan's practices.

So we see that in Antwerp such a Surgical College was brought to life before 1542 (91), that could, in consultation with the University of Leuven, award medical diplomas (92). It can be assumed that many surgeons received their training in these Colleges. So Thomas van Mauden, father of David who was later to publish his "*Bedieninghe der Anathomieen*" with Plantin, followed lessons at the Antwerp College in the second half of the 16th century.

A papal bull from Pius IV, registered in the Paris parliament on 19 November 1561, divided the diplomas from such colleges into the degrees of baccalaurean, license, and doctor, although this was not implemented immediately (93). In some cities, including Ghent, it was to be the middle of the 17th century before similar Colleges were established (94).

III.2 Official and other tasks of surgeon-barbers in the 16th century

a) Since the late Middle Ages the surgeon –barbers have actively participated in the care of patients in city hospitals.

From as early as the 12-13th centuries, when hospitals were established in the larger cities to serve as sanctuaries for the sick, poor and needy, city authorities have attracted health workers to provide for the care and healing of these patients.

Generally “*doctores*” were sought, that is qualified doctors with a diploma from either Leuven or a foreign university. They were appointed to diagnose the illness and to prescribe the appropriate medicines. As these *doctores* did not usually concern themselves with manual treatments such as dressing of wounds, blood letting etc (95) this was given to the surgeon-barbers, who in the beginning were occasionally called in to perform these tasks but who, later, due to the increase in demand for these tasks, were given their own specific appointment by the city authorities (96).

The authorities paid the activities, for which the surgeons were appointed. Thus we know that master Cornelis Jacopsz of the St Barbara’s hospital in Middelburg was paid to take care of “*the wounded and injured miserable people*” (97).

Ten years later, in a bill from the same hospital, there is mention of a till this point unknown illness “*that we the hospital authorities have coined Spanish Pox, so we have spoken to the master, and said to him, that he was to use due care and diligence to heal such people*” (98).

“dien wij hospitaelmeesters aenghemarct hebben als van de spaeyse pocken, so hebben wij met de meester gesproken, hem seggende, dat hij diligencie ende naersticheyt daer toe doen wilde gebruycken, om alsulcke personen te ghenesen”

Sometimes city authorities appointed a surgeon to work in two hospitals as for example in Amsterdam where in a byelaw dating from 26 January 1515 it is stated: “*master Meerten Hessels, who was appointed City surgeon, shall visit both hospitals standing within Amsterdam and shall, to the best of his knowledge and ability, cure these patients that are to be found in the hospitals...*” (99).

“meester Meerten Hessels, die tot der Stede chirurgijn werd benoemd, zal visiteren beyde gasthuisen, staende binnen Aemsterdamme, ende die siecken ende patiënten daer wesende, naer sijn vermogen ende beste wetentheyit zal genesen ende cureren.....”

In the Habsburg period such activities became more strictly regulated. So in Ghent in 1525 the aldermen passed statutes that laid down the oath that the city surgeons were to swear on their appointment to their paid position (100).

“Hereby you swear to be a qualified surgeon of the city of Ghent, to care well and honestly for all those in your care who are sick or injured whether they be rich or poor, and not to take advantage of cured patients neither financially nor in the judgment of care delivered by you or others, and all this without prejudice or secrecy, so as to duly and loyally comply with the decrees and statutes that the legislator has decreed with respect to surgeons or those listening to this title without in any way contradicting these and finally to perform the duties that a good qualified surgeon is supposed to do.”

In a circular of Rijsel (Lille), dated 27 July 1587, the tasks of a city surgeon are clearly stated: the care of abscesses, wounds, etc, as well as the administering of medicines and powders (101).

In addition blood letting was one of the most important tasks of surgeon-barbers in the hospitals. Just like the administration of ointments and potions, bloodletting could only be performed on prescription from the *doctor medicinae* as a ledger book from the hospital In Middelburg states when referring to the 16th century practice: “*Except in emergency situations, dangerous or unforeseen illness or in the absence of a doctor, they will not carry out any bloodletting without the doctor’s prior knowledge.*” (102).

“Behalve bij een geval van zeer haestighe, periculeuse ende onvoorsieninghe sieckte, of afwezigheid van doctoren, zullen zij, zonder voorkennis van de geneesheer, geen latinghe verrichten”

According to this Middelburg ledger book the city surgeons were obliged to work a rote system within the hospital. At the end of their term of duty they had to pass on all necessary information about the sick and injured to their successor (103). In other words, a clear social obligation existed in the 16th century that was organized by the city authorities to continue to have the sick and needy cared for not only by doctors but also by surgeon-barbers.

If, as mentioned, the differentiation between barbers and surgeons became vaguer during the 16th century it can be assumed that the surgeons appointed by the city were recruited from the members of the surgeon-barbers trade.

b) A second task given to the surgeon-barbers by the city authorities was the care of those suffering from plague.

This was most likely made official from the end of the 15th century because already in 1502 there was a decree that spoke of a payment of 13 stivers to the local plague master to cover the cost of his household cleaning (104).

Christiaan De Backer has even retrieved the names of these surgeon-barbers who had been appointed plague master for Diest from 1513 onwards from the city accounts (105).

Frequently there was a separate payment planned between the magistrate and the master-surgeons for the treatment of those suffering from plague (106).

In this manner Pieter Van Dieghem, city surgeon in Mechelen, and one of the court physicians to emperor Charles was, for example, paid by the Mechelen authorities specifically for the care of those with infectious diseases (107).

Plague masters were, of course, appointed by the city whenever an epidemic arose in the neighbourhood of the city or in the city itself. In this way surgeon Corneel Jossins was appointed in Ghent on 19 September 1559 to “*be the bloodletter for the quick illness*” (108).

In a decree issued by the city of Antwerp in 1580 there are a number of restrictions for barbers and surgeons that had equally been stipulated in Diest the previous year, i.e.:

“The barber who lets the blood of a plague sufferer may not practice his trade on healthy people for a period of one month.”

“The surgeon may not let blood or shave a healthy person for a period of one month after visiting and treating a plague sufferer.” (109).

c) A third task of the surgeons was “wound autopsy” on injuries and wounds that had been caused by quarrels or fights and which had given rise to legal proceedings.

After so called “*chirurgi iurati*” had decided on the nature and seriousness of the injury the legal authorities were able to settle on a suitable punishment and complementary damages based on these findings (110).

In addition these surgeons could be asked to take care of those who had suffered injury by torture (111).

These injuries were inflicted by all types of instruments of torture, not least by a glowing iron staff that was used to burn the body (112). In addition the city surgeons were also required to give instructions to the axe-man as to where, from an anatomical viewpoint, a limb precisely had to be amputated, as is clear from a text from the *Brugse Vrije* in 1540:

“On 27 November, 1540, Masters Claeyns van den Leene and Gregorius Roelpot, sworn surgeons of the city of Bruges, were required by officers of the law to go to the executioner on the scaffold to indicate exactly where the right hand of one Joos Quaille, sentenced by the tribunal in the region, was to be chopped off” (113).

“Meester Claeyns van den Leene en Gregorius Roelpot ghezworen cyrurgien en der stede van Brugghe dat zij den XXVII in november XveXL ten verzuche van myne heeren van der wet waren up 't schavaut by den scherprechtere omme hem te wysen eenen Joos Quaille volghende der sententie daeraf ghegheven in vierschare van den Lande zynre rechter vuyst af te hauwene”

Finally, whenever bandits or witches were sentenced to death it was these same *“chirurgi iurati”* who performed the autopsy and the city magistrate paid for their report (114).

Worth noting is that the city surgeons also had the power to postpone an execution or torture for certain reasons as is clear from the following text dating from 1520:

“But because of the intense cold and frost and the advice already received from the doctors and surgeons that it could be dangerous to carry out the executions these same executions were differed till the weather changed” (115).

“Maer midts de groote coude ende vorst ende alvorens gehad hebbende tavijs van de medecijnen ende chirurgien endat dat by dien bevonden es datter dangier inne gheleghen soude zyn in d'executie van den lijve es de zelve executie ghediffereerd toter veranderinghe vanden wedre”.

IV. Training to be a surgeon in the 16th century

The increase in professionalism of the surgeons trade is for a large part the result of the improved training that the previously discussed groups were able to obtain.

IV.1 The university-trained doctor-surgeons

The most important, theoretical and often intense training was obtained by the *doctores medicinae*.

Since the doors of the university of Leuven had opened in 1425 most of our students studied in their native country.

This number, however, remained relatively small and the medical faculty in Leuven remained the smallest of all its faculties for the whole period of the Ancien Regime (116).

The curriculum included anatomy, physiology, diseases and their treatment as well as pharmacology (117) and it gave the right, after the diploma had been obtained, to practice medicine.

In order to obtain the title of doctor it was also necessary to defend a thesis, after which, according to tradition, the promovendus had to invite the chancellor, the professors and all colleagues to a dinner.

The very theoretical and scholastic medical education that was available in Leuven was in essence based on the knowledge of Hippocrates, Galen and Avicenna.

The fact that the works of Avicenna were the most important study source at the change from the 15th to 16th century was due to the fact that there were very few printed versions of Galen's original texts until the first decennial of the 16th century.

Indeed Galen's most important work, contained in '*Methodus Medendi*' had its first important distribution after Nicolo Leonicensis (1428-1524) had helped with the printing of the original Greek version in Venice in 1500 (118). The first successful Latin translation by Thomas Linacre dates from 1519 (119), and was so welcome that in the 16th century alone it was reprinted almost 30 times (120).

The Leuven classics professor, Johann Guenther of Andernach (1505-1574), produced the Latin translation of the spurious surgical work of Galen, and had it published for the first time by Simon de Colines in Paris in 1528 (121). The remaining surgical works of Galen were only published for the first time in Latin in the 1540's (122).

In Leuven, therefore, by the beginning of the 16th century the most important source of study material was from the works of Avicenna.

Jacob Bogaert, (1410-1520), who between 1480 and 1516 was the sole professor of medicine at Leuven, thus wrote a five part "*Collectorium Avicennae Practicum*" that he based on the Canon of Ibn Sina (123) and which was used by students as study material for more than 35 years (124).

The students could of course make use of medical writings and incunables that were to be found in the first university library of Leuven. This library, that was established by Jan Spierinck (? -1499) probably also contained the Middle Age texts of Guy de Chauliac and Henri de Mondeville out of which the students could obtain their surgical knowledge. This library was unfortunately destroyed in 1578 by Alva's soldiers (125).

The Arabic influence that was present in the medical education at Leuven (126) left little room for anatomical and surgical instruction. Even the influence of Guenther of Andernach and the short period that Vesalius studied in Leuven could do little to change it.

This is one of the reasons why in the first half of the 16th century, the *doctores medicinae* in our country were almost never concerned with surgery and limited themselves to the prescribing of bloodletting or abscess lancing that were in turn to be performed by the barbers.

This slowly changed around the middle of the 16th century.

On the one hand this was the result of the previously mentioned mingling of university-trained surgeons with barbers particularly within the trade organizations, while on the other hand there was notable evolution within the university education itself.

This happened both by a slow change in medical education in Leuven and due to the fact that an ever-increasing number of students went abroad for their medical studies.

The breakthrough in medical thinking in Leuven came about due to the establishment in 1518 of the *Collegium Trilingue* that provided students with a thorough education in Classics. Thus a shift in thinking evolved away from the Arabic towards the Greek-Latin texts, and so Hippocrates and Galen were, so to speak, rediscovered. This applies to some extent to Hubert van Baerland (1510-1550) but even more to Jeremy de Drijvere (1504-1554) who taught medicine at Leuven for almost a quarter of a century and relied almost totally on the original texts of Hippocrates and Galen. Alongside this the rediscovered manuscript of Aulus Cornelius Celsus also belonged to the medical study material, the more so because de Drijvere supplied text and commentary on this work.

One of his later successors, Nicholas Biesius (1516-1572), also made himself useful to the Leuven *Alma Mater* although this man from Ghent concentrated more on philosophy and medical methodology and less on practical medicine and certainly less on surgery.

It was not until the second half of the 16th century that qualified *doctores* and university trained doctors became interested in true pathology and treatment albeit then in the more theoretical aspects thereof.

One of the most important protagonists of this new thinking was Maarten Everaert of Bruges who, on the one hand translated the "*Spitalbuch*", one of the "*Drei Buecher von Wunden und Schäden*" (127) and on the other hand produced a Dutch edition of Valverde's "*Vivae imagines partium corporis humani*" (128).

In addition there was the Ghent doctor-surgeon Carel Baten (1550-1618), who published his "*Handboeck der Chirurgien*" in 1590 but gained even more fame with his already cited translations of the works of Ambroise Paré (1510-1590) and his student Jacques Guillemeau (1550-1613).

The Antwerp physician-surgeon David van Mauden (1538/9-before 1612) also played his part with his book "*Bedieninghe der Anatomieën*" published by Plantin in 1583. Apparently his "*Examen chirurgiae*" never came off the press, but bears witness to his role in the *Collegium Chirurgicum* (129).

Finally there was the Leuven professor of medicine, Thomas Fijens (1567-1631), who published a book about the applications of cauterisation, and a few years later his "*Duodecim Chirugicum Operationes*" in which the twelve then most important major operations were described in detail.

Notwithstanding the evolution in medical education in Leuven it is necessary, as stated, to accentuate the fact that a large number of students went to follow university education abroad.

The attraction of the university of Montpellier, where many Flemish students had enjoyed studying in the 14th and 15th century (130) had declined and made room for the university of Paris but above all for those of Bologna, Padua and Ferrara. The number of students from both the Northern and Southern Netherlands, that went to study in Italy was innumerable, not only because there the Renaissance thinking was in the foreground also in medicine, but especially because only these universities offered surgery as a separate subject on the curriculum.

In these universities, more than in the Arabistic orientated universities of the North, texts of Middle Age surgeons were studied including those of Guilelmo da Saliceto, Bruno da Longoburgo, Guido Lanfranchi and especially Guy de Chauliac. His books "*Chirurgia Magna*" and the spurious "*Chirurgia Parva*" were much valued.

It is no wonder that the first Flemish translations of these authors rolled quickly off the presses (131). These translations, which were reprinted throughout the 16th century, led to the acceptance of the renewed surgical thinking even by those who did not go abroad to study. Various authors excelled and, out of need from the surgeon-barbers who were not versed in Latin, wrote their own texts. Many of these were included in so-called "*Articella's*" i.e. a collection of texts some of which were anonymous while others had the authors' name stated. Moreover, after the renewal in anatomy brought about by Vesalius, also surgeons concentrated on such for external surgical pathology so important basic knowledge.

Both Vesalius's followers in Padua and many of his foreign students who returned to their fatherland taught the Vesalian anatomy in their own

universities of Germany, France, Spain, England, and even Poland and the Scandinavian lands (132).

Thus, around the middle of the 16th century, anatomy tuition could begin in the Low Countries. Daan de Moulin has pointed out that this was fairly slow to happen (133). Nevertheless it became quite apparent in the second half of the century both at the university of Leuven, whose professor of medicine, Jan Wouters of Vieringen was responsible for the Dutch translation of Vesalius' Epitome, as at the universities of Leiden and Dowaii (Douai).

It is therefore clear that, under impulse of Vesalius' anatomical renewal and the practical realizations of Ambroise Paré on the one hand, and the humanistic influence on medicine on the other (134), surgery made a revival in the second half of the 16th century that was, after a time, also supported by the university world (135).

IV.2 Non-university trained surgeon-barbers

As mentioned earlier, from the middle of the 15th century the surgeon-barber's trade laid down regulations concerning the training of surgeon-barbers.

In the previously quoted decree of 1434 it is clearly stated that the surgeon-barbers could only be admitted to the status of master-tradesman after giving proof of their knowledge with respect to bloodletting and tooth extraction.

In the decree of Leiden of 1441 astrological knowledge was also to be examined in order that the bloodletting could be performed at the right moment (136).

So it was stipulated that the surgeon barber needed to know, "*in what sign the moon is and also if he knows the difference between the arteries, veins and nerves, and whether he can differentiate between the veins and the nerves*" (137).

"in wat teykene die mane is ende of hij oick die kennisse ende onderscheidinge van de aderen, zeenen ende arteriën weet, en die aderen ende zeenen den enen voir den anderen weet te onderscheiden"

In a renewed decree of 1466 for the first time a clear difference can be seen between the knowledge examined for barbers and for surgeons, whereby the latter needed to have clearly more anatomical and surgical background (138)

In the southerly Kamerijk (Cambrai) around 1445 apprentice barbers were expected to spend 6 days working by each of three masters in order that they could be assessed on their practical knowledge (139).

Even the simple barber was required to have an increasing knowledge, that according to the decree of 9 November 1471 from Bergen op Zoom, even included "*all the things that are to be done in the house*" in other words small operations such as lancing abscesses or making ointments (140) (141).

The surgeons on the contrary, as in Mechelen, were expected to know about many more facets of surgical pathology such as: "*abscesses, carbuncles, wounds, injuries and similar problems as well as sprained arms or legs*". Such surgeon had "*to be examined first by the doctors of the city and the sworn surgeons, found to be an expert and then finally admitted*" unless as was added "*he is a graduate of a university*" (142).

As mentioned, in the first half of the 16th century, a progressive mingling of barbers and surgeons was apparent and the trade thus gained a bigger hold on the professional practice, and therefore on the requirements expected from the apprentice surgeon-barbers. Knowledge of the *Materia Medica* and the preparation of medicines became more important for barbers as is seen in a guild roll of 1550 in which it is stipulated that the candidate "*shall be able to make a cataplasm and ointment to know basil, griseum, egyptiacum and apicum and this faultlessly*" (143).

Also progressive knowledge of pathology became essential for the barber group. In an emperor's decree of 12 May 1552, issued by Charles V, is stated, "*Firstly that he or she must know and understand the human complectia as this is the foundation of all medicine and surgery. In addition he or she must know and understand the anatomy and constitution of the human body*" (144).

"In den eersten, dat hij oft zij zullen moeten weten ende connen die complectien van de menschen, want dit es het fundament van alle medicijns ende chirurgijns. Ten anderen, dat hij of sij sullen moeten weten ende kennen die anathomia ende gesteltenisse des mensche lichaems"

There was, however, still a clear difference in the exams that the surgeons and barbers had to sit. This is apparent from a Guild letter that was issued on 4&5 May 1552 (145) in which two different exams are clearly described.

The future barbers were to be examined in the "*question of the phlebotomy*", both theoretical and practical, whilst the apprentice surgeons could now be questioned about 9 articles namely tumours and pathology, wounds, abscesses, breaks and dislocations (146) as well as the practice of clinical

investigation and treatment of certain illnesses, the working of various medications and the use of surgical instruments including the trephine (147). Non-university surgeons in the Low Countries therefore, around the middle of the 16th century, received a thorough education in which the exclusion of anatomy from the curriculum was now impossible to imagine.

In many towns even human dissection was organized, like in Amsterdam, where in a special privilege of Philip II dated 13 March 1555, was stated that annually one of those sentenced to death would be made available to the trade “*to anatomise*” (148).

The number of corpses that were given to the trade by the authorities increased considerably in the second half of the 16th century so that by the beginning of the 17th century there were two “*cutting days*” a week (149)!

Boudewijn Ronsse of Ghent, who in 1551 was city doctor in Gouda, some years later improved the training of surgeons in this city by making very clear training demands (150).

As the importance and seriousness of the exams increased, experts who had of course to be trustworthy were appointed by the trade to do the examining and they had to swear an oath to the dean and chapter (151).

Theodoor Boesman, who wrote extensively about surgical training in the past, quite rightly observes that there was, at the end of the 16th century, especially in the Northern Netherlands, an important change in the examination of the so called “*proefknechten*”, in other words apprentices (152). This was to do with the introduction of a so-called “*thesis*” probably as a result of similar practices at the universities, in particular at the in 1575 established *Alma Mater* in Leiden. A Guild letter of 28 December 1589 reads as follows:

“Those who shall be eligible to practice in the art of surgery shall be questioned on their thesis, given to them by the designated professor, dean and taskmaster, in the presence of the afore mentioned professor, dean and two taskmasters, in the Dutch language, and shall consist of sixteen propositions, theories or articles namely two on surgery as Ex capitulo singulari Guidonis, or other authors who have written about surgery; two on anatomy; two on definitions of apostemas; two on wounds; two on ulcers; two on fractures; two on dislocations and two on bloodletting. After receiving the title of the thesis the student may have one month’s time, or less if he so wishes, to prepare it” (153).

“Die zullen begeeren te practizeren inde conste van Chirurgie, zal men ten overstaen van eenen Professor der medicijnen uyt der Universiteyt alhier, mitsgaders van den Deken ende twee Proufmeesters, in nederduytsche tale, voor zo vele doenlicker is, ondervragen op alzulcke Theses als hem by de voorschreven

Professor, Deken ende Proufmeesteren zullen worden gegeven, bestaende van zestien propositien, voorstellingen, of artikelen, te weten, twee uyt de Chirurgie, ofte Ex capitulo singulari Guidonis, of andere Authoren die van de Chirurgie geschreven hebben; twee uyt de Anathomie; twee ex apostematum definitionibus; twee ex vulneribus; twee ex ulceribus; twee de fracturis; twee de dislocationibus ende twee van de Aderlatinge. Welcke Theses ontfangen hebbende zal de Proufdoender tijt van beraet mogen hebben een maent, of minder tijt, tzijnen believen".

As well as defending a thesis about surgical knowledge, the surgeons were also required to know the theory and practice of bloodletting in order to be allowed to carry out this barber's practice (154). Finally the surgeons were also expected to have an extensive knowledge of the *Materia Medica*, what by the end of the 16th century resulted in the fact that "an apothecary, admitted to the sworn profession" had to be present at the exam (155).

It should be clear from this overview that the training and in particular the examination of student surgeons witnessed a strong development in both intensity and professionalism. In this way the non-university trades of barbers and surgeons gained on the one hand in theoretical and practical foundations whilst on the other hand the development of different forms of examination again led to a dissociation of the two trade groups whereby at the end of the 16th century, both the non-university and the university surgeons could perform the same type of "major surgery" whilst the barbers, although armed with a greater theoretical knowledge than before, concentrated more on bloodletting and "minor surgery".

V. Conclusion

In conclusion, it may be stated that barbers and surgeons in the sixteenth century Low Countries experienced an important evolution. The Middle Age separation between these two groups was considerably blurred towards the end of the 15th century, in particular by the increasing influence of the trade organisations. These played an important role throughout the whole of the 16th century in a progressive delineation of surgeon-barbers' activities from those of other professions and not least from those of quacks. The trades organised the education, which became more and more structured and particularly in the second half of the century included renewals in anatomy and surgical treatments, and was concluded with specific examinations.

On the other hand the authorities made an effort to introduce firm rules into the profession both by the issuance of decrees and ordinances that subjected the practitioners to certain regulations and restrictions as well as by the

appointment of surgeon-barbers for the population, particularly in the larger towns and cities. These surgeon-barbers were appointed to carry out surgical and hygiene treatments, in particular for the less fortunate among sixteenth century society.

These conclusions should underline the fact that not only in surgical science but also in the practice of the profession, a true Renaissance occurred in our regions.

VI. Notes

1. Of the 2 Middle Dutch manuscripts of de Chauliac at least one, according to Daan de Moulin, originates from the Southern Netherlands (de Moulin p. 358 footnote 74).
2. The first edition of the *Chirurgia Magna* in Dutch was published in Antwerpen by Henryc Eckert Van Hombergh in 1507.
3. Wickersheimer p. 353.
4. First used in the 4th book of the Canon of Avicenna.
5. Two complimentary chapters covered on the one hand anatomy and on the other hand an Antidotarium, that is a compendium of medicines.
6. Cf. the surgical work of Fabricius di Acquapendente, that was entitled "Pentateuchos chirurgicum".
7. For discussion of the work of de Chauliac, use has been made of the French edition of Falcon dated 1520, as well as de Moulin's critical commentary of 1988.
8. These are discussed in other chapters of de Chauliac's work!
9. It may be assumed that Franco was already aware of Falloppio's findings.
10. Peter Haschaert or Hassart, born in Armentières in the beginning of the 16th century, travelled through most of Europe, before establishing himself consecutively in Rijsel (Lille), Leuven, Brussels and Liege. He published several monographs including one about syphilis, one about the treatment of the plague, as well as translations and commentaries on Hippocrates, Paracelsus and Hessus. (Cf. the publications of Leon Elaut with respect to the works of Haschaert).
11. Haschaert: Edition 1634, p. 54.
12. Under the title "Dat chyurgylick werk", that alongside the "Practica in arte chirurgica copiosa", also contained the translation of a shortened version, the "Compendiosa".
13. Jacques Guillemeau was a student and disciple of Ambroise Paré, who had "La chirurgie française...." published in 1594.
14. Guillemeau (translation Baten) p. 6 r^o.

15. Also reproduced in the commentary of Carel Baten in his "*Hantboeck der Chirurgien*", pp. 327-328.
16. Baten p. 216 in the Amsterdam edition of 1614.
17. Use was made here of a text edition published by J. Pot in 1931.
18. Pot p. 1140.
19. Pot p. 1146.
20. Pot p. 1141.
21. Pot p. 1146.
22. Van Hee (2000) pp. 219-220.
23. Guillemeau (translation Baten) p.19 v^o.
24. Here I refer to the many monographs, theses and articles that are dedicated to this subject and that not only provide information concerning the Northern Netherlands, but also frequently about the Flemish regions, incorporated in the United Provinces. In particular the publications of van Aniel, Boesman and more recently van Lieburg, Van Herwaarden and de Moulin should be mentioned. Finally in the recent thesis of Huizenga a long chapter is devoted to this particular subject (Huizenga pp. 221-273).
25. Including K. Van Puymbroeck and M. Van Roy.
26. For the Southern Netherlands cf. Brans, for Antwerpen cf. de Mets, for Ghent cf. Daem.
27. Including: Pauli and Van Hee (Fijens), Van Schevensteen (Van Mauden) and others.
28. Van Aniel p. 29.
29. Daem pp. 27 & 41.
30. Van Aniel p. 25.
31. Namely in 1302 (Wittop-Koning p. 9); cf. also De Meyer p.78.
32. Namely in Paris on 25/02/1255 and definitely confirmed there in 1379 (Cf. respectively Boisson p. 205 and p. 200). For the Low Countries cf. also Brans pp. 344-347 and de Moulin pp. 66-67.
33. According to Van Puymbroeck this can be explained by the fact that paper only came into general use from the 16th century onwards (Van Puymbroeck p. 20).
34. Daem pp. 15-18 and footnote 9 (Middle Dutch original text pp. 20-23).
35. Archives of Mechelen, Vol. VIII, p. 66 (Boisson p. 488 & Van Doorslaer p. 20). For later decrees and Guild letters cf. Huizenga p. 272, footnote 342.
36. Namely in Bruges in 1427 (cf. Van Puymbroeck p. 20).
37. As explained in the work of Carlos Wyffels, p. 143.
38. Daem pp. 32-35.
39. For a short biography of Yperman see the chapter of Tricot in R. Van Hee (Editor): "*Heelkunde in Vlaanderen door de eeuwen heen*" pp. 78-81.

40. For a table demonstrating this development (p. 205) see the chapter of Van Hee in R. Van Hee (Editor): *"Ziek of gezond ten tijde van Keizer Karel"* pp. 197 - 226.

41. In England it appears that in the barbers' trade, which already existed in 1308, there were, right from the beginning, barbers who were busy with "regular" activities as well as barbers who were involved in surgery. In 1493 they joined together with the surgeons in one trade. (cf. the work of Dobson and Walker 1979).

There were similar developments in the Netherlands and Germany albeit later (Mc Laughlin pp. 391-93).

42. Boisson p. 314.

43. Boisson p. 314.

44. But this seemed much less clear in Ghent, considering that barbers and beard makers of this town were also involved in minor operations. (Daem p. 35).

45. Stipulated according to a decree of 28 July 1434 in Utrecht (Boesman p. 3).

46. The decree was issued in Leiden (Boesman p. 6).

47. Van Andel pp. 29-30.

48. Daem p. 30.

49. Boisson pp. 243-244.

50. For the text of this decree, cf. Boisson pp. 243-244.

51. In the bishopric of Liege one had to wait until 3 June 1526, before Prince-bishop Erard de la Marck issued a similar charter, that irrevocably established and issued the statutes for the surgical Confrèrie of St. Cosmas and Damian in the Prince-bishopric (Boisson pp. 454-455).

52. Daem pp. 36-37.

53. Daem p. 31.

54. As appears from a letter from the headman of the Gorkum's trade to its members 1465. This states in art. 1 the financial admission conditions for the trade (i.e. the deposit of 2 golden Rhine florins for everyone from outside Gorinchem, a ½ golden Rhine florin for a porter's son from inside Gorinchem), as well as in art. 14 the contribution to the trade for each treatment of a wounded person (i.e.. one pound), further the regular "ordinary" payment of the members (a half a white stiver for each Rhine florin earned) and finally the fines, e.g.. when the member concerned had dared to "shave, bind or help clients of another member"! (van Andel pp. 26-27).

55. Town Archives of Ghent 166/11. bundle 9 (Daem p. 122 and footnote 5 p. 138).

56. Boisson p. 382.
57. Town Archives of Ghent 166/11. bundle 5. (Daem p. 123 and footnote 6 p. 138).
58. Daem p. 123.
59. Boisson p. 442.
60. Daem pp. 36-37.
61. Daem pp. 38-39 (Cf. also Huizenga p. 248).
62. Huizenga pp. 260-272.
63. Huizenga p. 249.
64. This surgeon is also mentioned by Peter Haschaert, who in 1528 described a trephination by Gabriël Bijl, in the presence of this Lieven van het Senneken (Haschaert p. 14). (See also Boisson p. 396).
65. Boisson p. 396.
66. Boisson p. 314.
67. Boisson p. 314.
68. Boisson p. 316.
69. Also in the guild books of 1550 out of northerly Leeuwarden there is no longer a distinction made between the two trades (van Andel p. 32).
70. It was to be several decennia before the majority of cities, including Brussels, arrived at a progressive separation of barbers and surgeons. (Boisson p. 400).
71. Huizenga p. 269.
72. Van Herwaarden pp. 370-372. (Cf. Huizenga p. 269).
73. Platow p. 24.
74. Platow p. 27.
75. Platow p. 24.
76. Brabant p. 58.
77. Erasmus: Colloquia, Book 1.
78. Boisson p. 383.
79. General State Archive Brussels. Nr. 49. Ambachten. Chirurgijns. Keuren en Ordonnanties 1517 – 1760 (Boisson p. 384).
80. Boisson p.368.
81. Boisson pp. 366–367.
82. Boisson p. 337.
83. Boisson p. 471.
84. Boisson p. 368.
85. Boisson pp. 366–367.
86. Haschaert: Edition 1634, p. 47.
87. Van Lieburg p. 177.

88. *"Maximilian and Charles,, wish to give notice, that we have received a humble request from the dean, doctors, masters and students of the medical faculty of the university of our city of Leuven in which they inform us that daily large irregularities and abuses are occurring in the afore mentioned city and university both by foreigners and those who wander from one country to another, calling themselves physicians and qualified doctors and whereby they, by their recklessness and illiteracy, give rise to many irregularities and dangers and whereby some people become both physically and mentally ill and some unexpectedly die without confession or administration of the sacraments of the Church and it is to be expected that this confusion and these irregularities will be repeated more and more, and seeing that the afore mentioned requesters will forecome this for the well being and health of the inhabitants of our afore mentioned city, ..."*. General State Archive Brussels. Series of decrees of the Netherlands, 2nd series, vol. I, pp. 141-142 (Boisson p. 478).

89. Boisson pp. 245 & 396. See also Broeckx pp. 58-59.

90. Boisson pp. 245 & 396.

91. Van Schevensteen p. 990.

92. Van Schevensteen p. 990.

93. Faidherbe p. 79.

94. Faidherbe p. 59.

95. There were, here and there, exceptions to this, e.g. in Mechelen, where in 1526, in addition to the two surgeons and two doctors a third city doctor was appointed, specially for the treatment of "contagious illnesses"; but also to carry out blood letting and bandaging. Archives of Mechelen: Ordonnanties van de Magistraat. S.V. Nr 1, f^o 32 (Cf. Van Doorslaer p. 8 onwards).

96. In Utrecht, for example, similar appointments have been registered from 1461 onwards (Huizenga p. 236 – Hut 1971, 147-149).

97. Van Andel p. 13.

98. Van Andel p. 13.

99. Van Andel p. 13.

100. General State Archive Brussels. Spaans Privaat Bestuur. Carton Nr. 1354. As copy, taken over by the aldermen of Ghent in their opposition to the recognition of the Statutes of the Collegium Medicum of Ghent in 1665 (Boisson p. 442).

101. Boisson p. 470.

102. Van Andel p. 13.

103. Van Andel pp. 13-14.

104. A decree issued in Gorkum (van Andel p. 14).

105. De Backer pp. 183 – 209.

106. As for example stated in 1514 in a decree from Rijsel (Lille) (Boisson p. 471).
107. Boisson p. 490.
108. Town Archives of Ghent: Register M.M. Political decrees 1558 – 1563, f^o 19 v^o (Daem p. 99 and footnote 11 p. 109).
109. De Backer pp. 189-190.
110. Huizenga p. 236 (& footnotes 99 & 100).
111. So the master surgeons Gregorius Roelpot en Nicolaas Vanden Leene were remunerated in 1551 by the city of Bruges for looking after Frans Van den Zichelen's little finger after he had been sentenced, as a punishment, to the amputation of a digit (Mattelaer p. 140).
112. *"In the same way Mr Aelbert has cared for Nijsgen of the Leech Wey (who had been accused of witchcraft) as she was miserably tortured with the hot iron by Mr Van den Bossche resulting in four large holes in the buttocks and thighs; it took him three weeks to heal these10 L."* (Utrecht bill from 1526). (Huizenga pp. 236-237 + footnote 101). Cf. also Mattelaer & van Anandel.
113. Bruges – State Archive – Verzameling van het Vrije N^o 280. Rekening 1540 – 1541. Folio 141 v^o.
114. *"(the same Mr. Claeys Vanden Leene en Gregorius Roelpot) came to the town hall with the legislators and under oath declared to have performed an autopsy on the body of one Hercules Kaerle executed by Jacob Block"*. (reference: see preceding footnote).
115. Bruges – State Archive - Verluyt Bouck 1490 – 1537, folio 72 v^o.
116. Lamberts & Roegiers p. 82.
117. Lamberts & Roegiers p. 79.
118. Nutton p. 78, referring to R.J. Durling: "A chronological census of Renaissance editions and translations of Galen". Journ. Warburg and Courtauld Inst. XXIV (1961).
119. For a more extensive study of the contribution made by Thomas Linacre on 16th-century medicine see Richard Durling's contribution in the "Linacre Studies.....", published by Francis Maddison, Margaret Pelling and Charles Webster in 1977.
120. Nutton p. 78.
121. Nutton p. 79.
122. Nutton p. 79.
123. The 14th century Latin incunable editions of Avicenna's "Canon" can be found in Klebs (Nrs. 131, 1-14), whilst Nancy Siraisi has divided the 16th-century editions of Avicenna into 6 categories, which she studied in detail. (Siraisi p. 18).

124. De Nave en De Schepper p. 77.
125. Gysel p. 41.
126. This was in no way different at other universities, e.g. that of Padua or Bologna (French p. 49).
127. De Nave & De Schepper p. 191.
128. De Nave & De Schepper p. 333.
129. De Nave & De Schepper p. 139.
130. Cf. among others the father of Reinaert de Vos (cf. van Andel), the father of Belle in "De Spinrocke" (cf. Callewaert), and many other papers where there is mention of the Flemish doctor, trained in "Mompelier"!
131. For an excellent overview see the appropriate paragraph in de Moulin's standard work on the history of surgery (de Moulin pp. 76-90).
132. Van Hee (2000) pp. 42-50.
133. De Moulin p. 75.
134. See here the collection of bundled texts brought together in 1984 by the "Kommission fuer Humanismusforschung", namely Rudolf Schmitz and Gundolf Keil, under the title "Humanismus und Medizin", in particular the contribution of Gerhard Baader: "Die Antikerezeption in der Entwicklung der medizinischen Wissenschaft während der Renaissance". (Schmitz and Keil pp. 51-66).
135. R. Van Hee (1990) pp. 87-125.
136. Boesman p. 4.
137. A decree issued in Leiden. (van Andel p. 30).
138. The decree was issued in Leiden (Boesman p. 6).
139. Coulon p. 36 and pp. 243-247.
140. Boesman p. 8.
141. The latter was later clearly stipulated namely in Deventer, in the Guild letter of 1513: "*In the same way, if anyone ever wanted to become one of our brothers (members) he would need to be able to make his ointments and drinks as any good master should*" (Boesman p. 11).
142. Archives of Mechelen. Ordonnanties van de Magistraat. S.V. Nr. 1, f^o 120. (Van Doorslaer p. 35).
143. A guild roll from Leeuwarden (Boesman p. 13).
144. Decree issued in Alkmaar (Boesman p. 14).
145. Decree issued in Amsterdam (Cf. Boesman pp. 15-18).
146. In other words, the classic Pentateuch, as mentioned by university doctors such as Guy de Chauliac.
147. Boesman pp. 16-18.
148. Boesman p. 18.
149. Boesman p. 19.

150. Boesman pp. 22-23.
151. Boesman p. 24.
152. Boesman pp. 25-26.
153. Boesman p. 26.
154. Boesman p. 18.
155. Boesman p. 29.

VII. References

1. Baten C. *Hant-boeck der chirurgijen....* Amsterdam: Hendrick Laurentsz, 1614.
2. Boesman T. De examens in de Chirurgijnsgilden. Thesis. Utrecht: Kemlnk en Zn, N.V. 1942.
3. Boisson R. *Chroniques chirurgicales, ou Histoires des Barbiers, Chirurgiens, Dentistes de Belgique et du Nord de la France.* Bruxelles: Ed. Dorka, 1970.
4. Brabant H. Le seizième siècle a-t-il connu la douche? In: "Esculape chez Clio. Vol. 2". Ed. H. Brabant. Paris: Ed. J. Prélat, pp. 53-72.
5. Brans P. Chirurgijns en chirurgijnsgilden in de Zuidelijke Nederlanden. In: "Belgisch Jaarboek Dodoens". 1956, pp. 327-347.
6. Broeckx C. *Histoire du Collegium Medicum Antverpiense.* Antwerpen: Buschmann, 1858.
7. Callewaert D. Die evangelien van den Spinrocke. Een verboden volksboek "zo waar als evangelie" (ca. 1510). Kapellen: DNB/Uitgev. Pelckmans, 1992.
8. Coulon H. La communauté des chirurgiens-barbiers de Cambrai (1366 - 1795). Paris: J.-B. Baillière et Fils, 1908.
9. Daem M. *Van baardemaker tot barbier.* Brussel: Aurelia Books, 1976.
10. De Backer C. Maatregelen tegen de pest te Diest in de vijftiende en zestiende eeuw. In: "De Pest in de Nederlanden: Medisch-historische beschouwingen 650 jaar na de Zwarte Dood". Ed. J. Lemli. Brussel: Koninkl. Academie voor Geneesk. van België, 1999, pp. 183-209.
11. de Chauliac G. *Le Guidon en françoys, nouvellement imprimé avec les glosses de très excellent docteur en médecine, maître Jehan Falcon.* Lyon: Constantin Fradin, 1520.
12. de Chauliac Guy. *Die Chyrurgie van meester Guido de Cauliaco, uutten Lat. in duytsche geset.* Antwerpen: Henryck Eckert van Hombergh, 1507.

13. de Mets A. La corporation des chirurgiens-barbiers d'Anvers et l'Enseignement de la Chirurgie à Anvers, depuis la fin du Moyen-Âge jusqu'à la révolution française. Anvers: De Vlyt, 1921, pp. 23.
14. De Meyer I. Analectes médicaux ou recueil de faits qui ont rapport à l'art de guérir et qui se sont passés dans le ressort de la ville et du Franc de Bruges (de 1006 jusqu'à nos jours). Bruges: Vanhee – Waute, 1851 (herdruk 1864).
15. de Moulin D. A History of Surgery with emphasis on the Netherlands. Dordrecht/Boston/Lancaster: M. Nijhoff, 1988.
16. de Moulin D. *Het chirurgisch erfgoed uit de oudheid en de middeleeuwen*. In: "Heelkunde in Vlaanderen door de eeuwen heen". Ed. R. Van Hee. Brussel: Gemeentekrediet, 1990, pp. 31-66.
17. de Nave F. & De Schepper M. (Eds.). *De Geneeskunde in de Zuidelijke Nederlanden (1475 – 1660)*. Antwerpen: Museum Plantin-Moretus en Stedelijk Prentenkabinet, 1990.
18. Dobson J. & Walker R.K. *Barbers and Barber-surgeons of London. A History of the Barbers' and Barber-Surgeons' Companies*. Oxford, 1979.
19. Durling R. Linacre and Medical Humanism. In: "Linacre Studies. Essays on the Life and Works of Thomas Linacre, c. 1460 – 1524". Eds. F. Maddison, M. Pelling & Ch. Webster. Oxford, 1977.
20. Elaut L. *De eerste Nederlandse vertaling van Hippokrates*. Ned. Tijdschr. Geneesk. 1978, 122: 1809-1811.
21. Elaut L. *P. Hasschaert uit Armentières commentarieert Eobanus Hessus*. Scient. Hist. 1960, 2: 59-67.
22. Elaut L. *P. Hasschaert Syflis boekje (1564). Pleidooi voor een diakritische behandeling van de venerische ziekte*. Scient. Hist. 1960, 2: 173-181.
23. Erasmus D. *Colloquia*. Basel: J. Froben, 1522.
24. Fabrizio G. di Acquapendente. *Pentateuchos cheirurgicum*. Frankfurt am Main: Petrus Fischer, 1592.
25. Faidherbe A. Les Médecins et les chirurgiens de Flandre avant 1789. Lille: L. Danel, 1892.
26. Franco P. Petit traité contentant une des parties principales de chirurgie, laquelle les chirurgiens hernières exercent. Lyon: Antoine Vincent, 1556.
27. French R.K. *Berengario da Carpi and the use of the commentary in anatomical teaching*. In: "The Medical Renaissance of the sixteenth Century". Eds. A. Wear, R.K. French, I.M. Lonie, Cambridge (UK): Cambridge University Press, 1985, pp. 42-74.

28. Fijens T. (= Fienus). *Libri chirurgici XII*. Frankfurt: Thom. Matthias Götz, 1649. Nederlandse vertaling door Steven Blankaert: "De Twaalf voornaamste Hand-grepen der Heelkonst". Amsterdam: Jan ten Hoorn, 1685.
29. Guillemeau J. "*La chirurgie françoise*". Paris: N. Gilles, 1594. Nederlandse vertaling door Carel Baten: "De francoysche chirurgie". Dordrecht: Isaac Jansz Canin, 1598.
30. Gysel C. *Zuidnederlandse hoogleraren in de geneeskunde tijdens de Renaissance*. In: "De Geneeskunde in de Zuidelijke Nederlanden (1475 – 1660)". Eds. F. de Nave & M. De Schepper. Antwerpen: Museum Plantin-Moretus en Stedelijk Prentenkabinet, 1990, pp. 39-65.
31. Haschaert P. (= Hassart). *Hippocrates. Van die wonden int hoofd. Nu eerst uutten Latijne int Nederduytsch overgheset*. Antwerpen: Willem Silvius, 1565. Herdruk: Amsterdam: Johannes Jacquet, 1634.
32. Huizenga E. *Een nuttelike practijke van cirurgien. Geneeskunde en astrologie in het Middelnederlandse handschrift. Wenen, Österreichische National bibliothek, 2818*. Thesis Groningen. Hilversum: Verloren, 1997.
33. Lamberts E. & Roegiers J. *De Universiteit te Leuven 1425 -1985*. 2^{de} Uitgave. Leuven: Universitaire Pers, 1986.
34. Klebs A.C. *Incunabula Scientifica et Medica*. Brugge, 1938.
35. Mattelaer J. *Le Médionat – une tâche moins connue du barbier-chirurgien lors d'une exécution*. *Janus* 1973, 60: 137-147.
36. Mc Laughlin E.F. *The guilds and medicine. Historical background*. *Ann. Med. Hist.* 1941, 3: 384-394.
37. Nutton V. *Humanist Surgery*. In: "The medical Renaissance of the sixteenth century". Eds. A. Wear, R.K. French & I.M. Lonie. Cambridge (GB): Cambridge University Press, 1985. (Reprint 1987) pp. 75-99.
38. Pauli S. & Van Hee R. *Over "de twaalf voornaamste handgrepen" van Thomas Fijens (1567 – 1631)*. *Gesch. der Geneesk.* 1999, 5: 227-236.
39. Platow J. *Bader, Barbriere, Friseure. Bilder und Geschichten eines alten Handwerks*. Berlin: Museumsverein des Berliner Friseurhandwerks e.V., 1992.
40. Pot J. *Een doktersrekening uit de 16^{de} eeuw*. *Nederl. Tijdschr. Geneesk.* 1931, 75/I, 1128-1152.
41. Santo M. *Libellus aureus de lapide in vesica per incisionem extrahendo*. Rome, 1522.
42. Schmitz R. & Keil G. (Eds.). *Humanismus und Medizin*. Mitteilung XI der Kommission fuer Humanismusforschung. Weinheim: Acta Humaniora, 1984.
43. Siraisi N.G. *The changing fortunes of a traditional text: goals and strategies in sixteenth-century Latin editions of the canon of Avicenna*. In:

“The Medical Renaissance of the sixteenth century”. Eds. A. Wear, R.K. French, I.M. Lonie. Cambridge (UK): Cambridge University Press, 1985, pp. 16-41.

44. Tricot J.P. *Jehan Yperman: Vader der Vlaamse heekunde*. In: “In de Voetsporen van Yperman. Heekunde in Vlaanderen door de eeuwen heen”. Ed. R. Van Hee. Brussel: Gemeentekrediet, 1990, pp. 78-86.

45. van Andel M.A. *Chirurgijns, Vrije Meesters, Beunhazen en Kwakzalvers. De chirurgijns-gilden en de praktijk der heekunde (1400-1800)*. 2^{de} Druk. 's Gravenhage: Martinus Nijhoff, 1981.

46. Van Doorslaer G. *Aperçu historique sur la Médecine & les Médecins à Malines avant le XIX^e siècle*. Mechelen; 1900. R. Herdruk: Mechelen: Geneeskundige Kring Dodoens. Uitg. Ars Graphica, 1988.

47. Van Hee R. *Chirurgie tijdens de Renaissance*. In: “In de Voetsporen van Yperman. Heekunde in Vlaanderen door de eeuwen heen”. Ed. R. Van Hee. Brussel: Gemeentekrediet, 1990.

48. Van Hee R. *Andreas Vesalius en zijn leerlingen: de doorbraak van de anatomie*. In: “Ziek of Gezond ten tijde van Keizer Karel. Vesalius en de Gezondheidszorg in de 16^{de} eeuw”. Ed. R. Van Hee. Gent: Academia Press, 2000, pp. 29-56.

49. Van Hee R. *De heekundige praktijk in de 16^{de} eeuw: “een scientie welke allen anderen in estime te boven ghaet”*. In: “Ziek of Gezond ten tijde van Keizer Karel. Vesalius en de Gezondheidszorg in de 16^{de} eeuw”. Ed. R. Van Hee. Gent: Academia Press, 2000, pp. 197-226.

50. van Herwaarden J. *Medici in de Nederlandse samenleving in de late Middeleeuwen (veertiende – zestiende eeuw)*. Tijdschr. voor Geschied. 1983, 96: 348-378.

51. van Lieburg M.J. *De Genees- en Heekunde in de Noordelijke Nederlanden, gezien vanuit de stedelijke en chirurgijns-gilde – ordonnanties van de 16^{de} eeuw* Tijdschr. Gesch. Geneesk. Natuurw. Wisk. Techn. 1983, 6: 169-184.

52. Van Puymbroeck K. *De organisatie en het sociaal statuut van de Brugse chirurgijns-barbiërs in de late 17^e en 18^e eeuw*. Onuitgegeven licentiaatsverhandeling. R.U. Gent, 1997.

53. Van Roy M. *Organisatie van de medische sektor te Brussel in de achttiende eeuw (1700-1796)*. Onuitgegeven licentiaatsverhandeling: 2dln. V.U. Brussel, 1988.

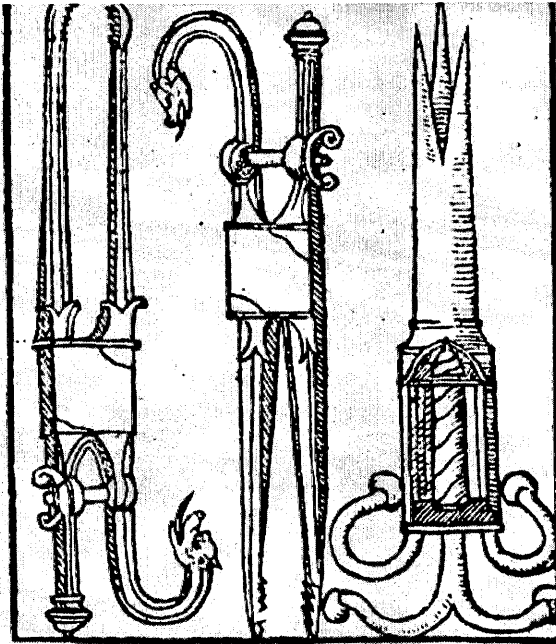
54. Van Schevensteen A.F.C. *Bijdrage tot de Biographie van David van Mauden, gezworen medecijn en prelecteur der chirurgijnen der Stad Antwerpen*. Vlaamsch Geneesk. Tijdschr. 1930, 11: 985-991.

55. Wickersheimer E. *Commentaires de la Faculté de Médecine de l'université de Paris (1395-1516)*. In: "Collection de documents inédits sur l'histoire de France". Paris: Imprimerie Nationale, 1915.

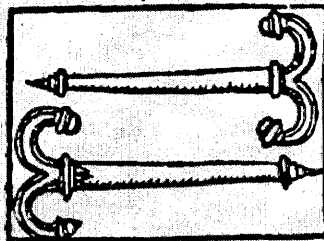
56. Wittop-Koning D.A. *Cosmas en Damianus in de Nederlanden*. *Scient. Hist.* 1968, 10: 8 – 12.

57. Wyffels C. *De oorsprong der ambachten in Vlaanderen en Brabant*. Brussel, 1951.

FIGURES



¶ Dander in rechte terebellen / s'cherp in
de vore ghelijc dat ghy in dese figure liet



staen gheronier-
sept / als dat hout
des pijls al gebro-
ken is / dat ghy in
d' hout saeste mo-
get bootē en d' al

so wttrecken. ¶ Den sin en manier in sul-
ke saken te wercken is. Dat ghi sult mer-
ken die tephenen der ghesontheit of des
steruens / eer dat ghi bestaet enighe wer-

1972

Figure, demonstrating instruments, used for the extraction of bullets, taken from the Dutch translation of the so-called "Pseudo-Brunschwig", which is an early version of the "Hantwerck" written by Hans von Gersdorff. [Amsterdam: University Library, Collection of the "Nederlandse Artsenvereniging"].



1978

Title page of the Dutch translation by the Ghent surgeon Jodocus van Sterthem of "La grande chirurgie" by Guy de Chauliac, edited in Ghent by Jan van Salenson in 1566. [Ghent: University Library].



Hier beghint een Boeck vanden Pocken.

Hier beghint meester Joannis de Vigo Boeck vanden Pocken/ die menich dye Fransche siecke noemt/ die ander de Spaensche die andere die Spaensche Pocken/ Van dat quade doode Blesch/ Da die schoufsteit/ ende der uurtucen ende der taubey weedom houdende sea capitelcy.

Dat eerste capitel van die huere en ghenehighe der Pocken die niet ghenehighe en sijn.
De uert der Pocken.

Die hare duysent vierhondert en vter en meghentich in der maet Driemuo ut weleke laer dye doonlichste Baro- luo Comick van Dantkeren niet geou- teughele schape nam die eycken na Ita- lien om dat rade van Syppolis wederom te verren- gden/ So openbaerde inden seluen late eenigherha- de sieck van onbekender nature.

Die verskynen vanden der Pocken.

Die welke Pocken die verskynen en menighe- ley nammen die verskynen mach naemden Die wa- ten nammen die Spaensche sieck/ want inder kl- ner tijt seggen si die sieck wydrapolis int walsche- landt hare weder comde ontghedint te hebben/ Maer die Spaensche want int vooftuym niet

en ghropensack is gherueft/ om dese salten wille nammen si die walsche sieck/ hier en bouen de De- nuycken/ To male de le ruelle noemmen si gemeen- lick die Tussen/ To male de le bulle. Die Tonsack den/ To male de le biosale Die Spanglaccero/ In so- nes haren si/ Maer dese verskeden nammen/ int- dese siecken so ecker nancudat belicde/ ughelste/ Nochtans enist niet te seggen opiden nammen/ als- int die eerste menigheit vander huere en hebben.

Daer die pocken se smetelich sijn.

So was doen en is oodlnu dese vooftuym sieck- de smetelich/ sifanbere doot te bekenen/ ghe- woen/ of te samen menigheit ende vander/ vanden- vromen metten inmuur en des mans inder vrom- vrom.

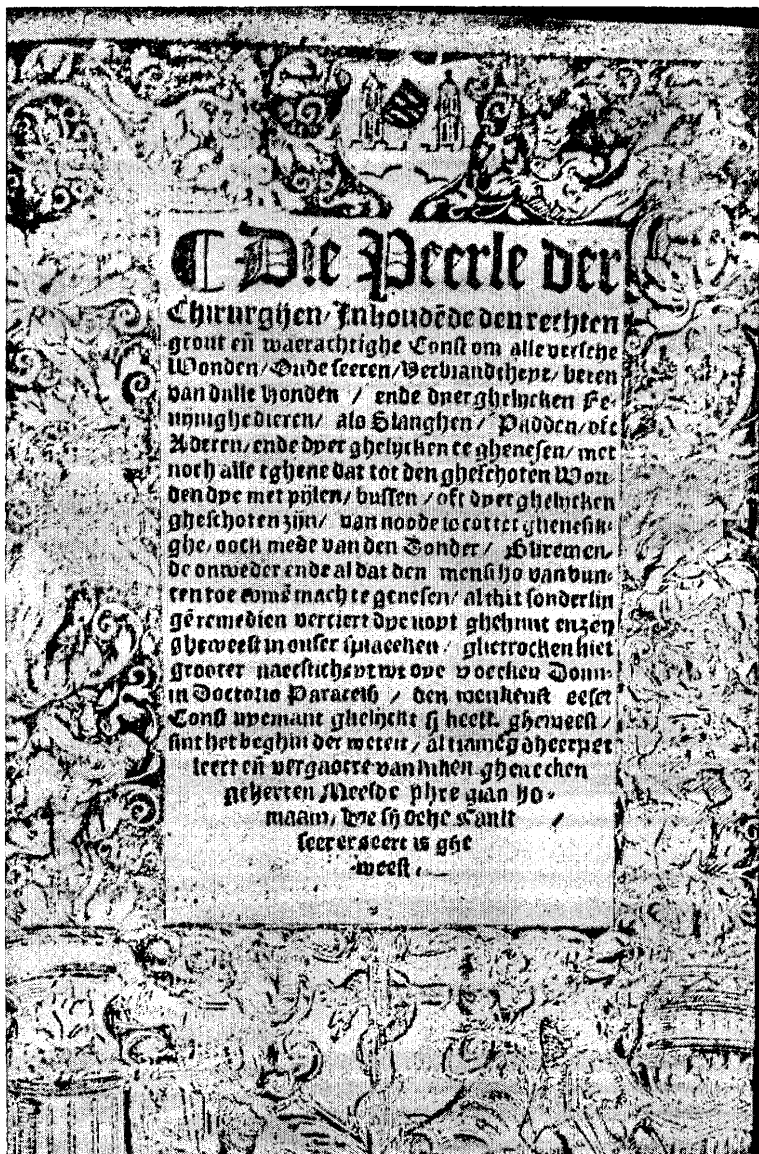
Die pocke der pocken.

Want der Pocken oafsprak berse vrom alre ge- roec/ ughelmecher te verken/ den vromen in die- vromen sieck/ en den muur in die roede niet dem- puyllheyo.

Die tekenen vanden Pocken.

Somchen int die Pocke van vander vromen som- tute swart somtijde vutacker/ rde som niet vutack- beren/ Warum dat dese puyllheyo niet en mochten- sijn/ en sijnen doot/ den medien so haest gelue- reert worden hare aere/ve en onwiltich gelere/ luy- hat niet verferinghe des gemerit/ dat si vutack- woe te gemen/ en luytlicheit wat ouer dier/ want al- walt dancse dese puyllheyo af dede comen/ huer- en weder en als die gemerit gesen int/ so comen- dary te sijn hoelachtige puyllheyo en somtijde niet- vlesch/ die vte opperheit/ gebe/ ende vromen ope- vuyllheyo/ halo/ en dancse/ vrom/ en sijnen/ en sijn- na ouer alle licha- int si verdroene gewest/ en for- drken dage tot onsdanghe sieck/ behouen si niet/ hie

Illustrated page from the "Fundament der Medicinen ende Chirurgien" by Peter Sylvius with a depiction "vande Pocken", e.g. syphilitic disease, edited in Antwerp in 1530.



5072

Title page of “Die Peerle der Chirurgien”, a translation by Filip Hermann of Paracelsus’ “Die Grosse Wundartzney”. (second edition of 1556). [Antwerpen: Museum Plantijn-Moretus].



5074

Title page of "Van die Wonden int Hoof", the Dutch version of Hippocrates' work by Peter Haschaert, edited for the first time in Antwerp by Willem Sylvius in 1565. [Antwerpen: Museum Plantijn-Moretus].



5466

Title page of the Dutch translation by Carel Baten of the Collected Works of Ambroise Paré. (the 1627 version, edited in Amsterdam).

5465
T Gasthuys boec

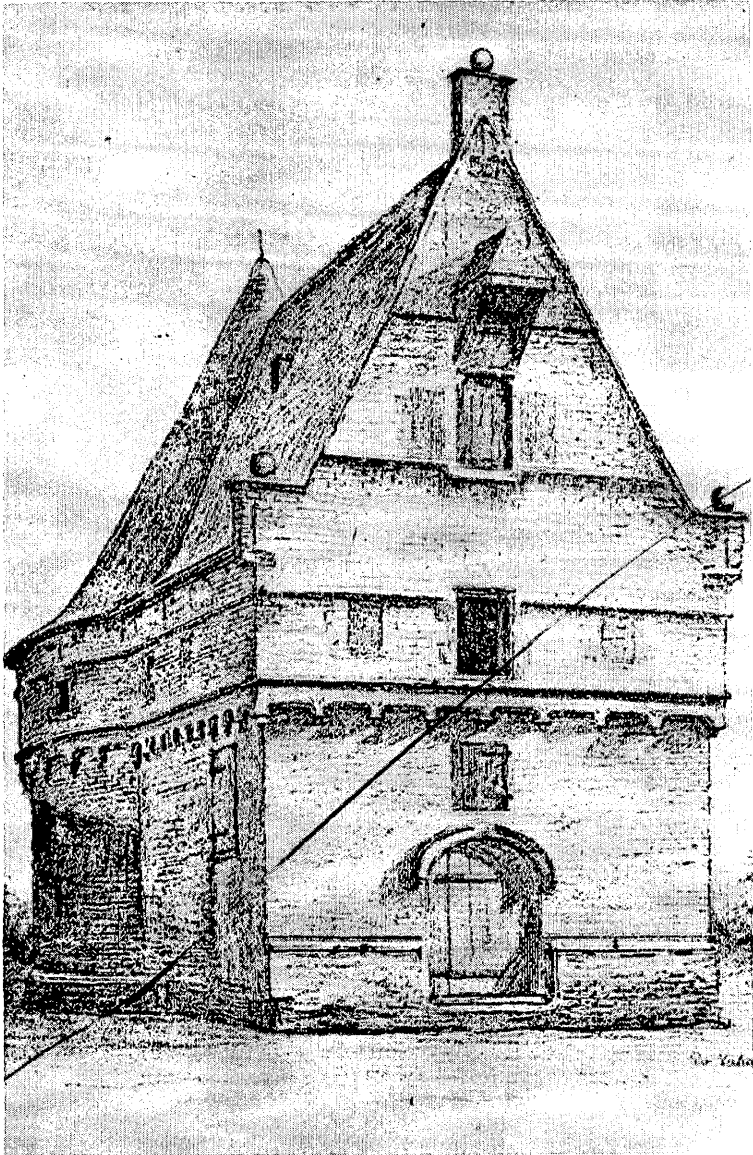
Beschreuen duer den vermaer-
 den/leer gheleerden ende exper-
 ten Doctuer inder **Medicine** ende **Chi-
 rurgien** Theophrastus Paracelsus van Ho-
 heneym/tot nut ende oirboor van alle
 ghebreckelijche ende Crancke Men-
 schen/ouergheset wten hooch-
 duytschen in onse nederlan-
 sche duytsche sprake.
 Duer M. E. B.
 (1567)



Gheprint Thantwerpen/ opde Lombaerue
 Wesse / inden Saper / by de Weduwe
 Hans de laet. Met Privilegie.
 Sub. J. de Berre. 1567.

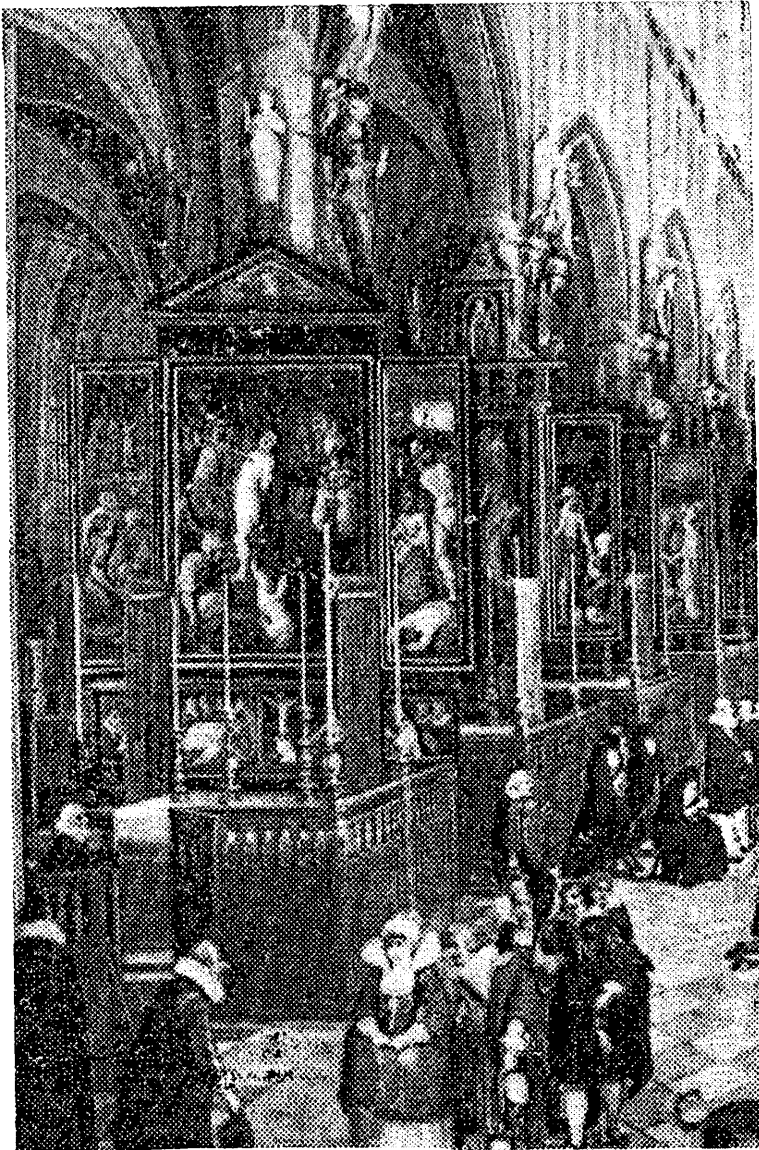
5472

Title page of "t Gasthuys-Boec", a translation by Maarten Everaert of the work by Paracelsus, edited in 1567. [Antwerpen: Town Library].



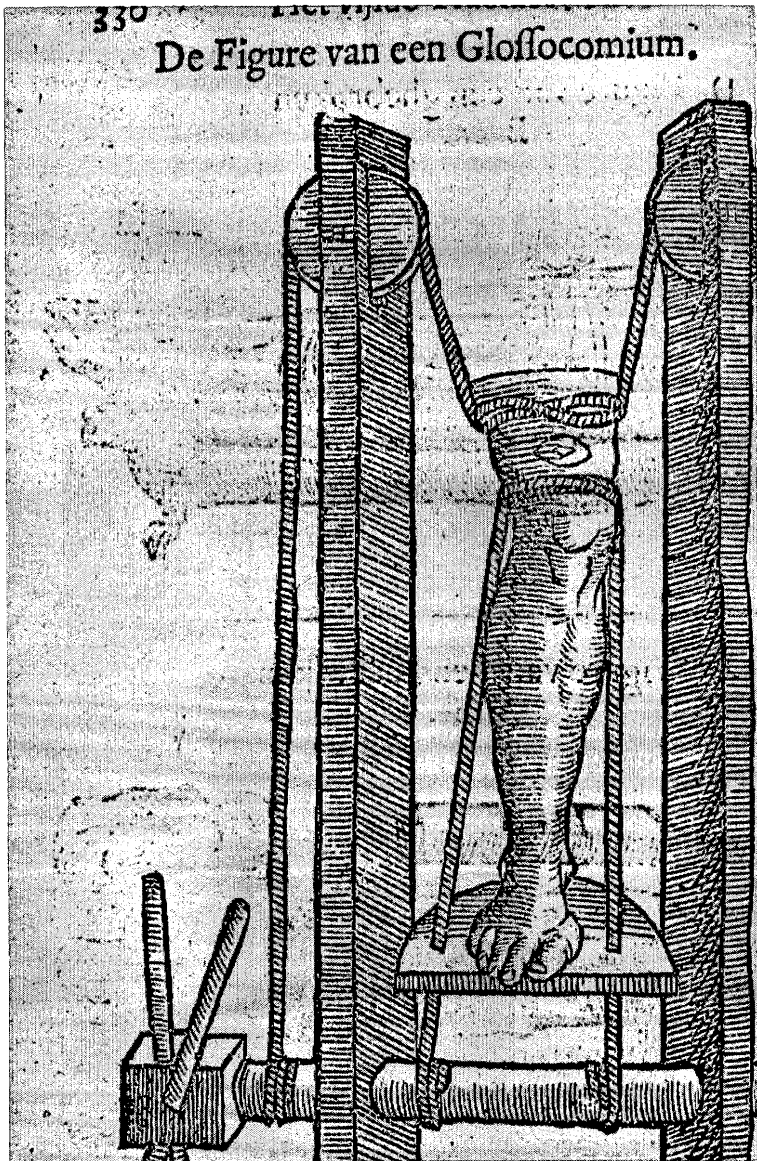
5762

Etching by Piet Verhaert, representing "The Blue Tower", a building erected in 1313 where anatomical lessons were given for the barbersurgeons (from 1540? onwards) up till 1611. The tower was demolished in the 19th century. [Reprint from the Liber Memorialis of the Medical Association of Antwerp, 1970].



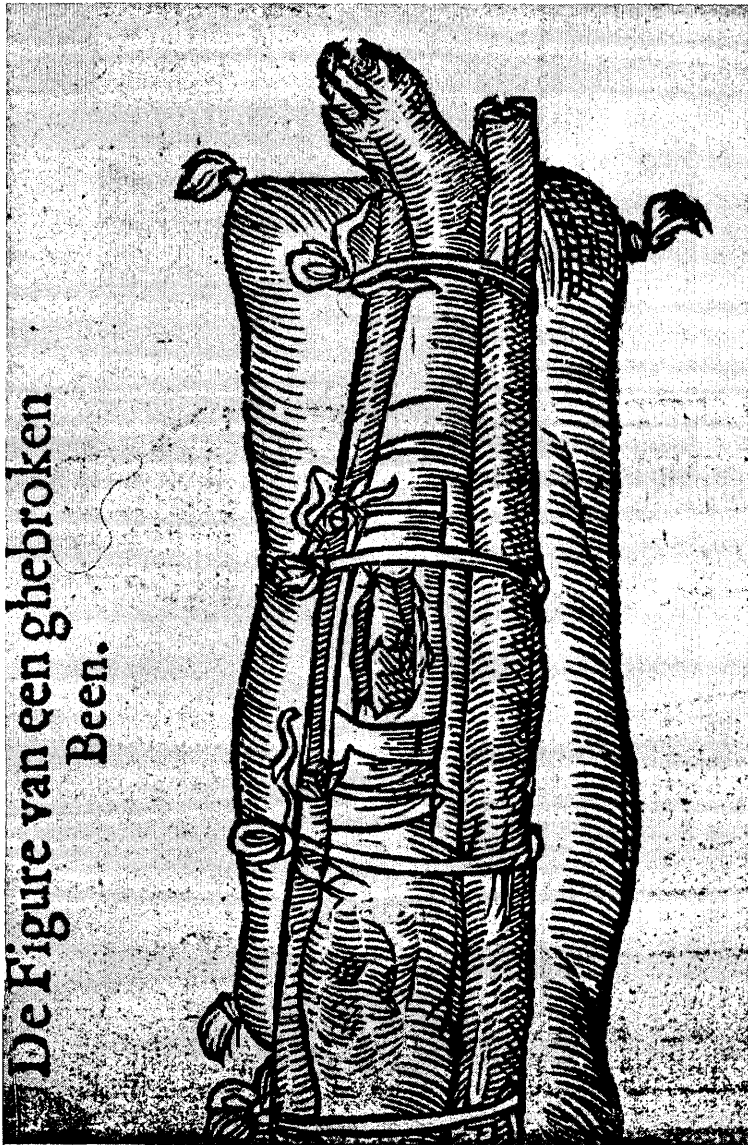
5764

The former altar of Saints Cosmas and Damian in the Cathedral of Antwerp, detail of a painting by an unknown artist. (Localisation unknown). [Reprint from the *Liber Memorialis* of the Medical Association of Antwerp, 1970].



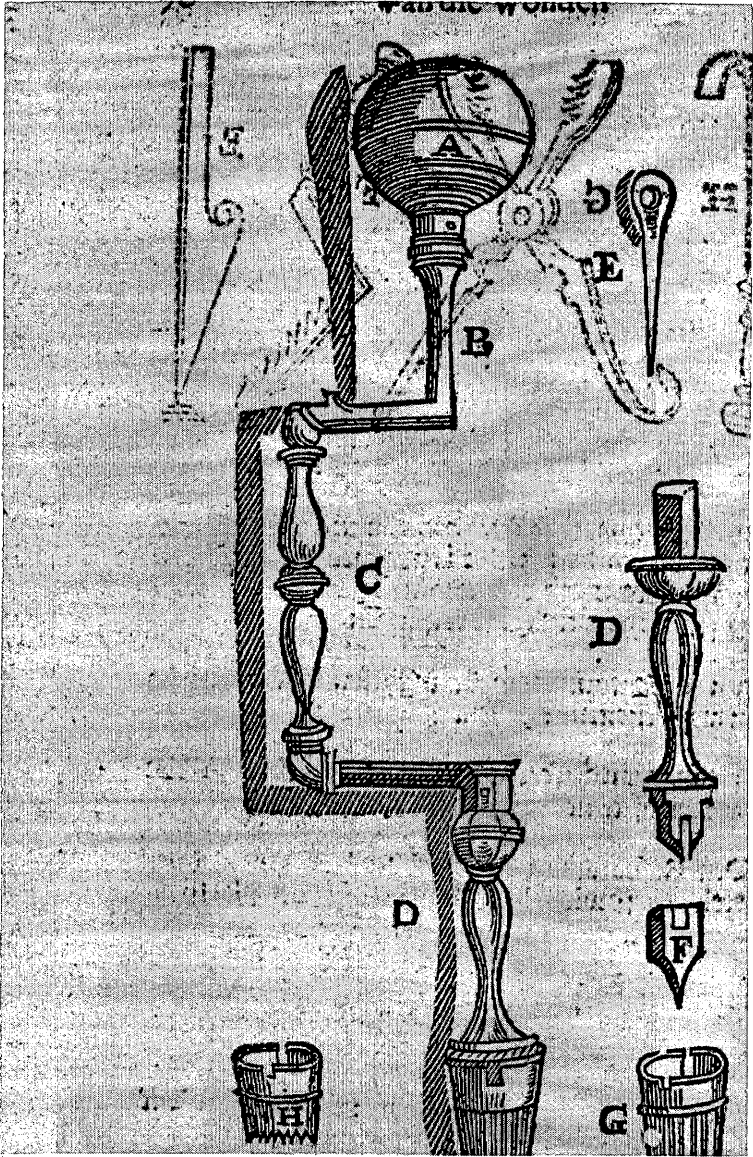
5769

Depiction of a glossocomium, an apparatus to treat luxations or fractures of the extremities, taken from the 1634 version of the "Hantboek der Chirurgien" by Carel Baten. [Antwerpen: Private Collection].



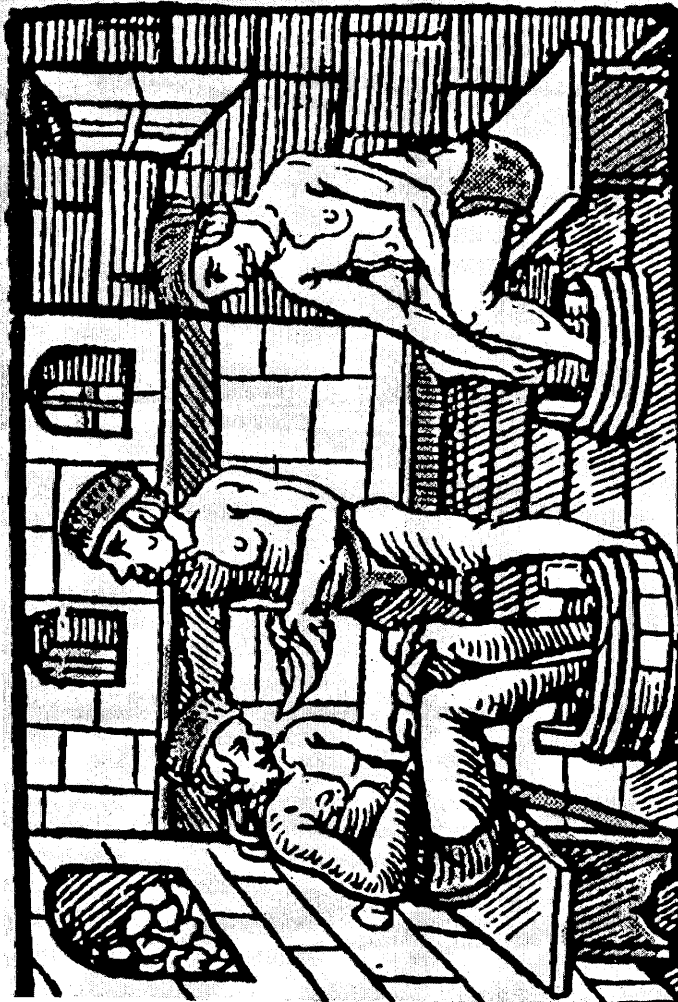
5772

Picture of an open leg fracture, treated with a fenestrated splint. From the "Hantboek der Chirurgien" by Carel Baten, edited in Amsterdam in 1634. [Antwerpen: private collection].



5774

Trephine, depicted by Peter Haschaert in his translation "Van die Wonden int Hooff", a commentary on the work of Hippocrates. (edition Amsterdam, 1634). [Antwerpen: private collection].



5776

Patients taking a foot bath while treated with cups. Picture taken from an Egenolph edition in Frankfurt am Main 1520-1542.



LAUDATIO PIERRE HALLEUX

Luc Taerwe

La plupart du temps, le patrimoine architectural témoigne de civilisations, de tendances artistiques ou d'écoles architecturales du passé. Toutefois, bon nombre d'ouvrages architecturaux illustres ont disparu suite à des cataclysmes ou à des guerres destructrices. Les bâtiments qui ont survécu subissent en règle générale une détérioration progressive suite aux intempéries et aux facteurs naturels.

La conservation de ces ouvrages et monuments exige des travaux de réparation liés ou non à la stabilité de la construction. Une réparation ou un renforcement justifiés se basent sur un diagnostic précis et une analyse fouillée de la situation existante. Cette analyse implique nécessairement une connaissance profonde du mode de construction et de la répartition des efforts dans l'ouvrage historique. Ainsi, l'auteur du projet chargé des travaux de restauration est confronté aux anciennes techniques de construction, à leur compréhension ainsi qu'à leur évolution jusqu'à ce jour. L'étude des aspects historiques des techniques de construction est indubitablement un domaine de recherche passionnant.

Aussi est-ce avec grand plaisir que nous accueillons parmi nous un des spécialistes les plus éminents dans ce domaine, à savoir le **Professeur Pierre Halleux**, un des lauréats de la Médaille Sarton pour cette année académique. Comme son curriculum l'indique, le Professeur Halleux a déployé ses activités non seulement dans le domaine de la restauration de bâtiments historiques, mais également dans de nombreux autres domaines des constructions civiles.

En 1958, Pierre Halleux entame ses études d'ingénieur à la Faculté Polytechnique de Mons et obtient, en 1963, son diplôme d'Ingénieur Civil des Constructions à l'Université Libre de Bruxelles. En 1966, il passe son doctorat en sciences appliquées à l'ULB en soutenant la thèse "Les comportements élastique et plastique des poutres métalliques à âme évidée, le calcul de leurs flèches". Ce travail lui vaut par ailleurs le prix Magnel du bureau SECO.

A l'ULB, il parcourt une carrière académique plutôt classique : assistant, chef de travaux, chargé de cours, professeur associé, professeur, professeur ordinaire

et finalement professeur émérite. Notons encore que, pendant 25 ans, il est également chargé de cours à l'Institut Supérieur d'Architecture Victor Horta ainsi que professeur visiteur à la Faculté de Médecine de Montpellier. Pierre Halleux a enseigné les matières suivantes : Elasticité, Résistance des Matériaux, Stabilité des Constructions, Théories et Procédés généraux de Construction et Mécanique des Matériaux.

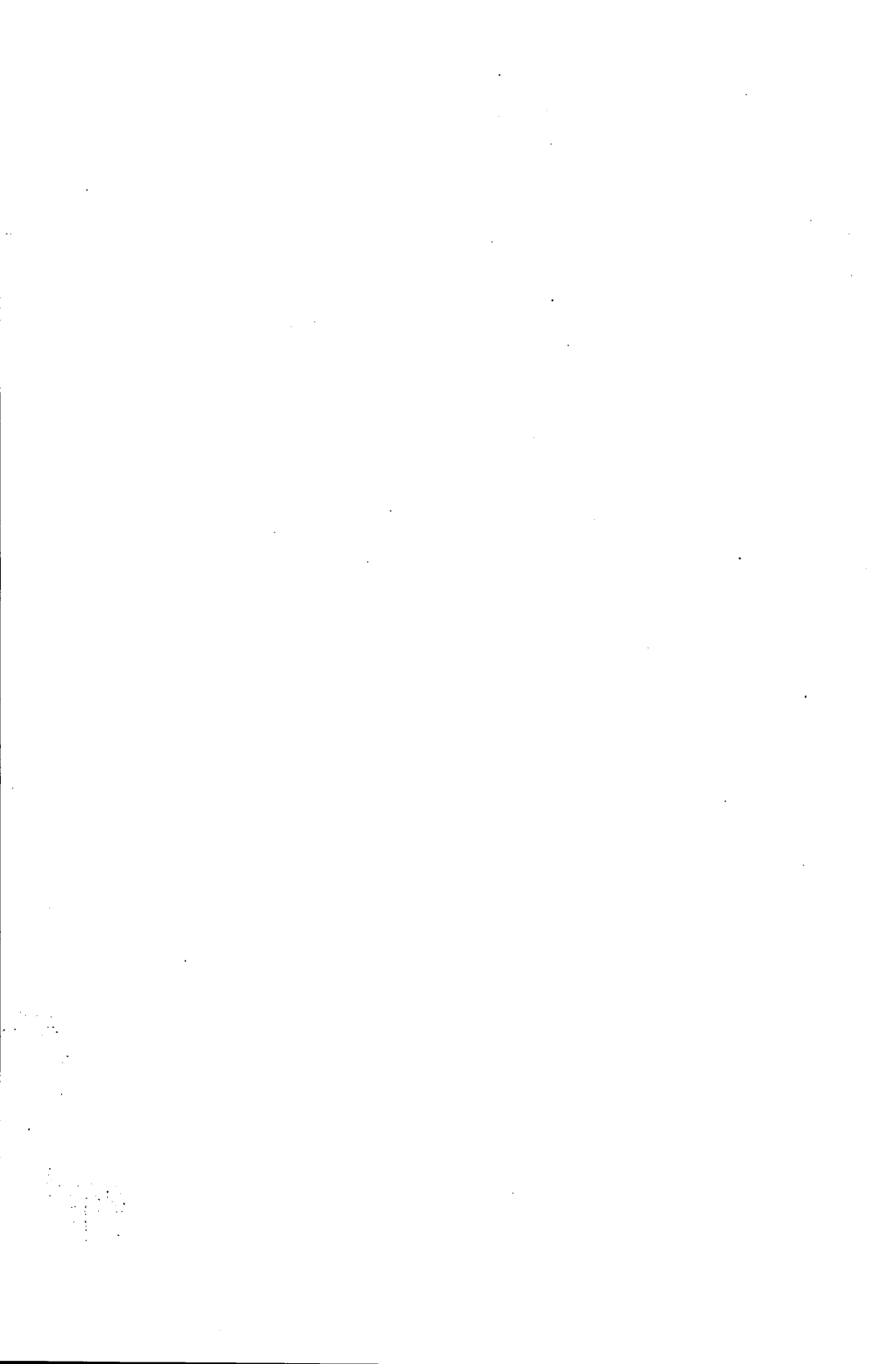
Ses sujets de recherche peuvent être regroupés en trois domaines principaux, à savoir : le génie civil, la biomécanique osseuse et la stabilité des édifices anciens.

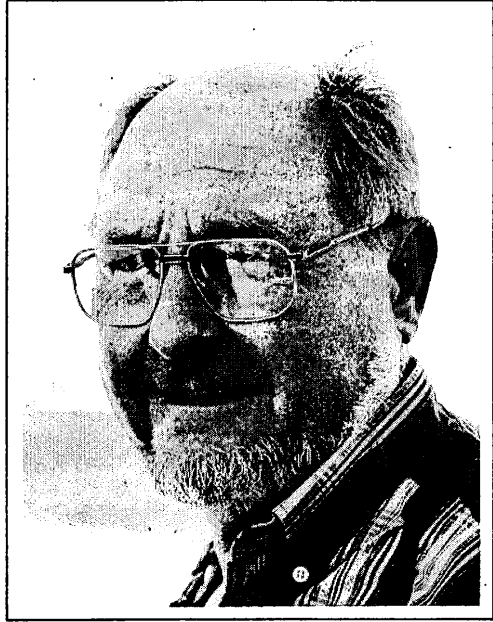
Dans le domaine du génie civil, Pierre Halleux a étudié les poutres métalliques et mixtes évidées, l'analyse expérimentale des contraintes et le comportement constructif d'éléments en béton armé et précontraint. C'est plus particulièrement à l'occasion de programmes de recherche communs dans ce dernier domaine, que nous nous sommes rencontrés pour la première fois.

Le lauréat a également fait des recherches sur la mécanique fondamentale de l'ostéogénèse et de l'ostéoporose, recherches aboutissant à des techniques particulières pour la fixation et la consolidation des fractures, au développement de prothèses de hanche et de genou, etc.. Il a participé à l'organisation des six symposiums de biomécanique osseuse à Bruxelles.

Son troisième domaine d'intérêt est l'histoire et la compréhension de la technique des édifices anciens, compréhension basée sur l'analyse globale de la construction ainsi que sur des mesures in situ. Dans ce cadre, il est bon de rappeler que le lauréat était également ingénieur responsable de la stabilité pour les édifices du Patrimoine Mondial de l'UNESCO, parmi lesquels je cite la grande tour de l'Hôtel de Ville de Bruxelles et la cathédrale de Tournai.

Les constructeurs du Moyen Age ne disposaient ni des moyens techniques, ni des matériaux dont nous disposons actuellement. Peut-être leur esprit inventif n'en était-il que plus grand. Aussi est-ce avec grand plaisir que nous écouterons notre collègue Halleux qui nous apprendra sans aucun doute pas mal de choses sur l'histoire de l'architecture médiévale.





**LA COMPRÉHENSION DE LA PENSÉE
TECHNIQUE DES BÂTISSEURS MÉDIÉVAUX:
UN LONG CHEMINEMENT DU 12E AU 21E SIÈCLE.**

Pierre Halleux

1. Introduction

Parmi les œuvres des bâtisseurs du Moyen-Age, à côté d'édifices romans d'une beauté reconnue et d'ouvrages défensifs prestigieux, l'essor du gothique constitue une étape marquante de l'histoire de l'architecture.

L'audace de ces constructions continue à forcer l'admiration tant des touristes, des historiens de l'art que des bâtisseurs d'aujourd'hui; du point de vue technique, il est clair que de pareilles réalisations exigeaient un savoir, ou plutôt un savoir-faire hors du commun.

En dehors de considérations de l'histoire de l'art qui sortent du cadre de la présente étude, nous nous proposons ici, dans l'esprit de l'ingénieur:

- de rappeler brièvement, du point de vue de la Stabilité des Constructions, en quoi le gothique, caractérisé par sa croisée d'ogives, est un principe constructif particulièrement original, qui répond bien aux besoins économiques et sociaux du moment;
- de faire l'inventaire des notions nécessaires à la compréhension du fonctionnement mécanique de ces édifices pour constater qu'elles sont apparues seulement, de façon progressive, au cours des siècles qui ont suivi le Moyen-Age dont les constructions ont été élevées par empirisme, intuition et transmission à la génération suivante du savoir-faire acquis;
- de voir quel est l'état actuel de nos connaissances sur le sujet après les études du dernier quart du 20e siècle qui ont été particulièrement productrices en la matière;
- de constater que la compréhension de ces édifices gothiques, encore loin d'être achevée, ouvre de nouvelles perspectives de recherche pour le 21e siècle;
- de conclure à l'extraordinaire intuition de ces maîtres-maçons qui ont pu, sans l'outil scientifique nécessaire à leur compréhension, nous laisser de pareils chefs-d'œuvre.

2. La voûte gothique, ses antécédents, sa genèse, son principe.

Jusqu'au 12^e siècle, le style roman s'inspire d'un modèle issu de l'époque romaine qui s'est dégradé au cours du temps. L'auteur du vocable "roman" l'archéologue français Charles de GERVILLE, lui donne au début du 19^e siècle une connotation péjorative en exprimant son mépris pour une architecture qu'il qualifie de lourde et grossière, et que plus tard seulement l'histoire de l'art appréciera.

On peut conventionnellement fixer l'apparition du style gothique à 1140 environ, avec l'introduction dans le chœur de l'abbatiale de Saint-Denis des voûtes sur croisée d'ogives qui en sont la signature (fig.1). Ici aussi, l'auteur du terme "gothique", le peintre et architecte italien Giorgio VASARI (1511-1574), y met au départ un sens péjoratif: il s'agit d'une architecture de barbares, et cette acception méprisante va durer jusqu'à la fin du 18^e siècle. Pour la construction d'un édifice religieux, on va d'abord exploiter le schéma basilical romain, une nef couverte d'une toiture à double versant de pente assez faible et deux bas-côtés dont la couverture est, elle aussi, peu inclinée. Tant pour l'esthétique que pour le confort - la toiture peu étanche laisse passer les courants d'air et fait tirage par où s'échappe la moindre chaleur - on va ajouter un plafond plat qui subsistera longtemps. Ainsi la nef romane de la cathédrale de Tournai a-t-elle conservé son plafond jusqu'au voûtement tardif du 18^e siècle.

Lorsque la taille de l'édifice s'accroît, la hauteur des murs de la nef augmente, alors que l'emploi, à l'époque romane, de pierres de petit appareil qui multiplient les joints de mortier n'est pas favorable à l'obtention d'une bonne stabilité avec de grands élancements: l'adjonction d'une galerie à l'étage des bas-côtés viendra conforter les murs tout en offrant un accroissement de la surface utile de l'édifice.

Vient alors l'idée d'un voûtement en dur, pierres ou briques selon les régions. Peut-être s'agit-il d'un sentiment de plus grande durabilité: on construit pour longtemps sinon pour l'éternité, et la maçonnerie semble alors préférable au bois, ce qui n'est en réalité pas nécessairement vrai, car une charpente de bonne qualité, bien aérée, peut se conserver impeccablement pendant des siècles. L'objectif d'une meilleure acoustique - chants grégoriens, sermons qui accompagnent les offices - reste à établir car la résonance de la voûte n'est pas nécessairement favorable à une meilleure intelligibilité des paroles.

D'un point de vue beaucoup plus pragmatique, la voûte maçonnée constitue surtout une protection efficace contre l'incendie: quand le feu prend dans un édifice non voûté, il ne reste rien, car la formidable charge combustible de poutres incandescentes qui s'effondrent dans la nef calcine les pierres, et les pans de murs qui subsistent sont bons à abattre. L'histoire de nos cathédrales est jalonnée d'un nombre incroyable d'incendies dus à la foudre, à l'imprudence des plombiers, à l'éclairage à flamme nue par cierges et torches, et aux feux de cheminée ou incendies des petites maisons voisines, souvent disparues aujourd'hui, qui étaient accolées à l'édifice.

Des exemples plus récents d'incendies où la voûte a sauvé l'édifice sont encore présents à la mémoire, tels celui de la superbe charpente de Chartres qui part en fumée en 1836, celui de la cathédrale de Reims touchée par l'artillerie lors de la première guerre mondiale et celui de la nef romane de Tournai frappée par les bombes incendiaires en 1940.

Le voûtement maçonné est donc bien justifié.

La formule classique de couverture de l'époque romane est la voûte en berceau, demi-cylindre en maçonnerie.

Une voûte exerce sur ses appuis des charges verticales qui correspondent à son poids et des forces horizontales vers l'extérieur appelées poussées au vide, qui résultent de la tendance de la voûte à s'aplatir, à s'ouvrir. Toutes autres choses égales, les poussées au vide augmentent lorsque la voûte est surbaissée et diminuent si elle est surhaussée: les voûtes elliptiques et en anse de panier poussent plus que la voûte demi-circulaire, qui elle-même pousse plus que l'arc pointu.

La voûte cylindrique en berceau exerce donc des poussées au vide substantielles qui ont l'inconvénient de se répartir sur toute la longueur des naissances: il faut donc des murs épais pour supporter cette sollicitation, et c'est pourquoi aussi les fenêtres autorisées dans l'architecture romane sont de taille restreinte.

Les arcs de renforcement en pierre que l'on dispose ici et là le long de la voûte ne sont guère utiles car le surcroît de résistance qu'ils offrent se trouve absorbé par l'accroissement de sollicitation dû à ce poids additionnel.

Les contreforts que l'on construit à l'extérieur des murs, pour aider à reprendre la poussée au vide de la voûte qui tend à les faire basculer, sont des points d'appui localisés, de même d'ailleurs que les éventuels tirants qui relient les naissances de la voûte; supports ponctuels, ils conviennent mal, puisque la poussée au vide s'exerce de façon répartie sur toute la longueur de la voûte; on va la ramener vers ces appuis localisés par l'intermédiaire de longues poutres en bois noyées dans la maçonnerie aux naissances de la voûte. Hélas, ce bois qui n'est pas aéré va pourrir et mettre en péril la pérennité du système.

Lorsqu'on veut accroître la taille de l'édifice, non seulement la poussée au vide augmente avec les dimensions de la voûte, mais le bras de levier de cette force, hauteur du mur de la nef depuis sa base jusqu'à la naissance de la voûte, évolue de même, ce qui multiplie l'intensité de la flexion en base de mur et requiert une surépaisseur considérable de la maçonnerie, c'est-à-dire un accroissement correspondant du cubage de matériau consommé.

A une époque où des chariots lourdement chargés de pierres et tractés par des bœufs s'embourbent vite dans des chemins mal entretenus, où la multiplicité des péages rend le transport prohibitif, allant jusqu'à parfois multiplier par sept le prix du matériau entre le départ de la carrière et l'arrivée au chantier, l'accroissement considérable du volume de matériaux requis pour agrandir l'édifice roman est mal venu.

Nous sommes en présence d'une barrière technique difficile à franchir sans un changement radical du mode constructif. Ainsi, dans sa troisième version, l'abbatiale de Cluny voit sa voûte, qui atteint le record pour la période romane de 29 mètres à la clé, s'effondrer en 1125 peu après sa construction, ce qui marque la fin, au niveau technique de l'architecture romane.

Une amélioration restreinte est celle de la voûte dont la section n'est plus un demi-cercle mais un arc pointu, en ogive. On peut se demander s'il s'agit d'une affaire de mode, d'esthétique, car les bâtisseurs du moment ne disposaient pas des notions de mécanique permettant de comprendre que l'arc pointu exerce une poussée au vide moindre que l'arc circulaire, et ils ne pouvaient au mieux que le pressentir. Ici, le mode constructif suit toujours le principe de la voûte romane en berceau, et l'arc pointu seul n'est pas encore du gothique. La poussée au vide de la voûte reste d'ailleurs considérable et le sérieux déversement des piliers de la cathédrale d'Autun en est un témoignage.

Nous passerons rapidement sur la voûte d'arête, constituée par l'intersection de deux voûtes cylindriques permettant de couvrir un espace carré en reportant les zones d'appui aux quatre coins. Connue à la période romaine où elle était réalisée dans le bon agrégat de l'époque, abusivement considéré comme béton, et oublié au Moyen-Age, elle pose des problèmes si elle doit être réalisée en pierres appareillées apparentes car chaque élément des diagonales demande une taille individuelle pour laquelle les connaissances en stéréotomie du 12^e siècle sont encore insuffisantes.

On peut bien sûr masquer l'arête diagonale par une nervure, mais il subsiste la difficulté que l'intersection de deux cylindres circulaires est un arc d'ellipse pour lequel tous les claveaux auront des rayons de courbure différents.

En réalisant par contre les arcs diagonaux en demi-cercles, le tracé au compas est simple, tous les claveaux sont identiques et cette standardisation permet la préfabrication. Pour éviter que la voûte ne retombe trop bas sur ses côtés, on transforme les arcs latéraux, doubleaux et formerets, en arcs pointus, composés chacun de deux portions de cercle offrant le même avantage de standardisation des claveaux. En couvrant les espaces ainsi délimités par des voûtains, on obtient la voûte sur croisée d'ogives qui va s'avérer être toute l'originalité du gothique (fig.2).

Les arcs diagonaux qui sont les arcs d'ogives ou arcs ogifs sont donc bien des arcs circulaires et non pointus; c'est à partir du 19^e siècle que l'on va - abusivement donc - appeler ogival l'arc pointu.

Elément caractéristique de l'architecture gothique, la voûte sur croisée d'ogives va permettre le développement d'une conception structurale différente de ce qui s'était fait jusqu'alors.

La voûte repose en ses coins sur des piliers qui ne supportent en principe que les charges verticales: pour autant que la conception de l'édifice soit correcte, ils peuvent être minces et élancés, et dégagent ainsi l'espace intérieur, puisqu'ils ne sont pas ou seulement peu soumis à flexion. Ceci implique évidemment la présence d'un dispositif complémentaire pour reprendre ces forces horizontales que sont les poussées au vide de la voûte.

Au coin d'une voûte sur croisée d'ogives, la poussée au vide s'exerce, comme on le verra, à peu près suivant la direction de la diagonale. Sa composante longitudinale se trouve auto-équilibrée par la composante antagoniste développée par la voûte voisine, tandis que sa composante transversale est transmise par un arc-boutant à un contrefort situé hors de l'édifice. Si la construction comporte deux volées d'arc-boutants superposées, c'est celui de la volée inférieure qui est ici concerné (fig. 3).

L'espace intérieur ainsi bien dégagé devient disponible pour les nouvelles fonctions sociales de l'église, et les murs qui n'ont plus de rôle porteur peuvent être percés de larges baies, voire complètement supprimés, au profit des vitraux qui apporteront ainsi la lumière devenue nécessaire, qui manquait dans la construction romane.

Au-dessus de la voûte, la toiture, dont les versants maintenant plus inclinés sont à 60° , repose sur le sommet des murs gouttereaux et subit l'importante sollicitation du vent, d'autant plus que l'édifice est élevé et isolé au milieu des maisons basses de la cité médiévale. Cette sollicitation est transmise au même contrefort extérieur par l'arc-boutant de la volée supérieure (fig. 3).

Ainsi, dans un édifice à deux volées d'arcs-boutants, chacune assure un rôle spécifique.

Le fonctionnement mécanique de la structure gothique présenté ici est évidemment très schématisé car la réalité est complexe, souvent mal connue et différente d'un édifice à l'autre.

C'est ainsi par exemple qu'il n'y a pas si longtemps que l'on sait que cette association nervures-voûtains qui apparaît comme une ossature porteuse avec éléments de remplissage travaille bien différemment, et que les nervures n'ont pas le rôle structural qu'on leur pressentait.

Le gothique apparaît donc vers 1140 à l'abbatiale de Saint-Denis, et sa grande période créatrice du point de vue du génie constructif dure seulement 140 ans environ, c'est-à-dire en gros jusqu'à l'effondrement du chœur de la cathédrale de Beauvais en 1284, qui peut être pris aussi comme second point de repère conventionnel. Dans les constructions gothiques ultérieures parmi lesquelles figurent encore bien des chefs-d'œuvre, le décor évolue tandis que la structure ne présente plus guère d'innovation.

3. Une réflexion générale sur les chantiers médiévaux.

Même dans la forme simplifiée qui vient d'être présentée, la compréhension du fonctionnement mécanique de la structure d'une grande cathédrale gothique requiert la maîtrise d'un certain nombre de concepts.

La plupart d'entre eux feront seulement leur apparition bien après le Moyen-Age, et même s'ils nous paraissent simples, voire évidents aujourd'hui, il n'en a pas toujours été ainsi, et sans doute n'en est-il pas encore ainsi, à en juger par les difficultés rencontrées et les fautes de compréhension commises par un nombre encore non négligeable d'étudiants.

Il faudra donc conclure qu'en l'absence de connaissances qui n'apparaissent que plus tard, les bâtisseurs médiévaux ont fait preuve d'une excellente intuition et d'un savoir-faire empirique transmis de compagnon à apprenti, de chantier à chantier, et ce de génération en génération.

Mon sentiment en la matière est que le nombre d'échecs et d'accidents de chantier a été bien plus considérable qu'on ne peut le croire, et que les chefs-d'oeuvre qui nous ont été transmis ne sont en fait que les édifices qui ont, par un hasard heureux, bénéficié d'une conception et d'un dimensionnement dépourvus de fautes rédhibitoires, autant que du génie d'un bâtisseur d'exception.

L'oubli des échecs vient vite, très vite même. Dans les dix dernières années, l'effondrement de deux ouvrages d'art importants en Belgique est passé quasiment inaperçu du grand public et même d'une majorité des gens de métier. Comment s'en souviendrait-on dans huit cents ans? Dans le même ordre d'idée, les observations actuelles laissent à penser que le chœur gothique de la Cathédrale de Tournai a dû, en raison d'ennuis de fondation, être démonté et reconstruit complètement à partir du niveau du triforium un siècle après son édification, intervention lourde s'il en est qui est tombée dans l'oubli pendant plus de six siècles, pour réapparaître aujourd'hui à la faveur d'un examen approfondi in situ.

Quoi qu'il en soit, le bâtisseur médiéval a bénéficié par hasard d'une circonstance favorable: c'est l'emploi du mortier de chaux qui réduit l'incidence des erreurs et qui corrige certains défauts pas trop graves.

En effet, contrairement au mortier de ciment portland actuel qui fait sa prise et durcit rapidement, le mortier de chaux connaît d'abord une phase de séchage correspondant au départ de l'eau de gâchage à l'issue de laquelle il est encore bien plastique; ultérieurement la prise réelle par carbonatation, due au gaz carbonique contenu dans l'air, est un phénomène extrêmement lent qui peut prendre des siècles. Ainsi le mortier de chaux garde-t-il très longtemps une plasticité qui lui permet de s'adapter aux tassements et aux mouvements de l'édifice, alors qu'un joint de mortier moderne se fissurerait.

En outre, le mortier de chaux présente l'intérêt d'une auto-cicatrisation, c'est-à-dire que de fines fissures qui y apparaissent peuvent s'obturer d'elles-mêmes.

Enfin, comme le chantier progresse en général lentement, cela laisse le temps d'observer l'effet d'un défaut de conception dans une travée qui s'achève et d'effectuer d'emblée la correction voulue lors de la construction de la travée suivante.

Ainsi donc, il s'agit ici, à côté du cas des édifices qui ont disparu pour faute grave, d'un mode constructif qui s'adapte et pardonne des erreurs parfois plus que modérées.

Aujourd'hui, nous sommes en présence d'édifices qui souvent apparaissent gravement fissurés, voire distordus, et qui ne présentent pourtant pas particulièrement de danger: c'est notre vision fondée sur la théorie de l'Elasticité qui nous a maintenus jusqu'il y a peu dans une manière de penser dont il faut sortir pour saisir le comportement structural d'une maçonnerie. Les lignes de poussée possibles qui correspondent à des situations stables sont multiples, et la fissuration peut simplement indiquer que l'édifice a trouvé une nouvelle forme d'équilibre. Pour une maçonnerie de briques ou de pierres, l'état fissuré est l'état normal.

4. Les concepts nécessaires à la compréhension de la structure gothique et les disciplines mises en jeu.

Quelles sont donc les matières dans lesquelles des connaissances sont requises pour comprendre la conception mécanique d'une grande structure gothique, étant entendu qu'il s'est avéré possible de mener à bonne fin un chantier parfois exceptionnel sur base de recettes et d'empirisme?

Les besoins touchent à la Géométrie, la Mécanique des Solides avec des notions d'équilibre, la Mécanique de Milieux Continus avec les concepts de contrainte, de déformation et de loi de comportement, la Résistance des Matériaux qui étudie, tant du point de vue de la résistance que de celui de la déformabilité, des éléments constructifs de forme simple, la Stabilité des Constructions qui, contrairement à son intitulé, ne s'occupe pas directement de voir si une construction est stable, mais qui étudie l'interaction entre les éléments simples qui constituent une structure réelle complexe, et enfin la Connaissance des Matériaux, discipline qui investigate les propriétés mécaniques et autres des matériaux mis en œuvre.

4.1. La Géométrie

Les bâtisseurs du Moyen-Age sont incontestablement imprégnés de géométrie, discipline à laquelle ils accordent une importance sans doute excessive, dans la mesure où l'obtention d'un beau tracé qui respecte des conditions contraignantes et des conventions symboliques ne constitue en aucun cas une garantie de stabilité de l'édifice.

Au Moyen-Age, des connaissances de Géométrie, considérée ici comme branche des Mathématiques, sont disponibles, venant du monde antique, certaines ayant été traduites du grec en arabe, pour transiter par l'Espagne avant d'être retraduites de l'arabe en latin. Ces connaissances sont l'apanage d'un nombre restreint de lettrés, et il est hautement improbable qu'elles aient été accessibles aux gens de terrain qu'étaient nos bâtisseurs.

Il faut plutôt considérer que les connaissances des hommes de chantier relèvent d'une géométrie empirique, voire expérimentale.

L'usage de la corde à nœuds en est un exemple, avec la série de nœuds équidistants qui déterminent un ensemble de tronçons identiques et permettent de construire des figures simples de proportions préétablies. Ainsi, la réalisation d'un triangle dont les côtés ont respectivement trois, quatre et cinq unités reproduit le théorème de Pythagore ($3^2 + 4^2 = 5^2$) et donne donc un triangle rectangle, ce qui permet de construire un angle droit ou de vérifier l'orthogonalité de deux murs. Ce procédé simple peut être utilisé de façon empirique sans qu'il soit nécessaire de connaître le théorème de Pythagore (fig.4).

Avec la même corde à nœuds, la construction d'un triangle isocèle dont la base est de cinq unités et les côtés égaux de quatre unités donne un angle à la base qui est à peu de chose près le septième de la circonférence; l'écart est suffisamment faible pour que, au degré de précision requis sur chantier, cette construction puisse servir au tracé d'une étoile à sept branches que l'on rencontre dans la symbolique médiévale.

R. Bechmann souligne à juste titre que l'usage d'une règle empirique comme celle du théorème de Pythagore évoquée ici est réductrice de la pensée, et il évoque le souvenir d'un chantier en Afrique du Nord où l'ouvrier s'avérait incapable de vérifier l'orthogonalité de deux cloisons car le local trop petit ne lui permettait pas de construire son triangle 3-4-5, ne pouvant comprendre que le même principe aurait pu être exploité avec un triangle plus petit. Nous avons rencontré un cas similaire lors de la rénovation de l'Institut des Constructions Civiles de l'ULB, au début des années 1990, lorsque le contremaître ne pouvait admettre l'évidence visuelle que deux murs n'étaient pas perpendiculaires.

Certes, les grands édifices religieux de l'époque gothique ont-ils été construits en tenant compte de règles géométriques conventionnelles ou, plus souvent, chargées d'une signification symbolique. Que leurs bâtisseurs aient pu croire que cela suffirait à assurer la stabilité de leurs édifices est évidemment une erreur, et nous ne nous y attarderons pas.

Mais les tracés géométriques frappent l'imagination, et à côté d'études sérieuses sur la question que nous n'abordons pas non plus, la multiplication d'ouvrages à sensation, misant sur la révélation de mystères pour accroître le tirage, et qui rencontrent effectivement l'engouement du public, appelle une réflexion de bon sens.

Les bâtisseurs médiévaux ne nous ont pas laissé d'écrits qui explicitent leurs intentions en matière de géométrie symbolique. Entre ce qu'a projeté l'architecte de l'époque et ce qui a été réalisé apparaissent probablement déjà des écarts substantiels, en raison de contingences de chantier telles que le réemploi de substructions existantes d'un édifice précédent, le relief du terrain, les expropriations refusées, la présence d'un rempart qui limite l'extension possible du bâtiment.

Le positionnement en plan de l'édifice sur le terrain est bien sûr rendu difficile par l'exécution exigée en phases successives, tant pour des raisons

budgétaires que pour conserver sur place l'exercice du culte: par exemple, on détruit l'ancien chœur roman pour édifier le chœur gothique avant de s'attaquer à la reconstruction de la nef, de sorte que l'on ne se trouve jamais devant un espace dégagé comme un terrain de football où l'on pourrait planter des jalons, ce qui peut expliquer des erreurs aléatoires d'alignement autrement que par la symbolique de la tête du Christ inclinée sur la croix.

En outre, c'est sans compter aussi que, sur les grands chantiers, l'architecte dispose d'un intermédiaire, d'une sorte de contremaître qui peut distordre involontairement la pensée géométrique initiale: c'est le "parlier", c'est-à-dire celui qui parle aux ouvriers, qui transpose en mots simples les instructions du maître, voire qui les traduit au sens littéral du terme dans leur langue ou dans leur patois local quand l'architecte renommé a été appelé de l'étranger.

De plus, l'architecte est un homme fort occupé qui gère souvent plusieurs chantiers et ne suit pas de suffisamment près l'exécution sur le terrain. Ainsi, l'exigence d'une présence exclusive à Bruxelles pour l'édification de la grande tour de l'hôtel de ville, imposée par les échevins à l'architecte Van Ruysbroeck, en est un témoignage.

Après les discordances entre ce qui est voulu et ce qui est réalisé viennent les distorsions progressives de l'édifice, principalement en élévation, dues à des mouvements de terrain, à la déformation plastique du mortier de chaux dont les tassements durent des siècles, ainsi qu'au fluage, d'incidence beaucoup moindre ici, des pierres utilisées.

Pour rechercher une intention de nature géométrique de la part de l'architecte, la situation en plan, au niveau du sol, peut servir sous réserve: ainsi, comme bien d'autres, l'architecte Bruno RENARD utilise-t-il au milieu du siècle dernier une travée "standard" de la cathédrale de Tournai pour établir son tracé géométrique alors que toutes les travées ont des largeurs sensiblement différentes, variant, au niveau du sol, de 11,31 m à 13,02 m soit un écart de 15%. Les relevés d'élévation devraient, quant à eux, être corrigés, tant les changements de géométrie ont pu être importants au cours des siècles, des hors-plomb de piliers de 80 cm étant courants dans bien des édifices.

Les interprétations géométriques d'aujourd'hui, dont un trop grand nombre manifeste un caractère trop superficiel, se basent généralement sur les relevés disponibles, pas toujours fiables, du 19^e siècle, car il est frappant de

constater que trop rares sont les édifices qui ont bénéficié d'une topographie et d'un relevé photogrammétrique récents. Pour la grande tour de l'hôtel de ville de Bruxelles, nous disposions au début de la restauration en 1989 des plans dressés lors de la restauration précédente, en 1895-97, et pour la cathédrale de Tournai en 1993 de ceux de Bruno RENARD datant de 1850.

D'une manière générale on constate que, pour les grands édifices, les relevés sérieux qui, même avec les techniques modernes, restent longs, difficiles, et coûteux, sont encore l'exception aujourd'hui.

A côté de cas où leur démonstration est indiscutable, les tracés géométriques dans lesquels des auteurs, souvent convaincus, et parfois à la recherche de sensationnel, découvrent un symbolisme souffrent de deux critiques substantielles:

- Souvent, ils intègrent des modifications subies par l'édifice, bien postérieures au Moyen-Age, principalement dans la foulée de la pensée de VIOLLET-LE-DUC, d'une création néogothique injustifiée et non fondée sur des éléments archéologiques probants;

- Pour la plupart, ils sont réalisés au départ de plans et coupes publiés à petite, voire à très petite échelle, de sorte que les erreurs du document initial, accrues par la distorsion du support papier sensible à l'hygrométrie, permettent toujours, en trichant avec l'épaisseur du trait de crayon, de faire passer le triangle équilatéral, ou toute autre figure, par où le raisonnement présupposé en a besoin! Rappelons que sur le plan d'une cathédrale de 100 m de long, figuré par un dessin de 10 cm sur une page de l'ouvrage publié, l'épaisseur de 0,5 mm du trait de crayon représente un écart de 50 cm.

En conséquence, si nous sommes intimement convaincus que la pensée des bâtisseurs médiévaux est imprégnée de règles géométriques, sujet sur lequel des travaux sérieux existent aujourd'hui, il reste de trop nombreux cas où la reconstitution de cette pensée géométrique demande l'aval d'études exemptes des nombreux a-priori qui semblent manifestement difficiles à laisser de côté, pour intégrer les multiples sources d'incertitude qui viennent d'être mentionnées. Cette reconstitution de la pensée géométrique est bien sûr de l'ordre du possible, non du certain, et nous suggérons pour cela une terminologie nouvelle, celle de "géométrie probabiliste".

4.2. La Mécanique

Après la géométrie vient la Mécanique. On fera la distinction entre Mécanique du Solide rigide d'une part, qui fait essentiellement ici intervenir des notions d'équilibre et un peu de cinématique, et qui permet à elle seule de comprendre déjà beaucoup du comportement de nos édifices gothiques, et d'autre part la Mécanique des Milieux continus, déformables, avec les concepts de tenseur des contraintes, tenseur des déformations et lois de comportement qui sont les relations entre contraintes et déformations, faisant si nécessaire intervenir des paramètres tels que temps (durée), température, humidité,... Les premiers développements sérieux n'en apparaîtront qu'au 19^e siècle avec la Théorie de l'Elasticité, alors qu'une bonne modélisation de la maçonnerie de pierres ou de briques exige des représentations non-linéaires difficiles que l'on essaye seulement d'obtenir aujourd'hui.

Une simple descente de charges comme on la conçoit depuis longtemps, même limitée à un cas plan, implique de comprendre la composition et la décomposition des forces par la règle élémentaire du parallélogramme, et celle-ci ne sera introduite qu'au début du 17^e siècle par Simon STEVIN (1548-1620).

Dans la structure d'une cathédrale, les différentes forces mises en jeu interviennent avec leurs bras de levier, et la notion de moment d'une force, nécessaire à la compréhension claire des équilibres et des questions de flexion, n'apparaît qu'en 1725 dans un mémoire posthume de Pierre VARIGNON (1654-1722).

Cette notion de moment d'une force, la force multipliée par son bras de levier, qui conduit à l'équilibre de rotation d'un objet pour lequel la somme des moments doit être nulle, semble bien simple au mécanicien d'aujourd'hui, et pourtant...

Pour illustrer cette difficulté de compréhension, nous prendrons ici un exemple simple d'application dans un engin de levage bien indispensable et largement utilisé au Moyen-Age pour hisser au sommet de la cathédrale en construction les grosses pierres et les lourds éléments de charpente de la toiture: c'est la cage d'écureuil.

Représentée sur différents reliefs romains, cette cage d'écureuil est connue depuis l'antiquité, et restera en service jusqu'à une époque bien tardive, puisqu'un dispositif de ce type, mû ici par un chien dans une ferme du 19^e

siècle pour battre le beurre, est encore exposé au musée du folklore de Tournai.

Le principe de fonctionnement est le suivant: un homme marche à l'intérieur d'une grande roue en bois de plusieurs mètres de diamètre qu'il fait tourner pour bobiner sur son moyeu le câble de levage. En négligeant les frottements dans le système, le poids de l'individu de 80 kg avec un bras de levier de 1,50 m permet d'équilibrer une charge de 600 kg suspendue au bord du moyeu de 40 cm de diamètre, soit un bras de levier de 20 cm: l'engin doit donc permettre pratiquement de lever des charges de l'ordre de 500 kg.

Des roues de ce type ont été, entre autres, conservées aux cathédrales de Beauvais et de Strasbourg. En utilisant des roues plus grandes et plusieurs hommes, voire des roues jumelles, des charges plus considérables ont pu être levées, et on trouve même sur des représentations iconographiques anciennes de véritables grues pivotantes basées sur ce principe.

Ces différents engins sont bien illustrés par Breughel l'Ancien dans l'une de ses deux versions du chantier de la Tour de Babel, la plus belle sans doute, et qui est l'un des chefs-d'œuvre du Musée de Vienne (1563).

Dans cette oeuvre, on trouve une cage d'écureuil simple, utilisée comme treuil, et ...qui ne peut pas fonctionner! Ici, la mauvaise représentation du système mécanique témoigne de l'incompréhension, même seulement intuitive, de ce concept de moment des forces, car le câble s'enroule autour du tambour et non du moyeu, de sorte que la charge à lever agit avec un bras de levier environ double de celui de l'homme qui marche dans la cage et qui ne peut dès lors lever qu'un fardeau bien nettement inférieur à son propre poids.

Breughel aurait-il donc été mauvais observateur, car le système était bien en service à son époque? Nous y reviendrons.

En tout cas, la compréhension du fonctionnement d'un tel engin est peut-être moins évidente qu'il n'y paraît, car la même erreur de représentation qui figure le câble enroulé autour du tambour plutôt que du moyeu se retrouve aujourd'hui dans des publications dont la qualité et le sérieux sont par ailleurs certains (par exemple D. Macaulay 1974, M. Peyramaure 1991, A. Erlande-Brandenburg 1992, R. Bechmann 1995, C. Wenzler 2000).

Ces auteurs sont parmi les meilleurs spécialistes du Moyen-Age, et ont sans doute laissé passer cette erreur de dessin, comme il en subsiste toujours dans toute étude largement documentée.

Quant à Breughel qui, lui, a peut-être eu l'occasion de voir fonctionner un tel engin, le rendu du détail de ses œuvres est tellement méticuleux que l'on a peine à croire à une observation trop hâtive, et je voudrais avancer ici l'hypothèse d'une confusion.

En effet, le système d'enroulement du câble sur le moyeu donne une position d'arrivée assez instable de la charge, en raison de la forte inertie du tambour qu'il faut freiner pour arrêter le mouvement quand la charge atteint exactement le niveau souhaité, celui-ci devant être ensuite maintenu pendant le déchargement. A l'époque romaine, le freinage était obtenu par un deuxième câble qui passait, lui, sur l'extérieur du tambour, comme le montre le relief funéraire de la famille des Haterii conservé au Musée du Vatican (J.P. Adam 1984). On peut imaginer que le même procédé ait subsisté au Moyen-Age et influencé la représentation erronée de Breughel qui aurait confondu câble porteur et câble de freinage.

Comme quoi, la notion de moment d'une force n'est pas aussi évidente qu'il y paraît.

Un principe élémentaire de mécanique, dont l'application se rencontre dans l'équilibre de multiples éléments d'une cathédrale gothique, est celui de l'égalité de l'action et de la réaction.

S'il peut paraître aller de soi, mon expérience d'enseignant d'aujourd'hui me montre qu'il pose encore pas mal de problèmes aux étudiants et n'est donc pas non plus aussi évident qu'il le semble.

C'est à NEWTON (1642-1727) qu'on le doit, et il est donc bien postérieur au Moyen-Age. Il permet par exemple de comprendre, plutôt que de concevoir intuitivement, le fonctionnement d'un arc-boutant: la voûte exerce, tant directement que par l'arc-doubleau et les ogives, une action vers l'extérieur qui est exactement, à la fraction près reprise en flexion par le pilier, équilibrée par la réaction antagoniste vers l'intérieur de l'arc-boutant.

Mais la difficulté de compréhension existait bien sûr déjà au Moyen-Age. On en trouve une illustration dans les carnets de VILLARD DE

HONNECOURT, manuscrit daté de 1235 environ, et conservé à la Bibliothèque Nationale de Paris.

Il s'agit du carnet de notes d'un voyageur curieux plutôt que d'un architecte, car on ne retient plus aujourd'hui de preuve sérieuse qu'il ait été un professionnel de la construction. Ses dessins sont en tout cas exécutés avec précision et fidélité pour l'époque.

Au cours de ses voyages, Villard est passé à Reims alors que la cathédrale en cours de chantier n'avait pas encore reçu de voûtement; il a dû avoir connaissance d'un plan qu'il reproduit dans ses carnets, où la volée d'arcs-boutants inférieure est située beaucoup trop bas par rapport au niveau où s'exerce la poussée au vide de la voûte: si la cathédrale de Reims avait été construite suivant ce plan, elle aurait couru un risque évident d'effondrement (fig. 5).

Ainsi qu'en témoignent aussi d'autres édifices, comme le chœur gothique de Tournai, avec une première volée d'arcs-boutants bientôt surchargés, suivie de la construction plus bas de la deuxième volée dont la surcharge va suivre, quatre phases successives de tâtonnements, l'hésitation était de mise et la conception d'un contre-butement correct bien difficile.

A la cathédrale de Chartres (fig.6), que tout le monde s'accorde à considérer comme un des hauts lieux de l'art médiéval, l'arc-boutant inférieur qui reprend la poussée de la voûte est dédoublé en deux arcs reliés par une série de très élégantes colonnettes, et l'arc-boutant supérieur, chargé de transmettre l'effort appliqué par le vent sur la toiture, est réduit à un frêle élément, alors que le manque d'efficacité de l'ensemble a été montré par les études de R. MARK évoquées plus loin.

Il ne faut certes pas sous-estimer la particulière difficulté constructive de cet arc-boutant inférieur dédoublé qui fait un des charmes de la cathédrale et contribue avec ses colonnettes à sa réussite esthétique.

Si toutefois l'on se place strictement du point de vue technique, cet arc dont les deux parties dédoublées sont distantes d'une hauteur de l'ordre de 6,50 m n'est-il pas à considérer comme un aveu d'incompétence, d'incapacité à situer correctement le niveau de poussée à reprendre de la voûte, niveau dont on espère bien qu'il se trouvera quelque part dans cette large fourchette de 6,50m? En tout cas, l'astuce technique imaginée pour contourner un

problème dont on ne connaît pas la solution tourne ici à l'avantage esthétique de l'édifice.

Contemporaine de Chartres - les chantiers ont débuté en 1194 et 1195 - Bourges est une cathédrale de taille similaire, preuve que l'on pouvait faire beaucoup mieux, mais pas pour autant parfait du point de vue de l'ingénieur, à la même époque; les arcs-boutants beaucoup plus obliques ramènent de façon élégante plus directement les efforts vers la fondation et les contreforts nécessaires en deviennent fondamentalement différents: pour une efficacité identique, un contrefort pèse 1000 tonnes à Chartres et 400 tonnes à Bourges, ce qui, en raison du contexte économique et du coût du transport des matériaux, représente bien plus que la différence des quantités consommées.

A quelques menus reproches près, Bourges est le résultat d'une intuition géniale qui propose une structure d'une rare élégance. En dehors de la question d'esthétique, c'est pourtant Chartres, d'une construction plus lourde et malhabile, qui sera prise comme modèle car sa lourdeur même permet des erreurs d'interprétation alors que la copie, à une échelle différente, de Bourges requiert un savoir nouveau.

C'est la notion de loi de similitude, qui représente, quant à elle, un concept important souvent passé inaperçu et qui semble avoir peu retenu l'attention des historiens de l'architecture.

Les lois de similitude établissent les relations qui permettent de passer d'un phénomène donné à son correspondant à une autre échelle.

L'intervention de ces lois de similitude est nécessaire lorsqu'on veut, au départ d'une construction qui donne satisfaction, en réaliser une autre semblable mais de taille différente.

On conçoit directement que si l'on double les dimensions d'un édifice, on multiplie par 4 les sections résistantes des piliers, alors que le volume, et donc le poids propre, est quant à lui multiplié par 8. Avec un matériau donné dont les propriétés ne sont pas modifiées, on ne peut donc impunément accroître les dimensions d'une construction qui reste géométriquement semblable à celle de départ.

La question dépasse d'ailleurs celle de simples règles de proportionnalité: que l'on songe par exemple à l'action du vent dont la pression est fonction du

carré de la vitesse, laquelle s'accroît avec le niveau considéré par rapport au sol: la relation entre les efforts subis par deux tours de hauteurs différentes n'est pas immédiate.

Cette notion de loi de similitude n'était pas connue au Moyen-Age, et peut-être même pas soupçonnée, à voir certains dimensionnements qui sont manifestement aberrants.

Le premier à avoir saisi ce phénomène est, semble-t-il, GALILEE, dans un ouvrage publié à Leide en 1638: il souligne l'impossibilité de construire des bateaux, des palais ou des temples de taille énorme et fait la comparaison avec la nature qui ne peut produire des arbres gigantesques car les branches céderaient sous leur propre poids. Venant au squelette de l'homme, du cheval et d'autres animaux, il explique de façon imagée que si leur taille devait être largement accrue, cela ne pourrait se faire que par l'emploi d'un matériau plus résistant que l'os habituel ou par un agrandissement non proportionnel des sections osseuses qui conduirait à une forme et une apparence monstrueuses (fig. 7).

Il faudra bien longtemps pour que cette notion soit assimilée par les bâtisseurs, et il semble bien que son ignorance soit à l'origine d'une part des problèmes rencontrés lors de la construction de l'église Sainte-Geneviève, qui deviendra le Panthéon, à Paris dans la seconde moitié du 18^e siècle.

Notons au passage qu'une application importante des lois de similitude se trouve dans les essais sur modèles: on mesure les sollicitations appliquées à une maquette dans une soufflerie pour en déduire l'action du vent sur la construction réelle, on mesure les déformations d'un modèle réduit en résine pour en déduire les contraintes sous poids propre dans la maçonnerie de l'édifice,... Il faut donc opérer le passage d'une maquette de 75 cm à une tour de 100m, d'une matière synthétique à de la pierre, de la vitesse du vent dans le tunnel à celle à laquelle souffle une tempête.

Ces essais sur modèles restent bien utiles: il nous était par exemple impossible d'appliquer les normes actuelles pour chiffrer l'action du vent sur une dentelle de pierre comme celle de la grande tour de l'hôtel de ville de Bruxelles (fig.8).

Sans les lois de similitude, les essais sur modèles restent d'application très limitée, et il ne semble d'ailleurs pas qu'ils aient été tentés au Moyen-Age: les

maquettes qui figurent dans l'iconographie et dans la statuaire avaient seulement pour fonction de visualiser pour le commanditaire, évêque ou chapitre, le projet d'architecture.

4.3. L'évolution de la théorie des constructions du 17e au début du 19e siècle.

Nous en étions arrivés au 17e siècle dans l'histoire de la compréhension de nos édifices gothiques.

Si Robert HOOKE (1635-1703) est surtout connu dans le monde des ingénieurs pour la "Loi de Hooke" établissant une relation linéaire entre contrainte et déformation qui est à la base de la Théorie de l'Elasticité, il semble être le premier à avoir, en 1675, noté que si l'on retourne de bas en haut le tracé d'équilibre en forme de chaînette d'un câble qui pend entre ses deux extrémités, on obtient la forme idéale d'un arc en compression pure sous son poids propre.

Avec la fin du 17e et le 18e siècle, on commence à avoir des idées convenables sur la mécanique des arcs; cependant, ce n'est pas pour comprendre l'architecture gothique à laquelle on ne s'intéresse plus, mais plutôt pour voûter des casemates et construire des ponts.

Philippe de LA HIRE (1640-1718), contemporain de Newton, introduit dans son *Traité de Mécanique* de 1695 le polygone des forces, qui conduit à la notion de ligne de poussée dans la descente de charges d'un arc.

C'est l'époque où l'on cherche à dépasser les recettes empiriques utilisées jusque là pour dimensionner les appuis d'une voûte, et de La Hire écrit "C'est une des plus difficiles questions qu'il y ait dans l'Architecture que de savoir la force qu'on doit donner aux murs et aux piédroits qui soutiennent des voûtes et des arcs, pour résister à l'effort que font les voussoirs qui la forment pour les écarter".

Parmi ses ouvrages, c'est dans "*La Science des Ingénieurs*" paru en 1729 que Bernard de BELIDOR (1697-1761) est le plus explicite sur les idées du moment relatives aux voûtes.

A partir d'ici, on pourrait citer presque tous ceux qui ont contribué au développement de la Résistance des Matériaux et de la Stabilité des

Constructions, mais nous nous limiterons aux auteurs dont l'apport est très directement lié à la compréhension mécanique du gothique.

Bien qu'il ne traite pas directement de l'arc ogival, COULOMB (1736-1806) mérite plus que d'être simplement cité pour son mémoire de 1773 "Essai sur une application des règles de Maximis et Minimis à quelques Problèmes de Statique, relatifs à l'Architecture".

En effet, ce travail présente déjà ce qui va devenir dans la seconde moitié du 20e siècle le calcul en plasticité et la Théorie de l'Analyse Limite des constructions, et l'on peut aussi déjà y comprendre pourquoi il est assez illusoire de chercher la solution exacte de la ligne de poussée d'un arc, tant elle est sensible aux variations des conditions aux limites. Le travail de Coulomb est une avancée remarquable en mécanique des constructions; masquée par les développements que prend au début du 19e siècle la Théorie de l'Elasticité, qui est une tout autre philosophie d'approche, elle va rester oubliée pendant presque deux siècles, jusqu'à ce que les travaux d'un spécialiste de tout premier plan de l'analyse limite, le professeur Jacques HEYMAN de Cambridge, vienne la remettre à l'honneur en montrant que cette approche peut aussi s'appliquer aux maçonneries, sujet sur lequel nous reviendrons. On doit d'ailleurs à Heyman une analyse fouillée du mémoire de Coulomb.

Le peu de succès apparent du travail de Coulomb à son époque résulte peut-être de ce que, en avance sur son temps, il situe l'infinité possible de poussées au vide d'une voûte entre deux limites, une borne supérieure et une borne inférieure, alors que les bâtisseurs du moment attendent une recette de calcul à appliquer sans se poser de question.

Ayant de passer à l'évolution des concepts au 19e siècle, il est utile d'évoquer la question de la Connaissance des Matériaux qui va débiter ses premiers développements scientifiques au 18e siècle.

Seront envisagées des propriétés mécaniques - résistance, déformabilité - et des propriétés de durabilité - une roche est-elle gélive par exemple - en ce qui concerne les matériaux pierreux de construction et les bois de charpente.

En dehors d'une question d'encrassement dû aux suies et aux fumées, le comportement de la pierre vis-à-vis de la pollution atmosphérique n'est pas

trop à craindre avant le 19^e siècle, quand l'industrialisation va brusquement la rendre catastrophique.

Le comportement au cours du temps reste du domaine de l'information acquise à long terme par l'observation, ce qui était à la portée des bâtisseurs médiévaux, et d'ailleurs, les techniques de laboratoire qui permettent aujourd'hui d'obtenir des données de manière accélérée laissent encore bien à désirer dans leur manière de reproduire les effets constatés à long terme in situ.

Il en va autrement de la résistance mécanique des matériaux utilisés, que l'on n'était pas en mesure de chiffrer au Moyen-Age.

Si quelques savants avaient déjà tenté l'une ou l'autre expérience élémentaire pour vérifier des théories, c'est le hollandais Piet van MUSSCHENBROEK (1692-1761), professeur à Utrecht puis à Leide, qui construit les premières machines d'essais des matériaux dignes de ce nom, et qu'il décrit dans son ouvrage "Physicae experimentales et geometricae" de 1729.

Toutefois, les machines conçues par van Musschenbroek restent de faible puissance, limitant les essais à des échantillons de petite taille qui ne sont pas nécessairement représentatifs des pièces volumineuses dont ils ont été extraits. Cette critique est déjà exprimée par le naturaliste BUFFON (1707-1788) qui étudie largement les propriétés mécaniques du bois dont il constate les importantes variations de résistance mécanique en fonction de la localisation de l'éprouvette prélevée dans le tronc, depuis le cœur jusqu'à l'aubier au sein d'une même section, et de bas en haut de l'arbre (Histoire Naturelle, Vol. 2, 1775).

Buffon en déduit que les résultats obtenus par van Musschenbroek sur petits échantillons ne donnent pas l'information nécessaire à l'ingénieur, et que des essais sur poutres en vraie grandeur sont nécessaires.

En ce qui concerne la mesure de la résistance à l'écrasement des matériaux pierreux, il faut attendre les travaux de E. M. GAUTHEY (1732-1807) qui conçoit et construit la première presse, dans le cadre des débats qui partagent les spécialistes à propos du dimensionnement des piliers de l'église Sainte-Geneviève, futur Panthéon, à Paris. Cette machine, sera perfectionnée en 1802 par Jean RONDELET (1734-1829).

Nous sommes donc déjà bien loin du Moyen-Age où les informations sur la résistance mécanique des matériaux mis en œuvre faisaient défaut. Cette méconnaissance se marque d'ailleurs dans certains édifices par la superposition, dans un même pilier, d'assises de bonne pierre et d'autres d'un tuffeau dont la piètre qualité limite la résistance de l'ensemble.

Si cette lacune de connaissance a été le plus souvent sans conséquence, c'est par ce que, comme on peut le chiffrer aujourd'hui, le niveau de contrainte, aux endroits les plus sollicités des éléments porteurs d'une structure gothique correctement réalisée, atteint rarement plus que le dixième de la valeur d'écrasement: dès lors, une appréciation vraiment très approximative de la résistance de la pierre était plus que suffisante, et notre expérience de restauration nous a d'ailleurs montré que des pierres ne cèdent par écrasement que dans des circonstances manifestement pathologiques.

4.4. L'apport et les lacunes du 19e siècle.

Il est temps maintenant de revenir à l'évolution de la compréhension de cette pensée technique du bâtisseur médiéval à l'aube du 19e siècle.

Nous ne reviendrons pas ici sur tout le développement de la Mécanique des Milieux continus qui va prendre un essor considérable et se baser sur la Théorie de l'Elasticité linéaire, alors que les maçonneries sont loin d'être élastiques, et que leur comportement est tout sauf linéaire, quoique, jusqu'à aujourd'hui, de pareilles approches sur lesquelles nous reviendrons restent bien utiles.

Nous risquerions en effet de développer toute l'histoire de la Mécanique des Matériaux au cours du 19e siècle, qui est bien documentée par ailleurs, et qui n'est pas directement liée à la compréhension du gothique, car les architectes qui s'investissent alors dans ce gothique, tant en restauration de l'ancien qu'en création néo-gothique, dans la mouvance du courant romantique de l'époque, travaillent le plus souvent sans le concours des ingénieurs qui sont, eux, fort absorbés dans le cadre de la révolution industrielle.

Une exception est à faire concernant un travail paru en 1840 dans les Annales des Ponts et Chaussées à Paris: c'est le "Mémoire sur l'équilibre des voûtes en berceau" de l'ingénieur E. MERY dont l'incidence sera durable, puisque la procédure de construction de la ligne de poussée d'une voûte qui y

est proposée, et qui convient d'ailleurs pour un arc gothique, est restée en usage jusqu'à aujourd'hui sous l'appellation d'"épure de Méry".

Le 19e siècle compte une figure marquante qui sort vraiment de l'ordinaire, c'est Eugène VIOLLET-LE-DUC (1814-1879), architecte collaborateur de MERIMEE à la Commission des Monuments historiques, qui va consacrer toute son existence à l'étude et à la restauration des grands édifices gothiques.

Si l'œuvre de Viollet-le-Duc souffre aujourd'hui de multiples critiques, la vision de la manière d'aborder la sauvegarde du patrimoine ayant évolué, il faut reconnaître que, sans lui, bien des témoins de notre passé qui tombaient en ruines auraient maintenant totalement disparu.

Les dix volumes de son "Dictionnaire raisonné de l'architecture française du 11e au 16e siècle" (1854-1868) restent aujourd'hui un monument, une source inépuisable de connaissance, même si l'ouvrage comporte des erreurs et des lacunes de compréhension concernant le rôle constructif de certains éléments de l'édifice, de même que des fautes de Résistance des Matériaux que Viollet-le-Duc aurait sans doute pu éviter s'il avait disposé de la collaboration des grands ingénieurs de son temps.

C'est dans le texte, et non via des commentaires à son sujet, qu'il faut lire Viollet-le-Duc pour l'apprécier.

Un reproche certes fondé est qu'à n'importe quel prix, il a cherché partout un point de vue rationnel dans la pensée technique médiévale. Dans sa thèse publiée en 1934, évoquée plus loin, "Eugène Viollet-le-Duc et le rationalisme", Pol ABRAHAM va rédiger d'une manière implacable le réquisitoire le plus sévère qui soit à propos de Viollet-le-Duc, dont il qualifie cependant le Dictionnaire de "livre source le plus vaste, le plus pénétrant, le plus convaincant qui fut et sera sans doute jamais écrit sur l'architecture du Moyen-Age".

Le temps passe, et la fin du 19e siècle s'écoule sans nouveautés marquantes concernant la compréhension des édifices gothiques.

Un élément cependant aurait pu apparaître, et dont l'importance ne sera signalée qu'un bon demi-siècle plus tard par les travaux de R. MARK, évoqués plus loin, c'est l'action du vent sur ces grands édifices gothiques qui

lui offrent une prise d'autant plus énorme qu'ils étaient, à l'époque, tout à fait isolés au milieu d'un ensemble de maisons basses.

Le 19^e siècle commence à prendre conscience de l'effet du vent sur les constructions, que l'on évoque dans l'expertise de l'accident du pont d'Angers (1852) qui provoque la mort de plus de 200 soldats qui avaient cependant rompu le pas lors de leur passage. C'est l'accident du pont sur le Tai (1879), en Ecosse, avec la chute d'un train de passagers par une nuit de tempête, qui incite aux premiers calculs de la résistance au vent d'un ouvrage, qui sera d'ailleurs largement surdimensionné; c'est le pont sur le Forth, en Ecosse aussi et qui sera achevé en 1888.

Gustave EIFFEL, qui est dans le domaine de la construction plus un entrepreneur qu'un calculateur de structures, se passionne pour l'aérodynamique, et ses travaux scientifiques porteront, quant à eux, sur ce sujet, principalement dans les premières années du 20^e siècle lors des débuts de l'aéronautique. Et c'est ainsi que la Tour Eiffel, construite pour l'exposition universelle à Paris en 1889, doit, en dehors d'une opération immobilière particulièrement rentable, servir cette passion d'Eiffel pour l'aérodynamique et être un laboratoire de mesure en vraie grandeur de l'effet du vent. Calculée pour une pression forfaitaire de 300kg/m^2 , elle ne risque rien.

Les premiers ouvrages à bénéficier du contrôle de l'action du vent sont des constructions d'ingénieur, et l'architecture au sens large n'en bénéficie pas.

Eugène Viollet-le-Duc ne parle pas de l'action du vent et ignore en la matière le rôle joué par l'arc-boutant de la volée supérieure, qui sert précisément à transmettre au contrefort la résultante des pressions et dépressions subies par la toiture.

Dans son célèbre traité d'architecture (1899-1901) avec quelque 200 pages consacrées au gothique, Auguste CHOISY ne fait pas non plus allusion à l'effet du vent sur ces toitures élevées.

Et récemment, lors de l'examen des dégâts causés par la tornade qui a frappé Tournai et sa cathédrale le 14 août 1999, nous avons trouvé abattus des pinacles néogothiques dessinés et construits par l'architecte Bruno RENARD au milieu du 19^e siècle, et qui étaient dépourvus d'un tenon métallique, élémentaire sécurité contre le glissement et la bascule. Il ne s'agissait pas

d'un oubli de pose, car les logements dans les deux pierres adjacentes n'avaient pas été creusés: l'architecte ne pensait donc pas à l'effet du vent.

Comment, dès lors, reprocher aux bâtisseurs médiévaux de n'avoir pas pris en compte pareille sollicitation à laquelle il est fait appel aujourd'hui, par exemple, pour une explication de l'accident célèbre de l'effondrement du chœur de la cathédrale de Beauvais en 1284?

Et il ne sera pas question avant longtemps de la prise en compte du vent.

Pour sa modélisation des structures gothiques, Robert MARK va utiliser les normes existantes d'action du vent sur les constructions, ce qui donne surtout des ordres de grandeur généralement bons des efforts mis en jeu, mais sans garantie de fiabilité et cela d'autant moins que l'édifice s'écarte de la géométrie simple de buildings modernes et d'immeubles tours. Nous en avons eu la preuve vingt ans plus tard, lors de notre étude relative à la grande tour de l'hôtel de ville de Bruxelles, complètement ajourée depuis le niveau de 40 m jusqu'à son sommet à près de 100 m.

Il est donc des cas où l'analyse sur modèle en tunnel aérodynamique s'impose; toutefois, tant la construction et l'instrumentation du modèle que le relevé et l'interprétation des multiples mesures prises en soufflerie, représentent un budget considérable qui réserve ce type d'opération à des édifices exceptionnels, la cathédrale de Beauvais, la grande tour de l'hôtel de ville de Bruxelles, qui le justifient car les normes actuelles s'appliquent très mal à leurs dentelles de pierre. Mais nous sommes déjà ici à la fin du 20e siècle.

4.5. De nouvelles idées au 20e siècle

Dans les années qui suivent la première guerre mondiale, vont apparaître quelques travaux plus critiques concernant directement les édifices gothiques, dans lesquels, entre autres, l'observation des dégâts causés par les bombardements de 1914-1918 va susciter des réflexions nouvelles.

On sait depuis longtemps que le système d'arcs du gothique, ogives, doubleaux et formerets, constitue une ossature stable en soi et potentiellement porteuse des voûtains.

Vers 1960, le professeur André PADUART présentait encore, dans l'introduction à son cours de voiles minces en béton, à l'Université Libre de Bruxelles, la voûte gothique comme une ossature porteuse avec éléments de remplissage, ce qui était l'idée développée par Viollet-le-Duc un siècle plus tôt, et qui semblait évidente au premier coup d'œil.

Un témoin marquant de la visualisation de ce squelette de pierre se trouve dans les vestiges de l'abbatiale d'Ourscamp, près de Compiègne, mise en vente à la Révolution française, et dont le démolisseur, marchand de matériaux, a déposé les voûtains en laissant en place les piliers et les arcs qui subsistent seuls depuis deux siècles (fig. 9).

A l'opposé, et ceci est plus surprenant de prime abord, des édifices situés dans la zone du front de la Grande Guerre ont vu des voûtains tenir en place, alors que les arcs supposés porteurs avaient été détruits par des tirs d'artillerie, ce qui mettait bien sûr en doute leur rôle réellement porteur.

Dans deux articles, parus en 1928 et 1934, V. SABOURET, ingénieur des Ponts et Chaussées, montre que la nature des arcs de la voûte gothique est décorative et non porteuse. Leur rôle structural serait ainsi limité, comme le suppose J. FITCHEN, à la seule phase de chantier pendant laquelle ils servent de support aux coffrages pour la construction des voûtains.

SABOURET fait ainsi apparaître, notion fondamentale pour le restaurateur d'aujourd'hui, qu'il est logique que la voûte se déconnecte des arcs formerets: c'est ce qu'on appelle depuis lors "les fissures de Sabouret".

Cette constatation, qui pourrait paraître accessoire, est au contraire primordiale, car c'est la mise en évidence du fait que l'état normal d'une voûte est d'être fissurée, et qu'une fissuration qui ne s'avère pas évolutive ne doit pas d'office être considérée comme pathologique.

A la même époque, dans son mémoire déjà cité de 1934, "Viollet-le-Duc et le rationalisme médiéval", l'architecte Pol ABRAHAM développe aussi une étude qui fait progresser les connaissances; pour l'explication du fonctionnement d'une voûte gothique, il adopte toutefois une "analogie" qui est mal conçue, par ignorance sans doute du concept même d'analogie", et qui conduit à une solution erronée.

Une "analogie" résulte de la constatation que deux phénomènes physiques, totalement étrangers l'un à l'autre, sont régis par des formulations mathématiques similaires, par exemple des équations différentielles de même forme qui s'avèrent difficiles à résoudre: si la solution a été trouvée pour l'un des problèmes, par voie expérimentale éventuellement, les résultats ainsi disponibles sont dès lors directement transposables sans calculs à l'autre problème.

En Résistance des Matériaux, des exemples d'analogie sont ceux de la méthode dite des poids élastiques ou de Mohr, dans laquelle un diagramme fictif de moments fléchissants donne la déformée d'une poutre, et pour les problèmes de torsion, l'analogie bien connue de la membrane due à PRANDL, l'analogie rhéoelectrique et l'analogie hydrodynamique.

Pour trouver le cheminement des efforts dans une voûte gothique, Abraham imagine que le flux de contraintes suit le trajet d'une bille lâchée au point haut de l'extrados de la voûte, et qui roule sur cette surface, entraînée par la pesanteur: elle suit d'abord la ligne de plus grande pente pour rejoindre le creux du dièdre formé par l'arc diagonal et les parois des voûtains qui s'y raccordent; elle chemine ensuite le long de ce caniveau suivant l'arc diagonal pour rejoindre le sommet du pilier qui supporte la voûte.

Ceci n'est évidemment pas une analogie au sens mathématique du terme, car les équations qui régissent les deux phénomènes sont tout à fait différentes: le cheminement supposé des efforts qui convergent vers l'arc diagonal pour suivre ensuite celui-ci jusqu'au support n'est pas correct. Robert MARK montrera un demi-siècle plus tard que les trajectoires de contraintes principales convergent en fait directement à travers les voûtains vers les supports des coins de la voûte, sans passer par les nervures qui n'ont donc effectivement pas le rôle initialement supposé d'ossature.

Après les travaux de Sabouret et d'Abraham, la compréhension du gothique marque un temps d'arrêt jusqu'à la fin des années soixante du 20^e siècle.

Au début de la seconde moitié de ce siècle se développe, pour les ossatures métalliques, le calcul en plasticité qui s'étend bientôt au béton armé; par la Théorie de l'Analyse Limite, on peut cerner la charge ultime d'effondrement de la construction grâce à deux théorèmes qui en donnent l'un, une borne supérieure et l'autre, une borne inférieure. Cette approche est très en vogue

au début des années soixante, et ma propre thèse de doctorat y est d'ailleurs consacrée.

Jacques HEYMAN, professeur à Cambridge, est un spécialiste renommé de l'analyse limite, et dans un article fondamental paru en 1966, intitulé "The Stone Skeleton", il montre que cette approche peut aussi s'appliquer aux ouvrages en maçonnerie, ce qui avait de quoi surprendre, puisque l'analyse limite était basée sur la formation de rotules plastiques rendues possibles par la ductilité du métal, dont le comportement "fragile", c'est-à-dire cassant, des matériaux pierreux est bien éloigné. Heyman retrouve ainsi certaines idées déjà exprimées dans le mémoire de Coulomb en 1773. Le même auteur publiera en 1995, sous le même titre "The Stone Skeleton", un livre de synthèse qui reprend une majorité de ses travaux sur le sujet.

On retrouve ainsi l'idée qu'une voûte peut représenter une infinité de lignes de poussée possibles parmi lesquelles se trouve la solution de l'Elasticité, qu'il apparaît illusoire de vouloir cerner de trop près, tant elle est sensible aux modifications des conditions aux limites comme un mouvement des appuis.

Ainsi, les travaux de Jacques Heyman constituent-ils un apport substantiel à la compréhension des structures gothiques.

Il y a une quarantaine d'années, la capacité des ordinateurs est encore insuffisante pour permettre l'usage de logiciels de calcul de structures par une approche du type de la méthode des éléments finis qui remplace l'objet réel par un modèle numérique constitué d'un assemblage d'un très grand nombre de petits blocs connectés par des noeuds, et dont l'étude peut requérir la résolution d'un système comportant plusieurs centaines de milliers d'équations. Pour des constructions qui ne peuvent se réduire à un ensemble de pièces de forme géométrique simple auxquelles peut s'appliquer une solution approchée de Résistance des Matériaux, la seule issue est alors à cette époque de recourir à une approche expérimentale, par des essais sur modèles en laboratoire par exemple, en attendant le progrès de l'outil informatique qui arrivera vite.

Connue dans son principe depuis longtemps, rendue possible pratiquement par l'apparition des premières résines synthétiques et encore largement utilisée il y a 40 ans, la photoélasticité est une technique de laboratoire qui exploite la relation entre l'état de contrainte et la modification du

comportement optique, la biréfringence accidentelle, de certaines résines transparentes (araldite, polyméthylméthacrilate,...).

Dans un modèle observé en lumière polarisée, les contraintes se manifestent sous forme de franges colorées que l'on peut interpréter pour en déduire, par des lois de similitude, celles qui se produiront dans la structure réelle.

C'est la méthode que nous utilisons à l'Université Libre de Bruxelles dans les années soixante pour étudier des problèmes particuliers de grands édifices de prestige projetés chez nous.

A la même époque aux Etats-Unis, Robert MARK, professeur à Princeton, étudie aussi des constructions d'architecture moderne par la même technique. Il va avoir l'idée d'appliquer cette approche de laboratoire aux grands édifices gothiques. A côté de publications multiples, son ouvrage "Experiments in gothic structures" paru en 1982 va avoir un retentissement remarquable.

Il faut dire que les images superbes des franges colorées des modèles photoélastiques, qu'il s'agisse de structures gothiques ou de grands édifices modernes construits à Bruxelles, accrochent le regard le moins expert, comme j'ai pu moi-même le constater dans mon expérience d'enseignant et de conférencier, et qu'elles donnent l'impression de pouvoir enfin comprendre des phénomènes particulièrement complexes.

R. MARK va ainsi analyser, avec des modèles à deux dimensions d'abord, qui constituent une première approximation, des édifices marquants, comme les cathédrales de Bourges, Chartres, Palma de Majorque, Beauvais, Notre-Dame de Paris,... La crédibilité des résultats est confortée par la conformité des prédictions du laboratoire aux désordres constatés sur place. (fig. 10).

Ainsi, R. MARK va-t-il proposer une nouvelle analyse de l'effondrement du chœur de Beauvais,- ce ne sera pas la dernière-, justifier la construction des arcs-boutants supérieurs de Chartres, montrer que le passage de la voûte sexpartite à la voûte quadripartite au tournant des années 1200 n'est pas l'effet d'une mode imaginée par les historiens de l'art mais une nécessité technique.

Il franchit le pas vers l'analyse par modèles photoélastiques tridimensionnels dont nous savons par expérience que l'étude est lourde et délicate, pour montrer que, dans une voûte sur croisée d'ogives, les trajectoires de

contraintes principales convergent directement à travers les voûtains vers les supports, sans passer par les arcs diagonaux: il confirme ainsi de manière scientifique des idées déjà exprimées mais non ou erronément démontrées par Sabouret et Abraham: dans la voûte gothique, les arcs renforcés de pierre ont une vocation esthétique, peut-être constructive au moment du chantier pour soutenir le coffrage des voûtains, mais certainement pas structurelle.

Ainsi, l'idée du squelette de pierre comme ossature porteuse, qui semble l'essence même de la voûte gothique, est bien à rejeter.

C'est un point de vue admis depuis si longtemps qui se trouve ébranlé, et au-delà d'une question d'histoire des techniques, les conclusions à en tirer sont vraiment importantes pour l'ingénieur responsable d'un édifice à restaurer.

On remarquera toutefois que les études photoélastiques emploient des modèles en résines de comportement élastique linéaire, et supposent donc aussi des structures réelles élastiques linéaires et résistantes en traction, ce qui n'est bien sûr pas le cas.

En quelque sorte, la confirmation de la validité des résultats ne peut venir qu'a posteriori, quand les zones de traction qui fissureraient le matériau sont inexistantes ou suffisamment restreintes. Ce sera souvent le cas, puisque les édifices étudiés sont ceux qui subsistent, et qui étaient dès lors effectivement conçus avec peu ou pas de contraintes de traction qui auraient pu les mettre en péril.

Des confirmations de la validité de la modélisation apparaissent dans le cas d'édifices tels que les cathédrales de Chartres et Bourges où l'examen in situ montre que des pierres ont dû être remplacées aux endroits où le modèle de laboratoire prédisait justement des tractions susceptibles de détériorer les joints de mortier.

Bien sûr, le souhait de pouvoir prendre en compte dans les modèles de laboratoire le comportement non linéaire dû à l'absence ou à la faible valeur de la résistance en traction des joints de mortier a fait l'objet d'attention et continue de le faire avec les modèles numériques d'aujourd'hui.

A ce propos, les tentatives que nous avons nous-mêmes menées à l'Université Libre de Bruxelles, pour réaliser des modèles photoélastiques fissurants en laboratoire, soit par sciage progressif provoquant de manière

itérative la progression des fissures, soit par emploi de résines sous-polymérisées qui résistent mal en traction, se sont avérées positives mais limitées à des modèles relativement simples, et donc impraticables pour représenter la situation d'un édifice gothique.

A partir des années 80 du 20^e siècle, toutes les approches un tant soit peu sophistiquées dans le domaine qui nous concerne sont basées sur une modélisation numérique, de type éléments finis, avec tous les risques que présente l'usage de logiciels commerciaux entre des mains non expertes, car tous les résultats doivent être considérés avec circonspection, et il est beaucoup trop tentant de faire d'office confiance à l'ordinateur, sans compter que le résultat obtenu est souvent sensible à la manière de discrétiser la structure, c'est-à-dire de la diviser en éléments pour constituer le modèle numérique.

Au départ, les premiers logiciels d'éléments finis sont conçus par et pour des utilisateurs dans les domaines de l'aéronautique, du nucléaire, de l'industrie automobile,... qui se satisfont parfaitement, dans les débuts, de la loi d'élasticité linéaire pour représenter le comportement des matériaux qu'ils utilisent.

Dans les premières applications qui seront faites à des édifices gothiques, et R. MARK lui-même en est l'un des précurseurs, on utilise les logiciels disponibles, avec ce que cela comporte comme insuffisances, qui sont en fait identiques à celles que nous avons déjà identifiées pour les modèles photoélastiques de laboratoire, puisqu'elles portent sur le même non-respect du comportement réel, non linéaire et fissurant en traction des maçonneries, et que le résultat ne peut être validé qu'a posteriori et à la condition que les zones de traction soient absentes ou d'étendue très restreinte.

Mais la facilité d'emploi de l'approche numérique est évidente: très vite au cours des années, le coût des calculs s'abaisse avec l'accroissement de puissance des ordinateurs, et l'étude de l'incidence d'un paramètre ou d'une situation différente, présence ou absence d'un renforcement local, d'un arc-boutant supérieur ou d'un pinacle, par exemple, ne requiert que l'introduction de quelques instructions ou la modification de quelques données, par rapport à l'usinage long et coûteux d'un nouveau modèle de laboratoire qu'il fallait préparer manuellement, puisqu'il s'agit de pièces uniques. En outre, l'approche tridimensionnelle restée rare sur modèle de laboratoire, tant elle est ardue, peut ici se développer sans entrave.

Il n'empêche que la procédure reste délicate, car des représentations graphiques comme l'image de la structure déformée par les sollicitations, dont le logiciel donne un dessin où les déplacements sont artificiellement très amplifiés pour en faciliter la lecture, donne vite l'impression que tout un chacun peut comprendre d'emblée ce qui se passe, alors que l'interprétation requiert souvent une longue expérience patiemment acquise. Disons clairement que cette approche informatique, entre des mains inexpérimentées, est un outil dangereux.

Pourquoi dangereux? Pour le risque de mal comprendre une réalisation médiévale? Il y a plus, et le panorama que nous allons dresser ci-après de ce qui se passe dans le dernier quart du 20^e siècle montre que bien des études n'ont plus pour finalité de comprendre, de connaître, mais d'exécuter une restauration commandée dans les limites d'un budget, de durée et d'exigence de rentabilité d'un chantier qu'impose un cahier des charges, conditions qui incitent à l'interprétation hâtive d'une analyse numérique, parfois réalisée plus pour obtenir de belles images à exposer que pour l'information réellement attendue.

Comme nous l'avons vu, les logiciels classiques d'éléments finis se contentent d'une loi d'élasticité linéaire pour le matériau mis en oeuvre. Pourquoi ne pas chercher à modéliser le comportement fissurant sous traction qui caractérise les maçonneries? C'est ce qui a été fait pour l'étude de la grande tour de l'hôtel de ville de Bruxelles, pour laquelle un processus itératif a été mis en place: lors d'un premier passage, qui est le calcul élastique linéaire, le programme détecte les zones où il y a traction et va les fissurer; un deuxième calcul élastique du modèle ainsi fissuré fait apparaître une extension des zones de traction, qui sont à leur tour fissurées, et ainsi de suite jusqu'à ce que, au bout de cinq itérations par exemple, on constate que les zones tendues sont stabilisées et ne progressent plus. On a ainsi réalisé numériquement la fissuration du modèle suivant une progression identique à celle de la fissuration physique qui s'établirait de proche en proche.

Si la procédure qui vient immédiatement à l'esprit pour "fissurer" un modèle numérique est de déconnecter les noeuds dans les zones de traction pour fabriquer réellement les fissures, cette procédure est lourde numériquement puisqu'elle change le modèle et oblige à recalculer sa matrice: nous avons dès lors préféré rendre inefficaces les zones tendues en les affectant d'un module d'élasticité presque nul.

La procédure reste lourde et d'un coût rarement abordable: ainsi pour le cas envisagé de la grande tour de l'hôtel de ville de Bruxelles, un cas de charge avec cinq itérations demandait, en 1993, une semaine d'occupation, jour et nuit, du seul super-ordinateur disponible en Belgique. Et encore la modélisation reste-t-elle imparfaite car elle ne tient pas compte de ce qui a pu se produire au cours des phases successives du chantier.

Il faudra donc attendre encore quelques années pour que les progrès du matériel informatique rendent praticables de telles procédures à des coûts abordables, mais l'évolution est rapide.

En attendant, la modélisation numérique en situation élastique linéaire peut continuer à rendre d'appréciables services, et dans les cas où il faut résoudre rapidement un problème pratique, une formule intermédiaire consiste à introduire dès le départ dans le modèle les fissures principales qui ont été observées dans l'édifice: c'est une option pratique permettant d'intégrer leur présence dans les prévisions d'efficacité des interventions envisagées, un calcul d'opportunité qui ne pourra évidemment pas expliquer pourquoi les fissures considérées se sont produites.

C'est cette option que nous avons choisie fin 2001 pour l'étude des mesures de sauvegarde de la Tour Brunin dans le transept de la cathédrale de Tournai.

Notre propos semble ainsi progressivement dévier de la recherche fondamentale ayant pour but de comprendre une pensée technique, vers la recherche appliquée destinée à soutenir des décisions urgentes attendues de l'ingénieur dans le cadre concret de restaurations qui peuvent tenir du sauvetage.

Un panorama de la situation de ces vingt dernières années s'impose donc avant de terminer par les perspectives d'avenir.

4.6. La fin du 20e siècle.

Nous en arrivons au dernier quart du 20e siècle dont une vision d'ensemble est certes difficile par manque de recul en la matière.

Une évolution manifeste des pensées s'est produite en raison de l'attitude nouvelle du public vis-à-vis de la conservation du patrimoine, comme en témoigne le succès remporté par les Journées du Patrimoine.

La Charte de Venise, rédigée en 1964 lors du 2e congrès international des architectes et techniciens des monuments historiques, et la création en 1965 de l'ICOMOS, (International Council on Monuments and Sites) organe conseiller de l'UNESCO, vont provoquer l'officialisation d'une dynamique nouvelle dans la conservation du patrimoine, dans lequel s'inscrivent bien sûr nos édifices gothiques, et souligner l'importance d'une étude préalable à toute intervention.

Cette fois, les ingénieurs sont explicitement impliqués au même titre que les autres intervenants dans la conservation, et vont se trouver regroupés dans le cadre de congrès qui leur sont propres, ainsi qu'au sein de comités scientifiques dévolus aux structures historiques par d'importantes sociétés telles que l'IABSE (International Society of Bridges and Structural Engineering), l'IASS (International Society for Shell and Spatial Structures) et le Comité Scientifique International des Structures (ISCARSAH) de l'ICOMOS.

Un créneau nouveau d'activité de l'ingénieur s'est manifestement ouvert depuis 20 ans.

Et les congrès, colloques et séminaires spécialisés se multiplient, hélas avec des chevauchements sans concertation des centres d'intérêt, ce qui suscite un problème nouveau, celui de la surcharge et il n'est plus possible à tout un chacun de participer à toutes les manifestations qui l'intéressent.

Si des études permettent de mieux comprendre les intentions des bâtisseurs médiévaux, les questions de conservation et de restauration, qui relèvent davantage des sciences appliquées, passent souvent au premier plan, et la recherche fondamentale en la matière reste à poursuivre.

Dans la diffusion des connaissances acquises concernant le domaine examiné ici, la situation est aujourd'hui confuse.

Bien des observations intéressantes – nous avons pu le constater – restent non publiées et seront donc perdues parce que l'ingénieur trop occupé considère sa mission terminée dès l'achèvement du chantier de restauration.

Dans le même temps, de trop nombreux articles paraissent çà et là avec de multiples redites, rassemblés dans des actes de congrès, pour autant que ces actes soient effectivement publiés, alors qu'il arrive qu'ils restent à l'état

d'intention dans le chef des organisateurs ou que leur édition soit à diffusion purement locale, inaccessible, voire ignorée de ceux qui oeuvrent dans le même domaine.

La limite est difficile à établir entre ce qui est compréhension des considérations techniques du bâtisseur médiéval, et relève de l'histoire des sciences et des techniques, et ce qui est projet et procédés de conservation ou de restauration, la première étant souvent une condition du choix opportun des seconds.

Nombre de textes publiés sur le sujet qui nous concerne ici sont dès lors égarés dans des revues techniques d'ingénieurs, certes souvent de niveau international, mais où l'on ne pense pas systématiquement à aller chercher ce genre d'information.

Faut-il s'étonner d'une pareille situation? Je ne le pense pas, et je crois qu'il faut au contraire s'en réjouir comme témoignage d'un intérêt pas seulement accru mais nouveau pour la question. En effet cette situation désordonnée n'a sans doute rien d'exceptionnel et se retrouve aujourd'hui dans les domaines de la recherche qui font appel à une collaboration interdisciplinaire. Ainsi, l'explosion brutale, il y a trente ans, de l'intérêt pour la biomécanique, discipline qui applique à l'être vivant les modes de pensée et les techniques de l'ingénieur, a-t-elle aussi conduit à un foisonnement anarchique de l'information qui intéressait aussi bien le médecin que l'ingénieur.

Ainsi arrive le moment de réaliser des regroupements critiques d'informations et des travaux de synthèse, dont la récente thèse de doctorat de P. SMARS (2000) est un bon exemple.

5. Conclusion

Quel est l'état actuel de nos connaissances, et que faut-il encore comprendre du point de vue de la pensée technique dans ces merveilleux édifices du gothique?

Nous croyons en avoir saisi les principes généraux, et nous savons aujourd'hui qu'il s'agit d'un système constructif remarquable qui s'adapte, par son mortier longtemps plastique et sa structure déformable, tant à des erreurs

constructives mineures qu'à certains mouvements de terrain, et qui est une bonne réponse aux besoins économiques et sociaux de son époque.

La recherche n'est pas pour autant terminée, et les nombreuses hésitations dont la compréhension de ces édifices a témoigné au cours de l'histoire, de même que le caractère bien imparfait et largement insuffisant de nos modélisations numériques, nous incitent à beaucoup de modestie. Il serait présomptueux de penser que dans une question qui s'avère aussi complexe, tant du point de vue de la technique que de celui de l'histoire, dont bien des archives restent encore à explorer scientifiquement, ce que nous croyons établi aujourd'hui ne sera pas remis en cause demain.

Un exemple frappant en est la multiplication, depuis quelques années, des idées successives émises pour tenter d'expliquer le célèbre effondrement du chœur de la cathédrale de Beauvais en 1284.

Comme dans un doctorat où les thèses annexes sont des propositions de recherche pour l'avenir, nous suggérons ici l'une ou l'autre piste à suivre.

Le domaine de la modélisation numérique est certes largement ouvert, et il devrait être prometteur, avec sans doute des tâtonnements inévitables, dont certains sont dus à l'inexpérience de chantier du numéricien.

Une autre piste de recherche, qui devrait motiver plus en commun les historiens de l'art et les ingénieurs, est celle de la présence du métal dans les constructions gothiques.

Laissant bien sûr de côté les renforcements métalliques qui y ont été introduits au cours des siècles à titre de véritables prothèses, nous songeons au métal d'origine, comme celui qui est connu depuis longtemps à la Sainte-Chapelle à Paris.

Si des pièces métalliques à vocation structurale sont visibles et connues ici et là dans nos grands édifices gothiques, c'est surtout à l'occasion de déposes de pierres lors des restaurations récentes qu'on les découvre en quantités impressionnantes noyées dans la maçonnerie.

Et c'est alors que nos analyses numériques d'aujourd'hui en constatent le bien-fondé, car leur présence, conçue intuitivement par les bâtisseurs médiévaux, était bien indispensable à la stabilité de l'édifice.

Songeons par exemple aux tirants métalliques qui relient les contreforts de la cathédrale de Beauvais, et dont le rôle amortisseur qui réduit les fréquences propres d'oscillation de ces hautes lames de pierres vient d'être découvert; songeons aussi à la quantité de métal mis au jour dans la grande tour gothique de l'hôtel de ville de Bruxelles, avec la hampe de sa girouette qui descend à 8 m dans la maçonnerie, constituant une véritable pierre armée, ainsi qu'à ses arcs-boutants armés eux aussi, alors que la simulation numérique montre que le vent peut effectivement les mettre en traction.

Le métal dans l'architecture gothique, voici donc parmi tant d'autres, un thème de recherche pour les temps à venir et l'on pourrait avancer encore bien des propositions de questions qui restent à investiguer.

Loin d'être un sujet épuisé, la compréhension de la pensée technique des bâtisseurs médiévaux reste bien un thème d'étude largement ouvert pour le 21^e siècle.

BIBLIOGRAPHIE

ABRAHAM P., Viollet-le-Duc et le rationalisme médiéval. Vincent, Fréal et Cie., Paris, 1934.

ADAM J.-P., La construction romaine, Picard, Paris, 1984.

BARNES C. F., Le "problème" Villard de Honnecourt. in Les bâtisseurs de cathédrales gothiques. Musées de la Ville de Strasbourg 1989, pp. 209-223.

BECHMANN R., L'Architecture gothique: une expression des conditions du milieu. Pour la Science, édition française de Scientific American, 1978, n°4, pp. 94-105.

BECHMANN R., Les racines des cathédrales. Payot, Paris. 1984.

BECHMANN R., Villard de Honnecourt. La pensée technique au XIII^e siècle et sa communication. Picard, Paris, 1991.

BECHMANN R., Le génie des bâtisseurs. Historia n°9801 "Le secret des cathédrales", 1998, pp. 35-38.

BELIDOR B. F., La science des Ingénieurs. Paris. 1729.

BOIRET Y., La Cathédrale Saint-Pierre de Beauvais - Faiblesses structurelles. In "Stable-Unstable?", Lemaire R. P. et Van Balen K. éd. Leuven University Press, 1988, pp. 299-311.

CHOISY A., Histoire de l'architecture. Paris, 1899, tome premier et tome second, réédition. SERG. Ivry, France, 1976.

CROCI G., The conservation and Structural Restoration of Architectural Heritage. Computational Mechanics Publications, Southampton 1998.

DAMISCH H., Viollet-le-Duc, L'architecture raisonnée. Collection Savoir, Paris, 1978.

DELBECQ J.M., Analyse de la stabilité des ponts en maçonnerie par la théorie du calcul à la rupture. In "Restauration des Ouvrages et des Structures". Presses de l'Ecole Nationale des Ponts et Chaussées, Paris, 1983, pp. 281-328.

ERLANDE-BRANDENBURG A., PERNOUD R., GIMPEL J., BECHMANN R., Carnets de Villard de Honnecourt. Stock, Paris, 1986.

ERLANDE-BRANDENBURG A., "Quand les cathédrales étaient peintes". Découverte Gallimard, Paris, 1993.

ESPION B., ELINCK S., HALLEUX P., Wind Induced Stresses in the Spire of Brussels Town Hall Tower. IABSE Symp. Rome, 1993, pp. 449-456.

FITCHEN J., The Construction of Gothic Cathedrals, a study of Medieval Vault Erection. University of Chicago Press. Chicago-London, 1961.

FITCHEN J., Building Construction Before Mechanization. The MIT Press. Cambridge. Mass., 1986.

GIMPEL J., Les bâtisseurs de cathédrales. Ed. du Seuil, Paris, 1980.

GODART B., TIVERON M., DUVAL D., Modélisation de la cathédrale de Strasbourg à l'aide du code de calcul aux éléments finis CESAR-LCPC.

Etude de l'influence de mouvements d'appuis sur le comportement d'une partie de l'édifice. Bull. Labo. Ponts et Chaussées, 206, nov-déc 1996, pp. 41-61.

GODART B., Influence of Foundation Settlement on the Behaviour of Strasbourg Cathedral, France. Structural Engineering Internat. (Journal of IABSE) 11, 4, nov 2001, pp. 223-227.

HALLEUX P., La voûte gothique: une audace de bâtisseur? Ann. Trav. Publ. Belg. 1989, 6, pp. 429-454.

HALLEUX P., Auscultation des édifices anciens: pourquoi? comment? Europea, Bruxelles 1990, pp. 100-122.

HALLEUX P., Restauration des édifices anciens: de la théorie aux cas concrets. Inst. Urb. ULB, Bruxelles 1990- 16pp.

HALLEUX P., La tour de l'Hôtel de Ville de Bruxelles: philosophie d'une restauration. CNRCC. Bruxelles 1993, 31 pp.

HALLEUX P., Restauration de la Grande tour de l'Hôtel de Ville de Bruxelles. Retombée des études scientifiques d'accompagnement. in ARDIC, Rénovation urbaine et conservation du patrimoine. Bruxelles 1995, 11pp.

HALLEUX P., La déformabilité de la tour de l'Hôtel de Ville de Bruxelles sous les effets climatiques (vent et ensoleillement). 4th Nat. Cong. Theoretical and Applied Mechanics. Leuven 1997, pp. 489-492.

HALLEUX P., L'ingénieur dans la conservation du patrimoine. Nouvelles A. Ir. Br. déc 1999, pp. 6-7.

HALLEUX P., The gothic tower of Brussels town hall: a scientific approach to the problems and choices concerning restoration. in Sustained care of the cultural heritage against pollution, Council of Europe Publishing, Cultural Heritage n°40, Strasbourg 2000, pp. 63-94.

HALLEUX P., Le métal d'origine dans la grande tour gothique de l'hôtel de ville de Bruxelles. Bull. ICOMOS Wallonie-Bruxelles, dossier 2001, pp. 2-9.

HALLEUX P., Le titane en grosses barres d'armature dans la tour de l'hôtel de ville de Bruxelles: une première mondiale en restauration. Bull. ICOMOS Wallonie-Bruxelles, dossier 2001, pp. 10-12.

HAMILTON S. B., The Historical Development of Structural Theory. Proc. ICE. I (III), 1952. pp. 374-402 - discussion pp. 402-418.

HEYMAN J., The Stone Skeleton. Int. J. Solids Structures, 1966. Vol. 2, pp. 249-279.

HEYMAN J., On Shell Solutions for Masonry Domes. Int. J. Solids Structures, 1967. Vol. 3, pp. 227-241.

HEYMAN J., Spires and Fan Vaults. Int. J. Solids Structures. 1967, Vol. 3, pp. 243-257.

HEYMAN J., Coulomb's memoir on statics. Cambridge University Press, 1972.

HEYMAN J., La restauration des ouvrages de maçonnerie: principes structurels. In "Restauration des Ouvrages et des Structures" Presses de l'Ecole Nationale des Ponts et Chaussées, Paris. 1983, pp. 329-334.

HEYMAN J., The crossing piers of the French Panthéon. The Structural Engineer. 1985. Vol. 63A. n° 8, pp. 230-234.

HEYMAN J., HEMINGBROUGH Spire. Proc. of the 2nd Int. Conf. Structural Repair and Maintenance of Historical Buildings, ed. by C.A. Brebbia et al., Vol. 1, pp. 13-22, Computational Mechanics Publications, 1991.

HEYMAN J., The Stone Skeleton. Cambridge University Press. 1995.

HOFSTATTER H. H., Gothique. Série Architecture universelle. Fribourg, 1964.

ICHER F., Les ouvriers des cathédrales. Ed. de la Martinière 1998.

JOWAY H. F., Le comportement structural d'édifices gothiques de la région mosane. Thèse de doctorat ULg 1976.

JOWAY H. F., Etude de la structure d'édifices gothiques. Annales de l'ITBTP, 1978. n°363, pp. 53-70.

JOWAY H. F., Les grands chantiers urbains et les constructions anciennes. Ann. Trav. Publ. Belg., 1978. 4. pp. 328-340.

KERISEL J., Old structures in Relation to Soil Conditions. 15th Rankine Lecture. Géotechnique, London, 1975, 25, n°3, pp. 433-483.

KERISEL J., Les chantiers et monuments du passé: leçons pour l'ingénieur et l'architecte. Annales de l'ITBTP, 1982, n°10, pp. 37-80.

KERISEL J., Les restaurations à travers le temps. Un facteur important: le sol. Exemple d'une restauration célèbre: celle du Panthéon français. In "Restauration des Ouvrages et des Structures" Presses de l'Ecole Nationale des Ponts et Chaussées, Paris. 1983, pp. 9-24.

KERISEL J., Down the earth. A.A. Balkema, Rotterdam, Boston, 1987.

KIMPEL D., SUCKALE R., L'architecture gothique en France, 1130-1270, Flammarion, 1990 (traduction de l'édition originale, Hirmer Verlag, Munich, 1985).

LASSUS J. B. A., Album de Villard de Honnecourt. Imprimerie Impériale, Paris 1858.

MACAULAY D., "Naissance d'une cathédrale" Deux Coqs d'Or, Paris, 1981.

MARK R., ABEL J. F., O'NEILL K., Photoelastic and Finite-element Analysis of a Quadripartite Vault. Experimental Mechanics. 1973. Vol. 13, n° 8. pp. 322-329 et Proc. SESA, Vol. 30. n° 2, 1973. pp. 322-329.

MARK R., Modeling Architectural Structure: Experimental Mechanics in Historiography and Criticism, (the 1982 William M. Murray Lecture). Experimental Mechanics, 1982. Vol. 22. n°10. pp. 361-371.

MARK R., Experiments in gothic structures. The MIT Press. Cambridge, Massachusetts, London, England, 1982.

MARK R., CLARK W., Le Gothique: une architecture empirique. Pour la Science, édition française de Scientific American. 1985, n°87, pp.72-79.

MARK R., Structural archeology: photoelastic and finite-element modeling of historic architecture. In "Stable-Unstable?" Lemaire R. P. et Van Balen K., éd. Leuven University Press. 1988, pp. 79-91.

MARK R., Light, Wind and Structure. MIT Press. 1990.

MASSONNET, C., SAVE M., Calcul Plastique des Constructions, Vol. 1, Ossatures planes. CBLIA. Bruxelles. 1961.

MERY E., Mémoire sur l'équilibre des voûtes en berceau. Ann. Ponts et Chaussées, Paris 1840, 1^e série, 1^{er} semestre, pp. 50-70.

PADUART, A., Introduction au calcul et à l'exécution des voiles minces en béton armé. Eyrolles, Paris. 1961.

PEYRAMAURE M., Quand Paris bâtissait Notre-Dame. in Géo, 151 sept. 1991, pp. 88-94.

RECHT R., (sous la direction de). Les bâtisseurs des cathédrales gothiques. Musées de la Ville de Strasbourg, 1989.

RECHT R., Le Dessin d'architecture. Adam Biro, Paris, 1995.

SABOURET V., Les voûtes d'arête nervurées. Rôle simplement décoratif des nervures. Le Génie Civil, 1928, tome 92, n° 9, pp. 205-209.

SABOURET. V . L'évolution de la voûte romane du milieu du XI^e siècle au début du XII^e siècle. Le Génie Civil. 1934. tome 104, n°11, pp. 240-243.

SAVE M., La théorie des charges limites et son application aux maçonneries. In
" Restauration des Ouvrages et des Structures" Presses de l'Ecole Nationale des Ponts et Chaussées, Paris, 1983, pp. 249-280.

SAVE M., La théorie des charges limites et son application aux maçonneries. In " Stable-Unstable?", Lemaire, R.P. et Van Balen, K. éd., Leuven University Press, 1988, pp. 231-248.

SMARS P., Etudes sur la stabilité des arcs et des voûtes. Confrontation des méthodes de l'analyse limite aux voûtes gothiques du Brabant. Thèse de doctorat KUL, Leuven 2000.

TIMOSHENKO. S. P., History of Strength of Materials. Mc Graw Hill, New-York, 1953.

VAN BALEN K., VAN GEMERT D., Modelling lime mortar carbonation. Materials and Structures, 1994, 27, pp. 393-398.

VIOLLET-LE-DUC E., Dictionnaire raisonné de l'architecture française du XIe au XVIe siècle. 10 volumes, Paris, 1854-68.

WENZLER C., Un défi médiéval. Les cathédrales gothiques. Ed. Ouest-France, Rennes 2000.

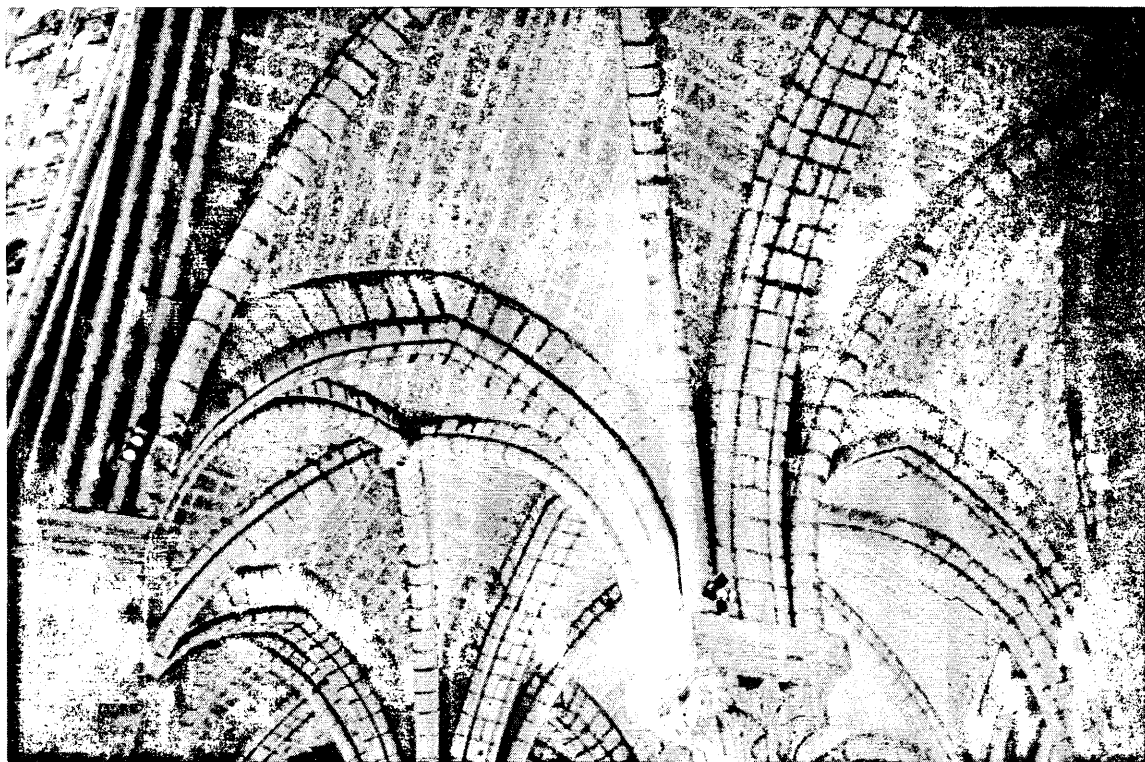


Fig. 1. Le premier voûtement gothique sur croisées d'ogives apparaît vers 1140 et subsiste dans le déambulatoire à Saint-Denis.

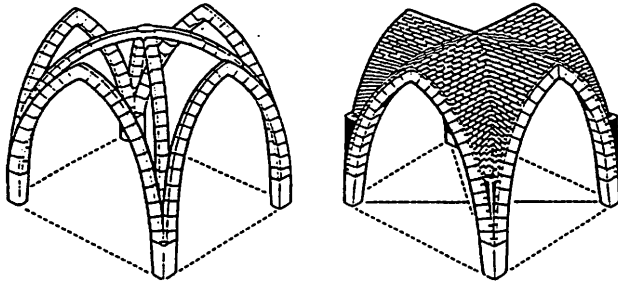


Fig. 2 Principe de la voûte sur croisée d'ogives dont les arcs diagonaux sont des demi-cercles (schéma d'après R. Bechmann).

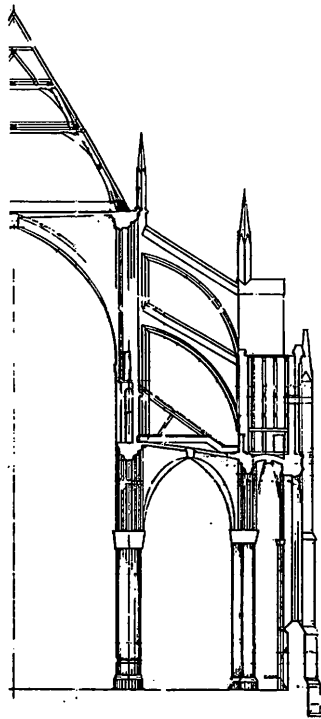


Fig. 3 Coupe d'un édifice gothique classique: les arcs-boutants supérieurs transmettent aux contreforts l'action du vent sur la toiture et les arcs-boutants inférieurs, la poussée de la voûte (cathédrale St-Michel à Bruxelles).

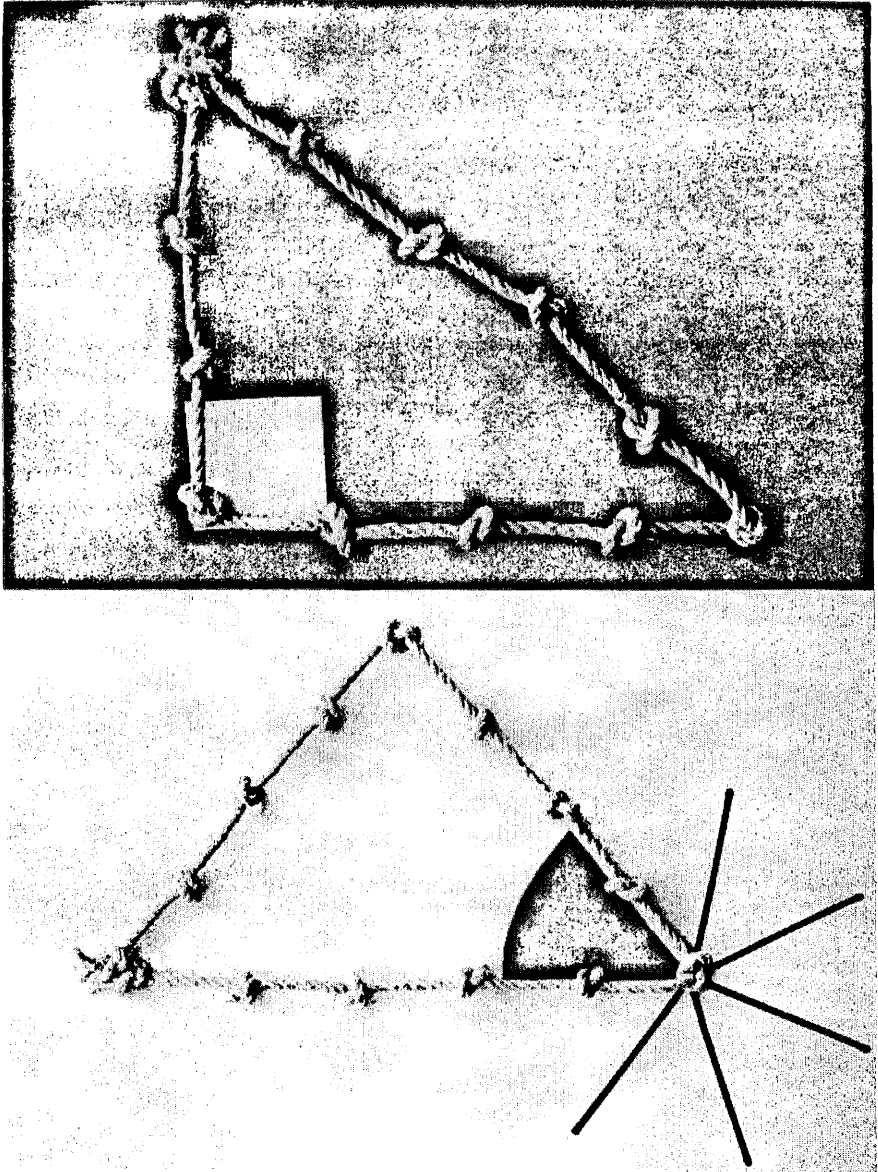


Fig. 4 La corde à noeuds permet de construire sur le terrain un angle droit (triangle 3-4-5, théorème de Pythagore) et l'angle de l'étoile à sept branches (triangle 4-4-5).

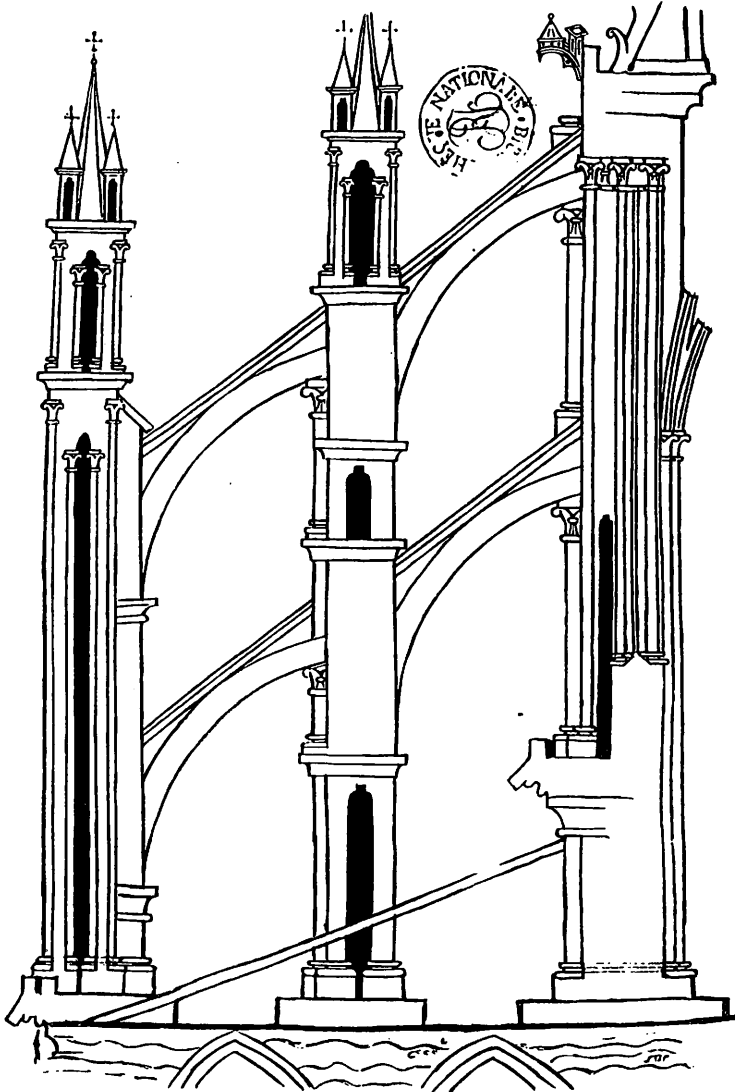


Fig. 5 Dans les carnets de Villard de Honnecourt, la planche représentant en coupe un projet de la cathédrale de Reims situe trop bas l'arc-boutant inférieur qui doit reprendre la poussée de la voûte.

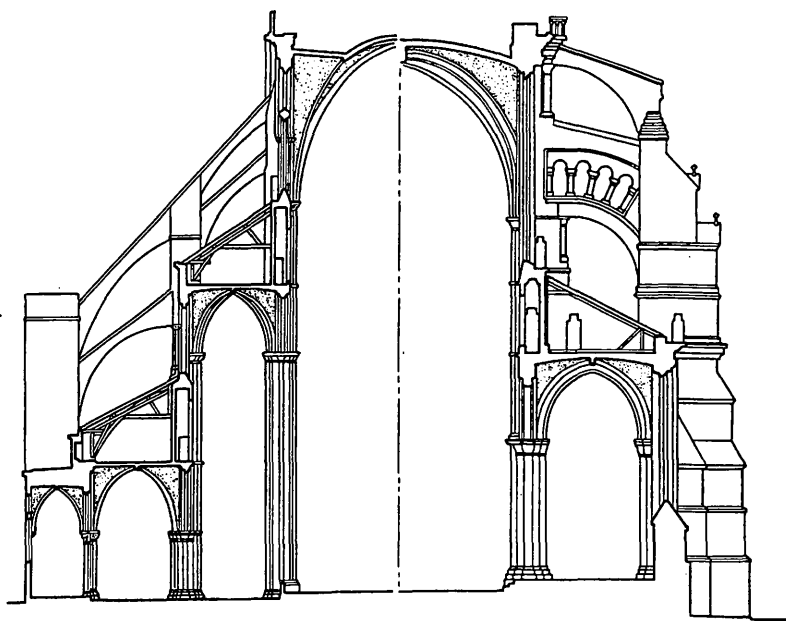


Fig. 6 Mise en regard, à la même échelle, des coupes des cathédrales de Chartres, à droite, et de Bourges, à gauche (d'après R. MARK)

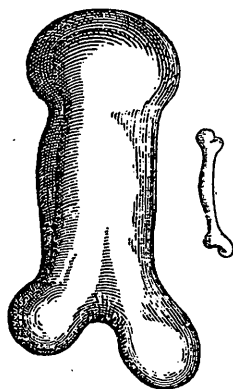


Fig. 7 Application par GALILEE (1638) de la notion de loi de similitude à deux os de tailles différentes: l'augmentation d'échelle doit conduire à une forme monstrueuse.

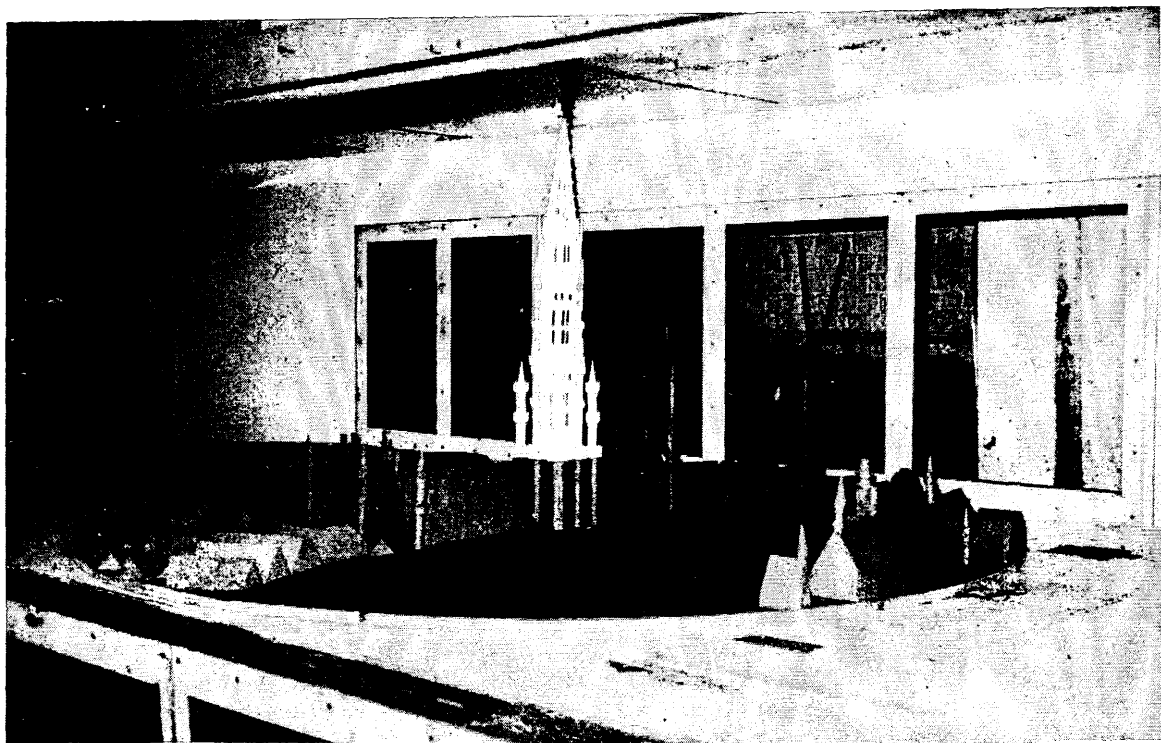


Fig. 8 Essai sur modèle en soufflerie: maquette de la grande tour gothique de l'Hôtel de Ville de Bruxelles.

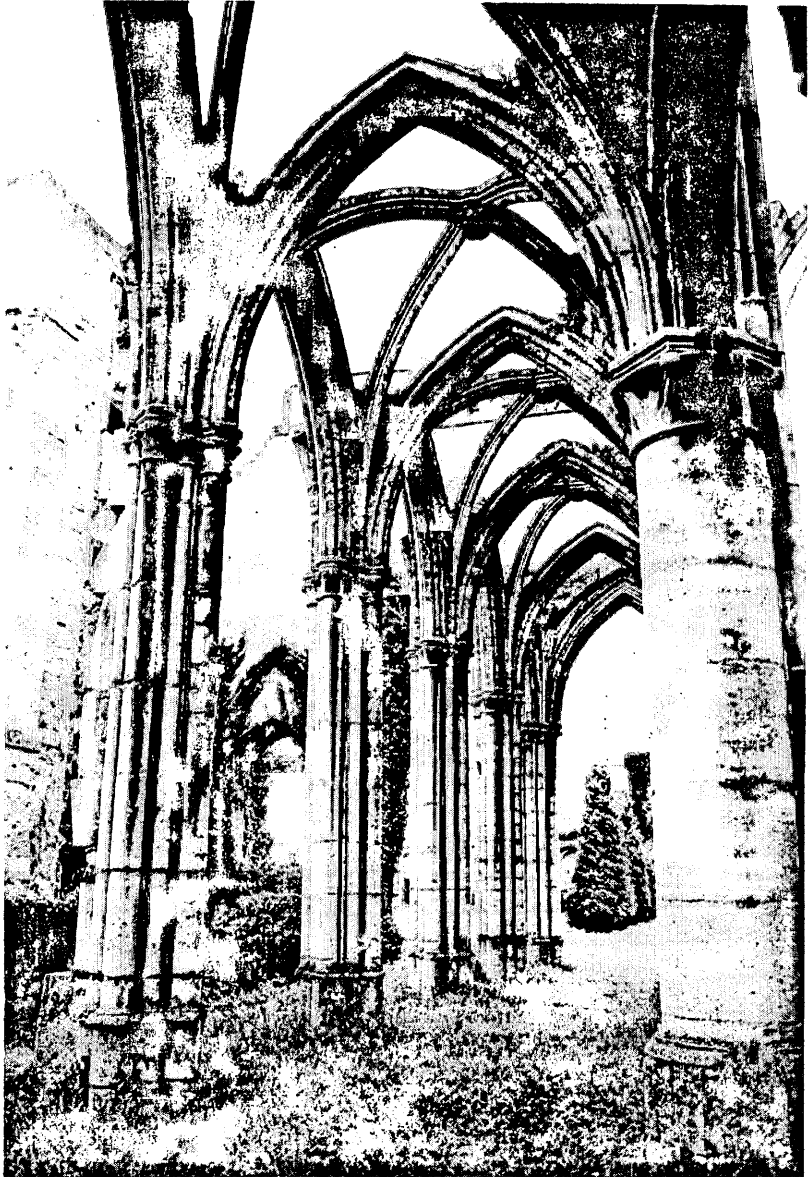


Fig. 9 Les arcs de l'abbatiale d'Ourscamp ont subsisté après la démolition qui a suivi la Révolution française.

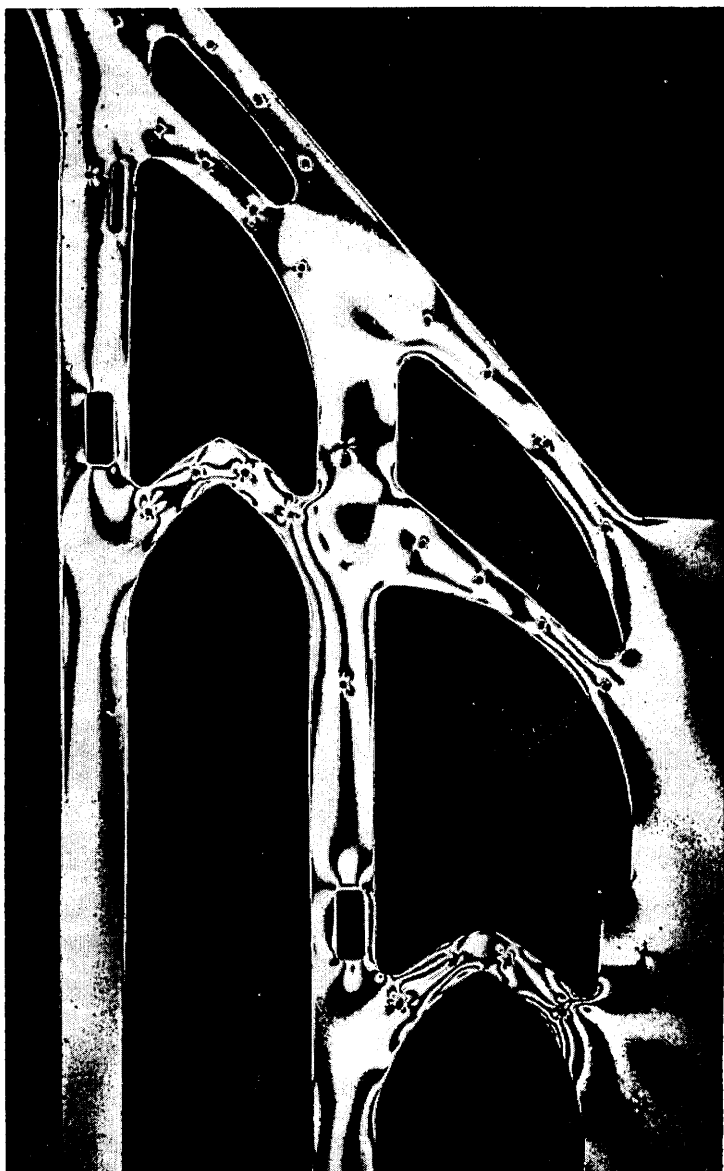


Fig.10 Etude du voûtement de la cathédrale de Bourges par modèle photoélastique (d'après R. MARK)

114

114

114

114

114

114

114

114

114

114

114

114

114

114

114

114

114

114

114

114

114

114

114

114

114

114

LAUDATIO ALAIN WIJFFELS

Dirk Heirbaut

The Sarton-medal is awarded to a scholar who has contributed in an outstanding way to the development of the history of science. Of necessity, this person has to be versatile. At least, he should be familiar with both history and that particular science of which he has become the historian. If this is true, it is beyond any doubt that prof. Wijffels more than qualifies. He was born in 1954 from a Belgian father and a Dutch mother, lives in France and is currently working in Belgium and the Netherlands. His studies at the university almost predestined him to receive the Sarton-medal. He started by obtaining the degrees of candidate in law and in philosophy in Antwerp, continued in Louvain with the degrees of licentiate in law and in criminology and also with a baccalaureate in canon law. Thereafter, he went on to become a licentiate of canon law in Louvain-La-Neuve, where he also found time to add a post-graduate degree in medieval history to his other diplomas, followed by another post-graduate degree, this time in Roman law after studies at, again another university, Paris II. All this was only meant as the preparation for a doctoral thesis in law, defended at Amsterdam University in 1985. As if this were not enough, there is also a 1994 Cambridge Ph.D. In short, Alain Wijffels has had a most uncommon career as a student, studying in Belgium, the Netherlands, France and England. His professional career has, up to now, been just as diverse with research and teaching in Antwerp, Leyden, Amsterdam, Cambridge, Louvain-la-Neuve, Paris and Brussels. Because Alain Wijffels has been very busy, it is impossible to give a detailed review of all his activities in this short notice. Though it does no justice to him, here I can only state that he has been teaching mostly about legal history and comparative law and a host of other, sometimes very diverse, subjects, e.g. English tort law.

Because of his *Wanderlust* as a student and as a professor, Alain Wijffels now stands out in a law faculty, as law by definition is national and both students and professors do not travel that much. However, once, before the era of the great codifications, things were different. Law was anything but national, being either local or European. The former was customary law, the legal system of ordinary people, whereas the latter, the *ius commune*, based on Roman law, was studied at the universities and, thus, was the preserve of the law professors.

As all law faculties used the same language, Latin, and the same books (the *Corpus Iuris Civilis*, and later the works of Accursius, Bartolus or Voet) students and professors could, and did, easily move from one university to another. Thus, by wandering around European universities Alain Wijffels is not an oddity, but only follows in the footsteps of his predecessors. One can wonder whether his own experiences as a wandering scholar led him to make the study of the *ius commune* his life's work or whether it was the other way round. Whatever the truth may be, Alain Wijffels is clearly one of the very few who study the *ius commune*, the old common law of Europe as a European phenomenon, as a European scholar, and not from a national point of view. The best illustration of this is to be found in his many publications about Alberico Gentili, a sixteenth-century Italian lawyer, who as a protestant had to leave his homeland for England, where he would end his distinguished career as the king of Spain's lawyer. Studying Gentili from an English, Italian or Spanish perspective, reduces him to a marginal figure. However, Wijffels by looking at him with European eyes has awarded him the place that is his due in history, as a scholar who was a bridge between different legal traditions, like Wijffels himself has brought together scholars from different countries by publishing in Italian and English about Gentili (as editor of *Alberico Gentili Consiliatore. Atti del Convegno Quinta Giornata Gentiliana 19 Settembre 1992*, Milan, 1999 p.; and as sole author of *Alberico Gentili and Thomas Crompton. An Encounter between an Academic Jurist and a Forensic Practitioner*, Leyden, 1992, vi + 41 p.). The Gentili research has not been Wijffels' only link with England. It has become the stepping-stone for a greater project, a study into the role and influence of the *ius commune* in England, a country long said to have remained unaffected by this common European law. Alain Wijffels has been so effective in providing arguments to the contrary that even the English cannot longer neglect either the *ius commune* in their nation's legal history, or Alain Wijffels himself, who is the only continental scholar who can pride himself on having been the co-organiser of the British Legal History Conference, the most important congress in this field in the British Isles (the papers were published in: J.A. Bush & A. Wijffels (eds.), *Learning the Law. Teaching and the Transmission of the English Law, 1150-1900*, xxv+417 p.). All this attention to the *ius commune*, university-made law, does not mean that Alain Wijffels has only studied the law of the books, neglecting the real life of the law in practice. He stimulated a lot of research about case law (e.g. his authoritative book: A. Wijffels (ed.), *Case Law in the Making. The Techniques and Methods of Judicial Records and Law Reports*. Vol. 1: *Essays*. Vol. 2: *Documents*, Berlin, 1997, vol. I: 373 p.; vol. II: 485 p.). His own studies in this field have mainly focused on the practices of the highest courts in Europe: Court of Admiralty in

England, *Reichskammergericht* in Germany, *Parlement* of Dijon in France and the Great Council of Malines in the Low Countries. The latter has been Wijffels' darling and it is not exaggerated to say that scholars all over Europe know this court best through Wijffels' publications in the major European languages and most of all his very impressive *Qui millies allegator. Les allégations du droit savant dans les dossiers du Grand Conseil de Malines (causes septentrionales, ca. 1460-1580)*, Leyden, 1985, xlii+1173 p. Apart from the subjects already mentioned, Wijffels has written about many other topics, his first book dealing with proposals from a reform of the punishments in Belgium's criminal law (*Inkomensderving als geldstraf*, Antwerp, 1983), xii+204 p.), his latest being *History in Court*, Leyden 2001, 336 p., a bout about law suits in which historians were involved either as experts or as claimants or defendants because of their publications. Thus, Wijffels has become not only a historian of legal science, but also a historian of historians.

In the light of his many publications, it would have been very remarkable if Alain Wijffels had escaped the notice of his fellow legal historians. He is a member of some of the most prestigious commissions and editorial boards in his discipline. He has been honoured with, among others, the Prix Charles Du Vivier of the Brussels Académie Royale (1989), fellowships from the Alexander-von-Humboldt Stiftung (Bonn), the Dutch NOW and Trinity Hall in Cambridge. The Law Faculty of Ghent University has followed by proposing in 2001 that two prizes should be awarded to him: the national Francqui chair for Ghent University and the Sarton medal, both of which he received in 2002. It should be stressed that it was hitherto unthinkable for the Ghent Law Faculty to put forward one and the same person for two prizes in the same year. That it did, was not at all due to a lack of inspiration, but only to a deep and profound wish to honour an exceptional scholar in an exceptional way.



FLANDERS AND THE SCHELDT QUESTION

A Mirror of the Law of International Relations and its Actors

Alain Wiffels

What is the 'international community' constantly referred to in present-day international affairs? Can or should it be defined by formal-legal standards — e.g. membership of the UN, legal capacity such as treaty-making power? Is it a shifting concept which matches different political realities according to a specific context — when, e.g., the USA and Israel are reported to walk out of an international conference on racism, does that mean that these countries no longer belong to the international community in the discussion on such issues? Can so-called 'rogue states' or terrorist organizations (which may well profess, at least in theory, universally respected long-term aims) be counted among the actors of the international community? How clearly defined or blurred is the phrase when used in a context of international politics, international law, or other issues in their own right, such as international trade, environmental protection — and so on? How relative is the concept in time (historically) and in space (from the perspective of different cultures)?

In spite of obvious restrictions, the issue known in the history of international relations and international law as the 'Scheldt Question'¹ offers an adequate illustration of the manifold answers these complex questions may receive in the

¹ The best general study of the Scheldt Question from the 13th century until Belgium's independence remains: S.T. Bindoff, *The Scheldt Question to 1839* (London 1945), with can be updated for the following period with: P.-A. Bovard, *La liberté de navigation sur l'Escaut* (Lausanne 1950). Older, more conventional (and often positivistically inspired!) historical surveys tend to suggest that the Scheldt Question only began with the Westphalian Peace, e.g. A. Rotsaert, *L'Escaut depuis le Traité de Munster (1648)*, *Aperçu historique* (Brussels/Paris 1918), or the otherwise for the nineteenth century very useful collection of documents *Tractaten en tractaatsbepalingen de Schelde betreffende sinds 1648* (The Hague 1919), which, however, only contains six documents prior to the Treaty of 19 April 1839.

Western tradition of the law relating to inter-polity relations. Hereafter, four moments from that on-going history, which now encompasses more than half a millennium, have been selected. For each moment, a Scheldt-related issue will be presented as a feature of the at the time prevailing concept of international relations. Each time, the same or different actors appear on the international stage. However, the international community is not merely defined by its actors of the moment. The variety of actors and their relationships show that the very structure of the international community is different from one era to another, depending *inter alia* on the diversity of the various types of actors, the ascendancy some may have over others, the extent to which these variables are integrated in a more or less coherent system, and also — this is where international law comes into the picture — the degree to which all those factors are formalised within a normative set of principles. Thus, at different periods in history, issues around the Scheldt estuary have each time reflected wider concerns of international politics prevailing at the time — including the limitations of these international views from the Western European perspective, but that, too, can be said to be part of the history of international law.

1. 1460-1504: Regional actors within the Burgundian state²

1.1 *Geo-political changes around the Scheldt Estuary*

Under the Burgundian regime, navigation in the Scheldt Estuary became a political issue which was repeatedly brought to the attention of the Duke's council. Geographical changes had affected its major waterways³.

² This first section is largely based on my own article 'Emergence et englobissement judiciaires du 'Brabant maritime'. Les prétentions territoriales sur l'Escaut occidental durant la seconde moitié du 15^e siècle', to be published in September 2002 in *Publication du Centre européen d'études bourguignonnes*.

³ The geographic development of the Scheldt Estuary during the Middle Ages, the toponymy, the agriculture in the surrounding land, all these are issues which, in spite of a string of excellent historical studies, remain open to many controversies. Even the most recent and authoritative works cannot avoid some degree of speculation and, sometimes, more or less bold interpretations. For the late-medieval geography, the historian will continue to rely on M.K.E. Gottschalk's fundamental research: *Stormvloed en rivieroverstromingen in Nederland*, 3 vol. (Assen 1971-77); the first two volumes relate to the source-material which is relevant for the present

Traditionally, the Eastern Scheldt (referred to as the Scheldt, which clearly shows that it was seen as the original and natural continuation of the Scheldt flowing from Antwerp) had been the main route for ships between Antwerp and the sea. From the late-fourteenth century onwards⁴, and increasingly during the fifteenth century⁵, the Honte or Western Scheldt became an attractive alternative for bigger vessels, due to floods and the deepening of its channel. At the same time, the position of Bruges was in decline and the Eastern Scheldt's capacity was decreasing.

The toll of Iersekeroord (situated on the Eastern Scheldt), itself a 'branch' of the Geervliet toll, was soon affected by these changes. As maritime trade

section: I, *De periode vóór 1400* (Assen 1971), II, *De periode 1400-1600* (Assen 1975); by the same author: *Historische geografie van Westelijk Zeeuws-Vlaanderen*, [I], *Tot de St-Elisabethsvloed van 1404* (Assen 1955), and II, *Van het begin der 15e eeuw tot de inundaties tijdens de Tachtigjarige Oorlog* (Assen 1958); see also her monograph on a region directly linked to the Eastern Honte: *De Vier Ambachten en het Land van Saafdinge in de Middeleeuwen* (Assen 1984), for which the dissertation by A.M.J. de Kraker offers a useful supplement: *Landschap uit balans. De invloed van de natuur, de economie en de politiek op de ontwikkeling van het landschap in de Vier Ambachten en het Land van Saefdinghe tussen 1488 en 1609*, (Utrecht 1997). The latter author (together with several others) has published further relevant studies in "Over den Vier Ambachten". *750 jaar Keure. 500 jaar Graaf Jansdijk*, (Kloosterzande 1993), see a.o.: K.J.J. Brand, 'De ontwikkeling van het polderlandschap in de Vier Ambachten en omringend gebied', pp. 41-60, including useful maps offering the author's attempts at reconstructing the development of the Western Scheldt (I hope that some of these maps will be included in the publication of my article mentioned *supra*, although Dr. Brand is himself preparing a new version of these maps); see also Dr. Brand's general synthesis and outline: 'Over het ontstaan en de ontwikkeling van de Hont of Westerschelde', in *Zeeuws Tijdschrift* 3 (1983), pp. 99-110.

⁴ The first important controversies between Antwerp and Zeeland regarding the levy of the toll of Iersekeroord on the Honte appear to have started shortly after the floods of 1375-7, E.M. Meijers, 'Des Graven Stroom', first published in 1940 and now included in: *Etudes d'Histoire du Droit*, vol. II (Leiden 1973), 98-167, p. 110 (in 1387, Antwerp obtained freedom of navigation on the Honte, but, as Meijers noted, one of the main issues of the controversy was precisely whether their exemption went beyond the *geleide*).

⁵ Gottschalk, *Historische geografie van Westelijk Zeeuw-Vlaanderen*, II, *o.c.*, pp. 36 (1429-30), 73 (before 1460), observing that navigation via the Wielingen was first mentioned in 1405 (p. 73, n. 4).

gradually favoured the Western Scheldt, its guards noticed the decline in passage — and hence, of their income — on the Eastern branch. Additional guards were posted on the Honte. Antwerp merchants, however, claimed freedom from the toll on this alternative waterway. Thus a growing conflict of interests developed between Antwerp, backed by industry and trade interests in Brabant, and Zeeland.

The economic interests for Brabant's trade in enjoying toll-free access to and from the sea were obvious. From the Zeeland perspective, the interests at stake were perhaps even greater. Because of its position, Zeeland derived a substantial income from interregional and international trade using its waterways, the unavoidable connection between the sea and the Germanic hinterland. Its toll system was devised to weave a watertight net across its estuaries, so that no ship could pass without being subject to tax. The network of tollhouses and guards ensured that the tax was effectively collected. The increase of maritime traffic on the Honte, precisely at a time when the Eastern Scheldt's importance was diminishing and Antwerp's attraction to international shipping was expanding, was therefore a serious threat to the Zeeland toll system and its control of maritime trade in the Low Countries.

Under Philip the Good, the principalities immediately adjacent to the Scheldt estuary had come under a common personal rule: the House of Burgundy had succeeded in acquiring most of the principalities in the 'Low Countries', across the fault line which divided the French Kingdom and the Empire. The Duke combined the titles, among others, of Count of Flanders, Duke of Brabant, and Count of Holland and Zeeland.

One of the corollaries of the Duke's personal union was that henceforth inter-provincial disputes required a common form of peaceful settlement. The settlement could be political, which implied a decision by the Duke himself, advised by his council. Gradually, however, a judicial alternative evolved within, and, by the mid-fifteenth century, distinctly from, the *curia ducalis*. The Great Council, first as a more or less distinctive section of the Duke's council, then as a separate institution, developed as a court which, representing directly the Duke's authority, could hear cases from the whole of his territories. Because it represented the Duke's authority at the pinnacle of the political system, above the particular interests of his individual principalities, it was also in a position

to exercise its jurisdiction over trans-provincial or inter-provincial conflicts⁶. As a court, its system for dealing with the settlement of disputes was far less flexible than that of a political body. It became dominated by academic lawyers, steeped in Roman and Canon law, who followed, by and large, proceedings inspired by French and ecclesiastical models, viz. the style of the Paris Parliament and the principles of the Roman-canonical procedure. The substantive law it applied could vary: the Duke's ordinances were a privileged authority, but legislation at that level remained comparatively limited; when a case was confined to a specific regional or local jurisdiction, the particular law of that jurisdiction (whether customary or statutory) would normally take precedence; all that, however, left a wide scope of applications for principles borrowed from the academic Roman and Canon law traditions. For inter-provincial disputes in particular, for which very little conventional law was available, recourse to Roman and Canon law (which, moreover, provided much material on *ius gentium* issues) was, certainly in the context of a superior court staffed by legists and canonists, inevitable.

1.2 *Legal proceedings and the peaceful settlement of disputes between 'sovereign' principalities*

⁶ A. Wijffels, 'Höchste Gerichtsbarkeit als Instrument der Friedenserhaltung in interterritorialen Konflikten: Der Große Rat von Mechelen in den burgundisch-habsburgischen Niederlanden', in B. Diestelkamp and I. Scheurmann (Hrg.), *Friedenssicherung und Rechtsgewährung* (Bonn-Wetzlar 1997), 83-102.

⁷ L.Th. Maes, 'Twee arresten van de Grote Raad van Mechelen over de tol van Iersekeroord', first published in 1977, now included in: *Recht heeft vele significatie. Rechtshistorische opstellen van Prof.Dr. L.Th. Maes* (Brussels 1979), 137-160. The following pages will not discuss litigation on the (Eastern) Scheldt, i.e. the part of the river upstream from Foxoirt, which had belonged to Brabant, but subsequently became the border between Brabant and Zeeland; upstream from the old Stockham, the river was Flemish, but the Duke of Brabant was entitled to exercise certain rights, which generated its own litigation, cf. mainly Meijers, 'Des Graven Stroom', *o.c.*, pp. 107-9 (on the river between Brabant and Zeeland: pp. 102-7); Ch. Divivier, 'L'Escaut est-il flamand ou brabançon?', in *Bulletin de la Classe des Lettres et de Sciences Morales et Politiques et de la Classe des Beaux-Arts* (Académie Royale de Belgique), 1899, pp. 721-68; H. Van Werveke, 'De rechten van de Graaf van Vlaanderen op de Schelde aan de Brabantsche grens', in *Bijdragen tot de Geschiedenis* 27 (1930), 224; F. Prims, 'De rechten van Brabant en van Vlaanderen op de Antwerpsche Schelde', in *Verlagen en Mededeelingen Koninklijke Vlaamsche Akademie voor Taal-en Letterkunde* 1931, pp. 889-964.

1.2.1 *The 1466-1469 proceedings*⁸

During the reign of Philip the Good, disputes about the collection of the Zeeland toll on the Honte were brought before the Duke and his council but remained unresolved. Provisional decisions explicitly referred to a settlement of the issue in the future. During the 1460's, interest-groups from Antwerp and Brabant became more pressing. By the time Charles was taking over the government of the Low Countries, the disputes were gradually reorientated to the Great Council, which meant that the parties had to conform to strict rules of litigation. It also meant that the political and economic conflict of interests had to be phrased and argued in legal terms.

1.2.1.1 *The litigants*

Several cases originated around the mid-1460's, which were partly joined together in two successive judgements of the Great Council⁹. One case involved an Antwerp ship-captain who had refused to pay the toll when summoned by the guard of the Iersekeroord toll on the Honte, and who was duly backed during the proceedings by the Antwerp city council. By 1467, the year Charles succeeded his father, the issue had raised such concerns that the deputies of the Brabant towns, joined by the Four Members of the County of Flanders, started a separate action against the farmers of the Iersekeroord toll,

⁸ The main primary sources are: the decisions of the Great Council dated 18 July 1468 (published in: W.S. Unger, *De tol van Iersekeroord. Documenten en rekeningen 1321-1572* ('s-Gravenhage 1939), No. 21, pp. 20-6) and 8 September 1469 (published in: E. Marshall and F. Bogaerts, *Bibliothèque des antiquités belgiques*, I (Antwerp 1833), pp. 148-59), and also part of the file submitted by Antwerp, EA 2673. The decisions are well-known, but the file, though calendared, seems to have been ignored, even by recent authors. I am preparing an edition of the full dossier.

⁹ In the decision of 18 July 1468, the Brabant and Flemish litigants refer to another law-suit before the Great Council, opposing the Procurator-General and the farmers of the toll to the Antwerp city-council. Those proceedings were said to have been initiated following a dispute between the farmers and the Antwerp merchant Gerard Pels, who had refused to pay the toll. His case is referred to in several passages of the aforementioned judgement, which, in its final section (expressing the actual *res iudicata*), allows the release of Pels's ship provided a deposit of was handed over as surety.

whose case was handled by the Proctor-General, acting on behalf of the interests of the Count of Zeeland.

1.2.1.2 *The issues*¹⁰

The central issue of the various cases brought before the Great Council related to the Zeeland toll, and its application to Antwerp and Brabant merchants passing through the Honte. The case for Zeeland was that its toll-system applied to all waters under the Count's sovereignty, including the Honte; and that it was the Count of Zeeland's prerogative to place guards on all the waterways under his jurisdiction and to collect the toll¹¹. Antwerp and Brabant, on the contrary, claimed freedom from the toll on the Honte, both for their own goods and (at least, in part) for goods of foreigners they might be carrying¹².

1.2.1.3 *The arguments*

(a) *The legal framework.*

Antwerp produced a variety of titles supposed to buttress the city's claim. However, it seems that even these titles were subordinated to a main line of argument which, at the time, was highly conventional in legal proceedings. As in much other contemporary litigation, the legal argumentation worked out by both sides in the dispute revolved around the Roman-canonic concept of

¹⁰ A. Wijffels, 'La liberté de navigation sur l'Escaut à l'avènement de Charles le Téméraire', in: H. Van Goethem, L. Waelkens, K. Breugelmans (eds.), *Libertés, Pluralisme et Droit. Une approche historique* (Brussels 1995), 123-34.

¹¹ On Iersekeroot as a 'branch' of the Geervliet toll: W.S. Unger, *De tol van Iersekeroot, o.c., passim*.

¹² In the proceedings to which Antwerp was a party, the city's claim was that «par privilege ilz ne soient tenuz de paier aucun droit de tonlieu ne conduit dedens, empres ou partout la riviere de la Honte a cause de leurs navires ou biens, quelz quilz soient, ne en quelque maniere quilz soient chargiez, mais avec ce sainsi estoit quilz eussent chargie aucuns biens destrangés iceulx estrangiers a qui lesdits biens estrangés appartiennent ne doivent paier pour ledit droit de tonlieu et conduit que V s. III d. monnoie de Flandres selon la forme de leurdit privilege» (EA, document i, p. 1), a formulation which repeated literally the contents of the document of 1276 on which they relied (*ibidem*, doc. b).

possession. The Proctor-General claimed not only the original title and prerogative of the Count to levy and collect the toll, but insisted on the long-term possession of that prerogative. Conversely, the Brabant party's main legal argument consisted in demonstrating their long-term possession («from times immemorial») of the freedom from the toll on the Honte¹³.

Tolls and exemptions from tolls had been a perennial problem for medieval trade. Nevertheless, the issue was not governed by a specific, more or less comprehensive body of law. In the absence of such a specific branch of 'Tax Law', the Roman-canonic rules on possession, based on both authorities among the texts of the *corpora iuris* and on an even larger body of doctrinal authorities, offered a general, but effective set of rules for the peaceful (and legal) settlement of disputes of all kinds. It was a well-trained, versatile, system, which could be applied both to minor quarrels between individuals, and to major conflicts between corporations or political bodies. Its advantage was that it prescribed generally recognised principles regarding the course of the procedure, the conditions which any alleged possession had to meet in order to enjoy legal protection, and the evidence which had to be adduced. In theory, it was not a merely neutral system, for it granted a privileged protection, pending the proceedings, to the party who had been dispossessed or whose possession had been disrupted or threatened. In practice, however, the concept of possession was so adaptable in late-medieval Roman-canonic law that both parties could usually claim a possession which had been challenged by the opponent. As a result, both parties were then in a position to claim judicial protection of their possession. In the case opposing Brabant and Zeeland, the former were claiming not only peaceful and long possession of freedom from the toll, but also from the toll-guards' interference with their possession. For the Count of Zeeland, The Proctor-General claimed both possession of the prerogative of levying and collecting the toll, and the attempts by Antwerp and its merchants to encroach upon that possession.

It would be wrong, however, to infer that the arguments were exclusively framed within those legal concept of rightful possession and interference with

¹³ On the importance of the concept of 'exemption from toll' during the Middle Ages: A.J. Stoclet, *Immunes ab omni teloneo. Etude de diplomatique, de philologie et d'histoire sur l'exemption de tonlieux au haut Moyen Âge et spécialement sur la 'Praeceptio de navibus'* (Brussels/Rome 1999).

such possession. The medieval Civil and Canon law traditions may have been the work of academic lawyers, but their reasoning seldom departed from considerations which would much later be referred to as *Interessenjurisprudenz*. Thus also in the arguments brought before the Great Council in the litigation arising from the toll-collection on the Honte: the Proctor-General had little difficulty in pressing the point of the Count of Zeeland's paramount interest in avoiding any breach in the Zeeland network of tolls; the Brabant towns countered by extolling the Duke of Brabant's interests in his subjects' exemption from the toll on the Honte, raising the prospect of the utter breakdown of the Antwerp fairs, and the dire consequences for the income of the Duke of Brabant¹⁴. In short, the Duke of Burgundy was told that his interests at stake as Duke of Brabant in this case outweighed any interests he might have as Count of Zeeland. In a more political register, the Brabant towns also raised the potential consequences of the issue if, in future, Charles's principalities were to be divided among his heirs¹⁵.

(b) *Territorial disputes.*¹⁶

¹⁴ «.....que mon dit seigneur y perdrait le plus pour le moins; car par ce moien l'[exercité] de la marchandise seroit fort diminuee, sur quoy les dits pais de Brabant, Flandres, Hollande et Zellande sont principalement fondez, les foirs d'Anvers yroient au neant et les tonlieux d'illec. qui sont à mon dit seigneur, lui vouldroient moins trois mil escus, qu'ilz ne font à présent pourchacun an, sans les pertes de plusieurs tonlieux particuliers ...» (Judgement, 18 July 1468, *l.c.*, pp. 24-5).

¹⁵ «... actendu, s'il advenoit, que comme fait à espérer et que chacun desire, que mon dit seigneur eust generacion de plusieurs enffans, et que les dits seignouries et pais feussent partiz en divisez, que en temps avenir grans differens, debas et discors se pourroient sourdre et mouvoir entre eulx, qui en seroient seigneurs, et leurs subgetz» (*ibidem*, p. 25). In a different register, it will be remembered that the contracts for farming out the toll usually contained a clause which provided for a suspension in case «hierbinnen den lande van Hollant of Zeelant in openbare orloge quamen tegens den lande van Brabant of Vlaendren of tegens der croonen van Ingelant, dairby dat die cooplyuden mijns voirsr. genadichs heeren stroomen voirby der voirsr. tollen of wachten niet veylich varen of gebruycken en mochten» (Unger, *De tol van Iersekeroord, o.c.*, No. 23, p. 29 (ordinance on the farming of the toll, 1 September 1470); No. 26, p. 44 (*idem*, 17 October/9 December 1482); No. 29, p. 56 (art. 13 of the project of 20 March 1496).

¹⁶ On the notion of 'stroom' in the relations between Flanders, Holland and Brabant, cf. the fundamental study by Meijers, 'Des Graven Stroom', who discusses not only litigation around the Honte (pp. 109-16), but also the status of the Eastern Scheldt in

Incidentally, the litigation also led to territorial claims, though these were merely arguments and no direct adjudication on these claims was sought. Both parties seem to have admitted that, «in recent times», the Honte had developed from a small and shallow waterway to a river fit for navigation by large ships. The Proctor-General asserted that these changes had all taken place on Zeeland territory, and thus did not affect the Count's rights¹⁷. On this issue, the Flemish litigants intervened: they claimed that the new, deeper, channel had worked its way entirely on the Flemish side, and that the Honte was therefore within the jurisdiction of the Count of Flanders¹⁸.

Moreover, the litigants did not agree on the geographical extension of the

the context of the relations between Brabant and Holland (pp. 102-7), and the status of the Scheldt as the border between Brabant and Flanders (pp. 107-9) — while a large part of the article investigates the Count of Flanders' 'territorial sea'. Meijers's article was supplemented on some points, together with a few new interpretations, by F. Doeleman, 'Zeggenschap op de Honte', in *Tijdschrift voor Rechtsgeschiedenis* 43 (1975), 23-43.

- ¹⁷ «et pour ce que ou temps passé l'eau de la Honte estoit si petite, que nulz ou bien peu de navires, venans de la dicte ville d'Anvers, pouvoient passer par les dites rivieres, tous les navires passoient parmi le païs de Zellande, où il avoit ses gardes, assavoir à Yersekerhoirt et Geervliet, et que par les alluvions et inondacions des eaues la dicte riviere de la Honte estoit devenue plus na[v]igable et plus profonde, qu'elle n'estoit auparavant, tellement que presentement tous ou la pluspart des navires, allans et venans en la dicte ville d'Anvers, passoient par la dicte riviere de la Honte, par quoy mon dit seigneur perdroit le dit tonlieu, qu'il a droit de prendre en l'eau salee ...» (Judgement of 18 July 1468, *l.c.*, pp. 21-2).
- ¹⁸ «dirent les dits deputez de Flandres, que la dite riviere de la Honte depuis l'Eschault devant Chavestingues jusques `la mer salee et trois lieues en icelle mer est du tenement de la dicte conté dse Flandres, et que le conte de Flandres y a toute jurisdiction et nul autre n'y a que veoir ne que congnoisre, se non icellui conte et ses officiers, par quoy le dit conte de Hollande et de Zellande n'y peult mettre aucunes gardes. Dirent outre plus les dits deputez, que la dicte alluvion, dont parle le dit procureur, fait pour eulx, car ce que la dite riviere a gagné par alluvion, inondacion ou autrement en largeur et profondeur, elle l'a gagné sur la terre et coste de Flandres, où est presentement la droite profondeur, flux et strom, par où passent les dits navires; et avec ce dirent [...] que la dite riviere peut estre muee et devenue plus profonde et na[v]igable, n'est point advenu fraudeusement ne par fait ou engien d'homme, mais naturelement» (Judgement of 18 July 1468, *l.c.*, p. 23).

Honte¹⁹. According to the Zeeland thesis, possibly founded on the situation in more ancient times, only the waterway extending from the Scheldt around Saafinge to Hulsterhaven could properly be referred to as the Honte²⁰. The Flemish claim²¹, on the contrary, asserted that the Honte referred to the waterway stretching all the way from the Scheldt right into the open sea²².

(c) *The outcome.*

At least two judgements were given in these proceedings. The first, dated 18

¹⁹ Meijers, 'Des Graven Stroom', *o.c.*, pp. 109-10.

²⁰ «actendu que, comme ilz disoient. le flux et strom de la Honte failloit et perdoit son nom au lieu, appellé Hulsterhavene, et que tout le residu de l'eau, tirant devers la mer et devers Zellande, estoit nuement de la seigneurie et jurisdiction du conte de Zellande» (Judgement of 18 July 1468, *l.c.*, p. 24). Even if at the time of the legal proceedings, the name of Honte was already in use for the whole Western river down to the sea, it may well be that the Zeelanders' restrictive use was founded on the usage dating from an earlier stage of development of the Honte, when it was but a branch between Hontemude and Hulsterhaven (Gottschalk, *De Vier Ambachten, o.c.*, p. 14). Hontemude may already have disappeared during the 14th-century floods (Gottschalk, *Stormvloeden, o.c.*, II, p. 12).

²¹ Stngthened by the evidence of several witnesses during the procedure, EA 2673, doc. I, pp. 64 et seqq.

²² «que la dite riviere de la Honte et le fleux d'icelle prenoit commencement depuis la dite riviere de l'Eschault devant Chavetingues en venant tout au lonmg de la coste de Flandres par devant la Neuze, Hulsterhavene et aussi joingnant Biervliet et l'isle de Cadsant jusques en ladite mer, où elle prenoit fin, comme dit est, lequel flux estoit et est entierement le vray strom de Flandres, et que nul n'y avoit jurisdiction que veoir ne que congnoistre, se non nuement le dit conte de Flandres et ses dicts officiers, et que avecn ce il n'estoit aucunement soustenable, que la dite riviere de la Honte preinst fin au dit lieu de Hulsterhavene, designé par les dits fermiers, veu qu'il convient, que icelle riviere, qui tousjours d'un costé castie la dite conté de Flandres, prendre vuydenge et yssue en la mer ou aultrement, fauldroit dire que ce feust un sacq [...]» (Judgement of 18 July 1468, *l.c.*, p. 24). The concept of a 'sac' is similar to Doeleman's interpretation (in: 'Zeggenschap op de Honte', *o.c.*, pp. 32-3) of A.W. Vlam's study, 'Bijdragen tot de geschiedenis van de Schelde', in *Archief, vroegere en latere mededeelingen voornamelijk in betrekking tot Zeeland*, 1944-5, pp. 32-50; according to Doeleman, the Honte was originally «een waterloop, die ter hoogte van Hulsterhaven uit een waddengebied òm de kaap van Ossensisse heen naar het oosten vloeiende en bij het inmiddels verdwenen Hontemuden in de Schelde viel» (my italics), although the author admits that, westwards, the Honte was already linked to the sea via the Dullaert and the Wielingen (p. 33).

July 1468, ordered further investigations and provisional measures²³ before a final decision could be reached. The Antwerp merchant who had been arrested with his ship was to be freed in return for a security. Ships passing through the Honte would not have to pay toll, but, in case the final decision would be in favour of the farmers and the Proctor-General, records were to be kept of their identity and cargo, and sureties would have to be offered. A special judicial commission would visit the estuary and carry out a full inquest on the issues. The report of the commission would also include a written survey, i.e. in all probability, a map, of the course of the Honte²⁴.

The following year, a second judgement made a final ruling in favour of the Antwerp merchant²⁵. The other major issues remained outstanding.

²³ This was in line with Burgundian and (during the early years) Hapsburg policies. Thus, in the judgement of 18 July 1468, The Flemish and Brabant litigants referred to (a) a 'provision(al) decree' of the Duke granted at Luxembourg in 1443, which suspended any levying of the toll on the Honte until such time a final decision was reached; (b) the 'Joyeuse Entrée' of Duke Charles; (c) another 'provision(al) decree', given at Luxembourg on 2 August 1467, which apparently confirmed that of 1443 (*l.c.*, p. 21).

²⁴ The maps which are now at the City Archives of Antwerp and at the General Archives of the Realm in Brussels were used for the publication of J. Denucé, *De loop van de Schelde van de Zee tot Rupelmonde in de XVe eeuw* (Antwerp s.d.), and have traditionally been associated with that judgement. A new edition of the maps would be necessary in order to further historical research. M.K.E. Gottschalk and W.S. Unger, 'De oudste kaarten der waterwegen tussen Brabant, Vlaanderen en Zeeland', in: *Tijdschrift van het Koninklijk Aardrijkskundig Genootschap*, 2e reeks, 67 (1950), pp. 146-64 (with appendices), have sharply criticised Denucé's interpretations. According to these Dutch authors, the Brussels map was probably drafted around 1468 and was subsequently used and modified during later legal proceedings, including the 1496-1504 proceedings. The purpose of that original map was, in their view, two-fold, as it was instrumental in the attempts to settle territorial disputes over the Scheldt from Rupelmonde onwards and over the Honte between Brabant, Flanders and Zeeland, but it was also used in the litigation about the toll on the Honte. On the other hand, Gottschalk and Unger argue that the Antwerp map was a new work, partly based on the Brussels copy, which was primarily aimed at the controversies over taxes (*geleide* and toll), which may explain why it also covers the Western area of the old Honte's estuary. A third map, which the city of Middelburg ordered in 1497, has been lost.

²⁵ The judgement of the Great Council of 8 September 1469 is largely a literal repetition of the 1468 judgement, but it states in its final section that the inquest has

1.2.2 The 1496-1504 proceedings²⁶

In 1477, the untimely death of the Duke at the siege of Nancy forced his daughter into defensive positions. The Great Privilege was one in a series of concessions in which each principality sought the recognitions of their ancient rights and freedoms²⁷. Under Maximilian, the civil war in the Low Countries was not propitious for asserting the sovereign's rights. Only in the 1490's, when the Hapsburg regime had restored the sovereign's authority and peace, and political stability was re-established, had the time come to reconsider the conflict of interests around the Honte²⁸. The toll had been farmed out to Middelburg²⁹, a town which could now be counted upon to carry out vigorously the collection — partly because as one of Zeeland's most powerful corporate bodies, it could marshal forces to implement the collection, but partly also because as a commercial rival to Antwerp, it had an interest in challenging

taken place and that the map is now ready. The decision definitively released G. Pels and his security; the judgement also confirmed the suspension ('surséance') of the toll in favour of Brabant (*l.c.*, pp. 158-9).

- ²⁶ The main source remains the judgement of the Great Council of 11 October 1504 (of which there are several published versions, though many of these are either incomplete or based on second-hand transcripts). I have used (and will quote hereafter) the original draft from the Council's 'register of extended sentences', GCM 805.32. The corresponding file of these proceedings appear to be missing in the archives.
- ²⁷ W.P. Blokmans (dir.), *Le privilège général et les privilèges régionaux de Marie de Bourgogne pour les Pays-Bas 1477* (Kortrijk-Heule 1985), particularly the contribution by R. Van Uytven, '1477 in Brabant' (including the edition of the 'Joyeuse Entrée' of 29 May 1477)h, pp. 253-372.
- ²⁸ For the last two decades of the 15th century, the archives of the Great Council show important gaps, reflecting the troubled political situation at the time (J.Th. de Smidt and E.I. Strubbe, *Chronologische Lijsten van de Geëxtendeerde Sententiën en Procesbundels (dossiers) berustende in het archief van de Grote Raad van Mechelen, I, 1465-1504* (s.l. 1966); A.J.M. Kerckhoffs-de Hey, *De Grote Raad en zijn functionarissen 1477-1531* (Amsterdam 1980).
- ²⁹ According to the judgement, the farming of the toll was granted to Bergen-op-Zoom in 1499; the latter's levying of the toll was also challenged during the litigation involving Middelburg. According to Unger, *De tol van Iersekeroord, o.c.*, pp. XIV, 27 ss., Middelburg held the toll-farm between 1470 and 1499.

the latter's claims to exemptions³⁰.

In 1496, a series of incidents led to new proceedings before the Great Council. The central government must have looked with some apprehension upon the unfolding of the conflict before and during the legal proceedings, when the memory of the internal strifes was still fresh in everyone's mind. Antwerp's refusal to pay the toll led Middelburg to reinforce its guards on the Honte, posting a gunboat on the river as a display of its determination. Antwerp sent a small 'task force' which was meant to dissipate any impression that they were intimidated. The head of the guard, an octogenarian veteran of the estuary, and his watchmen were attacked and injured. The bailiff acting on behalf of Antwerp pursued his task with great energy, arresting Middelburg's councillors in their own town. At a later stage, during the proceedings, representatives of Middelburg were caught by Antwerp forces on their return from Malines — and thus under the sovereign's protection —, imprisoned and mistreated. Considering the interests at stake, such acts of violence and the contempt of the sovereign's authority could easily have been interpreted as provocation sparking off a much greater clash between the forces of different provinces³¹.

1.2.2.1 *The litigants*

Nevertheless, the conflict remained by and large contained within legal proceedings. Antwerp and the Estates of Brabant were once again opposed to the farmer of the toll of Iersekeroord, who had by then been for a long time the city of Middelburg, joined by the Proctor-General, once again on behalf of the Count of Zeeland's interests. The Flemings were now absent from the proceedings.

1.2.2.2 *The issues*

Little had changed since the 1460's. The crux of the litigation was still the

³⁰ Possibly, the choice of Middelburg had therefore been inspired by political motives. Maes, 'Twee arresten van de Grote Raad', *o.c.*, p. 151, remarked that an earlier draft had granted the farming to private individuals. The renewal of the contract with Middelburg coincided with the *Magnus Intercursus* and the resumption of trade with England.

³¹ On these incidents, see GCM 805.32, ff. 157r, 160rv.

application of the toll to Antwerp merchants sailing via the Honte. The political and military upheavals since the late 1470's had only exacerbated, without resolving, the claims on either side.

1.2.2.3 *The arguments*

(a) *The legal framework.*

One recognises the same arguments as during the late 1460's. The possessory claims were reiterated on both sides, supplemented by diverging versions of the developments during the last two decades³². Brabant saw a confirmation of its position in the concessions made by Mary of Burgundy in 1477 and the non-implementation of the toll in the following years. The Proctor-General tried to show that the concessions, obtained under duress and the pressure of the mob, were void and had been repealed; during the civil war, the sovereigns' policy had been to maintain as much as possible their prerogatives, which, in any case, they had retained by their *animus possidendi*³³.

The titles Brabant referred to were much the same as those which Antwerp had already submitted in 1466: a 1276 agreement which was supposed to have been confirmed in 1343 by the Duke of Brabant and the Count of Holland and

³² GCM 805.32, f. 163v (Procurator-General, offering a characteristic summary of the defects of the opponents' possession): «A la possession dont se vantaient lesdits des estas disoient qu'ilz n'avoient aucune possession et s'aucune avoient elle estoit sans tiltre, et se tiltre y avoit il estoit subreptif et obtenu par faulx, donné a entendre ou par commocion de peuple, et sy ne pouvoit estre paisible, veus les interruptions dessusdites»; f. 165r (States, challenging the possession of the toll by the Count of Zeeland): «que n'avions en ceste matiere possession par noz fermiers qui leur pouvoit nuyre, car se iceulx fermiers avoient levé aucune chose, ce avoit esté furtivement comme dit est, et aussi au desceu de noz predecesseurs et de nous».

³³ GCM 805.32, ff. 158v-159r; f. 159v («...affin de nous remettre en nostre relle possession de ladite Honte, laquelle depuis lesdites commocions nous avions tousiours retenu de courage et de pensee»); f. 166r (the farmers of the toll had on several occasions been given directives, «que demonstre bien que nosdits predecesseurs et nous avons tousiours voulu retenir et continuer nostredite possession, laquelle tousiours avions retenu durant lesdites commocions saltem animo»).

Zeeland³⁴; a 1304 unilateral declaration of the Duke of Brabant, in which he retracted the authorisation given previously to men-of-arms from Holland and Zeeland to capture enemy goods, allegedly on the waterway of the Honte³⁵; the provisional decrees of the Dukes of Burgundy, at various dates, suspending the collection of tolls; and concessions granted, including in successive *Joyeuses Entrées*. All these titles (or their alleged import) were rejected by the Proctor-General, who countered with an even more ancient title, viz. the 1195 imperial grant to the Count of Holland to levy the toll on all waterways under his jurisdiction³⁶.

As in the 1460's, but perhaps less energetically, the economic arguments were also reiterated on both sides³⁷.

³⁴ L.P.C. van den Bergh, *Oorkondenboek van Holland en Zeeland*, II (Amsterdam-The Hague 1873), No. 324, p. 139; J.G. Kruisheer, *Oorkondenboek van Holland en Zeeland tot 1299*, III, 1256 tot 1278 (Assen-Maastricht 1992), No. 1759, pp. 883-6. The document was referred to in order to argue «que la riviere de la Honte, partant de la mer et faisant passage a tous marchans jusques en nostre ville d'Anvers, avoit de tout temps esté et encoirs estoit ung fleuve publique et franc appartenant au duc de Brabant» (GCM 805.32, f. 156r); see also f. 164v: «icelle sentence contenoit par expres que lesdits d'Anvers seroient francs de tous tonlieux et gheleydes sur ladite Honte sans riens reserver, ce que depuis avoit confirmé le conte de Zellande». Meijers, 'Des Graven Stroom', *o.c.*, pp. 111-2, does not seem to interpret that argument as a territorial claim, for he considers that «om aan te tonen, dat de Honte Brabantsch was, was door Brabant *alleen* beroep gedaan op een schrijven van Jan van Brabant van 1305, waarbij deze verlot had gegeven zijn vijanden uit Holland in Zeeland te arresteeren» (my italics).

³⁵ GCM 805.32, f. 164r. See also doc. c in the file EA 2673 and the Procurator-General's counter-argumentation in GCM 805.32, f. 161v.

³⁶ GMC 805.32, f. 158rv («comme conte de Zellande avons droit par privilege et don imperial de l'an mil C IIII^{xx} XV d'avoir et lever tonlieu sur tous les biens et marchandises appartenans a marchans et gens estrangiers non francs qui passent ou atouchent le stroom d'iceulx noz pays, une foiz en eaue douce et une foiz en eaue sallee, et que de ce ensemble de mettre et changer ses et wachtes pour la garde du tonlieu partout nosdits pays ou bon nous semble»); see also f. 161r. For the 1195 document: L.P.C. van den Bergh, *Oorkondenboek van Holland en Zeeland*, I (Amsterdam-The Hague), No. 173, p. 107; A.C.F. Koch, *Oorkondenboek van Holland en Zeeland tot 1299*, I, *Eind van de 7e eeuw tot 1222* (The Hague 1970), pp. 382-4.

³⁷ GCM 805.32, ff. 156v-157r.

(b) *Territorial disputes*.³⁸

Predictably, the Zeeland position had not changed. The Proctor-General asserted more strongly than ever the Count's right to levy the toll on all his waterways, including the Honte³⁹.

The Brabant position, in the absence of the Flemish party, was now more difficult. The Estates decided to express the claim that the Honte, from the Scheldt to the sea, fell under the jurisdiction of the Duke of Brabant⁴⁰. This argument may seem far-fetched, and its brief record in the Great Council's judgement does not make it possible to assess how it was effectively worked out by counsel during the proceedings⁴¹. Possibly, it relied on the Duke's ancient possession of territories West of the Scheldt, particularly the area south-west of the Beveland island known as 'between Honte and Hinkele', which had later been ceded to the Count of Holland⁴².

³⁸ During the last years of the 15th century, the government was better informed on the geographic situation, partly through its policy aiming at securing a more effective protection of the adjacent territories, such as the *Vier Ambachten* (De Kraker, *Landschap uit balans, o.c.*, pp. 27 ss., 204-6, 302 ss.).

³⁹ E.g. GCM 805.32, f. 158r: «...droit de lever tonlieu par tout nostredite conté [...] a gens non francs qui atouchent le stroom de nostredit pays de Zellande, soit par ladite Honte ou ailleurs, et de mettre et changer nos wachtes par tout ledit pays ...».

⁴⁰ «... ung fleuve publique et franc appartenant au duc de Brabant», falling under «la jurisdiction et stroom du duc de Brabant» (GCM 805.32, ff. 156r and 164r).

⁴¹ GCM 805.32, f. 156r: «la riviere de la Honte, partant de la mer et faisant passage a tous marchans jusques en nostre ville d'Anvers» — the passage is to some extent ambiguous, for the words «partant de la mer» would seem to refer to a geographic area, but the latter part («jusques en nostre ville d'Anvers»), which refers to a part of the river which had always been known as the Scheldt (upriver from Saafinge), should perhaps be understood to refer to a commercial route. In any case, the passage appears to establish that in 1504, Brabant was using the name 'Honte' for at least the whole course of the river from the Scheldt (according to the traditional and ancient use of that name) to the sea, and that it claimed sovereignty over the entire stretch of the river thus referred to.

⁴² Doeleman, 'Zeggenschap op de Honte', *o.c.*, pp. 33-6, who analyses the different sources which establish the Duke of Brabant's authority in the region 'between Honte and Hinkele' (before it was ceded to the Count of Holland) in order to buttress

The territorial arguments also gave the Zeeland party an opportunity to minimise the Flemish claims, which were no longer represented. Having asserted the Count of Zeeland's rights over the Honte, the Proctor-General proceeded to concede that the Count of Flanders could claim a narrow strip along his county's coastline, according to a famous and since then often-quoted formula, «as far as he could enter into the water on horseback and touch the water with a lance»⁴³.

(c) *The outcome.*

The judgement of 1504⁴⁴ was a victory for Zeeland interests. The Great Council, recently permanently installed at Malines, decided that the Count of Zeeland was fully entitled to collect his toll on the entire course of the Honte, implying that the river came under the Count's jurisdiction⁴⁵. The Brabant

his own explanation why the Flemish-Zeeland border was close to the Flemish bank of the Honte. The same author also argues that the Flemish border was established on or near the bank-side because it followed the border-line of the Tournai diocese; later, when the diocese of Utrecht was created, the pre-existing limit became the common border and the water-area north of Flanders was thus automatically incorporated into Utrecht (p. 39). However, the interpretation of the agreement of 1200 between the Duke of Brabant and the Count of Flanders remains controversial (cf. Van den Bergh, *Oorkondenboek, o.c.*, No. 183, p. 112, especially the words «pro terra illa ... ultra versus Selandiam»).

⁴³ GCM 805.32, ff. 161rv, where the Procurator-General gainsays the Brabant territorial claims: «...mais mettoient en fait que ledit fleuve du tout en tout estoit fleuve et stroom de Zellande, sauf le comte de Flandres du costé et au long de Flandres y avoit autant et si avant juridiction qu'il pouvoit entrer en l'eau et attoucher d'une espee ou de la verge de justice ce qu'il a voulu exploiter, et n'y approche le duc de Brabant a VI lieues prez»); on this passage, see also Doeleman, 'Zeggenschap op de Honte', *o.c.*, pp. 24-6.

⁴⁴ Remarkably, members from other councils were asked for advice (Council of Flanders, Council of Brabant, Court of Holland), an unusual step before judgement was given («appelez et prins a icelle visitacion faire certains notables personnages jusques au nombre de six de nos consaulx de Brabant, de Flandres et de Hollande», GCM 805.32, f. 167r).

⁴⁵ GCM 805.32, f. 167rv: «... disons et declarons que le conte de Zellande a droit de lever et cueillir par luy ses fermiers receveurs et commis son tonlieu de Ghervliet et de Yrsekeroot generalement sans riens excepter par tout son pays et conté de

Estates were ordered to pay compensation for the lost income, although the compensation was set at a lump sum of 18.000 gold Philip guilders⁴⁶. Antwerp and her agents who had been found 'guilty of violence and contempt were sentenced to a stiff fine⁴⁷.

Summary

The late-fifteenth century proceedings show that the Scheldt (or rather: Honte) Question was then mainly perceived as a conflict of interests between

Zellande, cours d'eaues et strooms d'icelluy, *aussi bien la Honte que autres*, quelz qu'ilz soient et comment qu'ilz se nomment. Et ce de toutes navires, denrees et marchandises quelles qu'elles soient et de quelle part qu'elles viennent, appartenans a marchans non francs, qui en alant, venant, montant, descendant et passant, atouchent aucun *des cours d'eaues et strooms dessusdits, la Honte ou autres*. Et que sembleblement le conte de Zellande a droit de mettre ses wachtes et gardes par chacun des dessusdicts *strooms et cours d'eaues aussi bien la Honte que autres*, et generalement sans riens excepter par tout sondit pays et conté de Zellande pour, par le moyen desdits wachtes et gardes, de tant mieulx et plus facilement recouvrer, recevoir et faire entierement venir ens les deniers et le droit d'icelluy son tonlieu» (my italics).

⁴⁶ GCM 805.32, f. 167v: «Et condempnons lesdits des estas de Brabant impetrans a nous rendre et restituer tous les dommaiges et interestz que feuz nos predecesseurs et nous avons soustenu et souffert par leur moyen et empeschement depuis le commencement et meismes depuis l'an XLIII dernier. Et lesquelz dommaiges et interestz nous reduisons et moderons de grace a la somme de dixhuit florins d'or Phelipe». The Dutch version published by W.S. Unger, *De tol van Iersekeroord*, o.c., No. 38, pp. 69-70, contains a more hefty (and realistic) sum: «ter somme toe van 18 dusement gouden philipusen».

⁴⁷ GCM 805.32, f. 167v: «Et pour ce que par ce proces est soufissamment apparu des excès commis et perpetrez par lesdits d'Anvers, Anthoine van Zittert, messire Jean Dymersele et autres, nous condempnons lesdits d'Anvers pour amende et raparacion envers nous en la somme de huyt mil florins d'or Phelipe. Et en suspendant ledit Anthoine van Zittert de son estat et office de huissier, ordonnons que icelluy Anthoine et tous autres particulier qui se sont meslez des excès dessusdits seront adiournez en personne en la court de ceans a certain et competent jour pour repondre a telles fins et conclusions que le procureur voudra prendre contre eulx et chacun d'eulx. Et sy reservons a Cornille Berthelz., Henry Braem et leurs consors intimizez et interessez leur action de injure et de interest contre les injurians et interessans dessusdits pour la povoir intenter en ladite court de ceans touteffois que bon leur semblera par la forme et maniere qu'il appartiendra que faire se devra par raison».

autonomous regional actors. Beyond the adjacent principalities, few references were made to a wider 'international community': a few arguments and witnesses mentioned the international trade, and on one occasion it was acknowledged that the ultimate authority to levy tolls resided with the Pope and the Emperor, the theoretical supreme authorities within the Western Latin *res publica Christiana*.

The ambivalence of the Dukes of Burgundy's personal union nevertheless gave the dispute some characteristic features. As the supreme political body of the principalities, the sovereign and his council could appear to be not so much a common, but rather a superior authority 'above' the individual principalities. In a relatively peaceful political context (a condition which was not fulfilled for most of Maximilian's reign), that superior authority seems to have been at least sufficiently strong for imposing a peaceful form of dispute settlement.

The means of peaceful settlement was that of a court of justice. As a result, the principles which governed both the procedure and the substantive rules applied by the court were to a large degree those of Roman-canon law. The versatile format of possessory actions offered a fitting framework for trans-provincial or inter-provincial disputes, for which no body of legal rules outside the *ius commune* had yet been developed. In that sense, the Great Council was able to fulfill the role of a regional 'international court', settling disputes between actors whose 'sovereignty' was at the same time shared and distinct, i.e. integrated into a common political structure.

2. 1783-1786: The Scheldt Question in the era of the *Droit public de l'Europe*

2.1 *International relations and the European Law of Nations on the eve of the French Revolution*

By the 1780s, traditional diplomacy was less challenged by new philosophical ideas — bolstered, for a while, by the success of American independence — than by uncertainties about the long-term developments in the perceived balance of power. Ever since (at the latest) the Spanish Succession War, the rise of Britain's weight in European politics had seemed to have become the

main challenge to France's potential hegemony. At the end of the Seven Years' War, the time was ripe for a cautious alliance between France and her old arch-rival Austria. Peace with the Emperor meant that France could once again invest more resources in its overseas and maritime policy, the necessary condition if she were to break England's growing supremacy over the world's sea routes and maritime trade. The loss of England's most developed Northern American colonies appeared to many observers a clear indication that that supremacy was now declining. On the European Continent, the Anglo-Dutch war had broken England's ties with her long-term bridgehead for military interventions in Europe. The Dutch Republic, weakened and internally divided by the power-struggle of political factions which favoured different foreign policies and alliances, was tempted to rely on the protection of France.

In Central Europe, the rise of the Prussian state had become Austria's main source of concern. Prussian expansionism not only shattered the *modus vivendi* which had emerged after the Thirty Years' War within the Empire, it also fundamentally changed the situation in the shrinking Polish territories, where the regional Great Powers — Austria, Prussia and Russia — were increasingly heading towards direct confrontation.

2.2 Joseph II's claim for free navigation on the Scheldt

From Vienna's perspective, the Austrian Netherlands were an ambivalent political asset. No doubt the territories still carried a certain prestige because of their historical associations with the House of Burgundy and Charles V. More importantly, their strategic position ensured that the Emperor remained a prominent and necessary player in Western European politics.

However, the territories also had their drawbacks. They had been returned to the House of Austria mainly because the European Powers at Utrecht, and not least the Dutch, had wanted a major power to hold the vulnerable provinces between France and the United Provinces — an arrangement which had furthermore been reinforced by the *Barrière* system, which had already been eroded under Maria-Theresa and was finally abolished by her son. Since France was no longer seen as the main threat to the Emperor's interests, that purpose now seemed obsolete. Another consideration militating against the Emperor's interests in the Belgian territories was its lacklustre commercial position, much in contrast to the glorious past of such cities as Bruges, Ghent

and Antwerp. It was commonly believed that if these provinces could offer better access — both geographically and politically — to maritime trade, some of that commercial past could be revived. In line with such widely-held opinion, it was usually admitted that the Austrian Netherlands were exceedingly disadvantaged by the insufficient capacity of its few Flemish seaports (mainly, Ostend) and Antwerp's loss of any direct access to the sea since the partition of the Netherlands as a result of the Dutch revolt in the sixteenth century⁴⁸. For Austria, which was struggling to set up international maritime trade through its few outlets on the Mediterranean, the prospect of acquiring overseas colonies (as other Western European Powers had, with various success), and of participating in world trade, was a recurrent vision which, witness the infamous end of the Ostend Company, the Dutch influence on European policies had repeatedly thwarted.

Joseph II may have had reasons to believe that in the aftermath of the Anglo-Dutch War during the first years of his reign, the circumstances were favourable for a change. England's ties with the Dutch had been severely strained and its influence in the Republic were at a low ebb. The United Provinces were seeking protection from France. Austria's alliance with France had lasted for more than a quarter of a century, and was part of France's policy to ensure that her hands were sufficiently free on the Continent to tackle England on the seas and in the colonies. The friendly relations with Catherine of Russia could reasonably be expected to thrive on the prospect of offering Russia's maritime ambitions privileged facilities on the North Sea, in the immediate vicinity of the Channel. Finally, the internal strife in the Dutch Republic would inevitably weaken its capacity to respond on the international scene.

A strategy was devised, the main aim of which was to obtain a Dutch concession opening the Scheldt to international navigation. The idea had already been vented by the Emperor at the beginning of his reign, around the same time when, for opportunist reasons, England, at war with the Dutch, had already made a similar suggestion to the Austrian government.

⁴⁸ Some (particularly, Dutch) authors tend to interpret more restrictively the meaning of 'closure' regarding the history of the Scheldt, for a recent example, s. the dissertation of V. Enthoven, *Zeeland en de opkomst van de Republiek. Handel en strijd in de Scheldedelta c. 1550-1621* (Leiden 1996), Chapter 4, pp. 109-50 (and the additional thesis No. 3, «Op enkele korte perioden na is de Schelde nooit gesloten geweest»).

The main objection to the plan was seen to lay in art. 14 of the Treaty of Munster, which had sanctioned the closure of the Scheldt imposed by the Dutch Republic ever since Farnese had recaptured Antwerp⁴⁹. Whatever the merits of the criticisms directed against that particular article one and a half centuries later, any European diplomat at the time would admit that a challenge of the article could easily be perceived as a challenge to a fundamental concept, even though perhaps outdated, of the international European political order.

2.2.1 *The sequence of diplomatic initiatives and military display*⁵⁰

In 1783, Joseph II's government had established a plan of action which purported to obtain, ultimately, the 'freedom of the Scheldt', a purpose which, however, was camouflaged through a screen of other claims to be asserted in order of priority. A diplomatic note written in October 1783 stated that after the departure of the last Dutch garrisons in the Southern Netherlands, the question of the borders, and particularly the Northern border of Flanders, had to be settled; and only after the various other claims against the Republic had been put forward would the Dutch government be confronted with the question of free navigation on the Scheldt. In addition, the Austrian government intended to create the circumstances which would make the Dutch take the initiative and seek negotiations. A few minor incidents in October and November 1783 offered the Emperor's government the pretexts for stepping up the pressure on

⁴⁹ Dutch version, according to a contemporary publication (*Articulen en conditien van den Eeuwigen Vrede. Ghesloten tusschen den Groot-machtighen Koninck van Hispanien, etc. ter eender, ende de Hoogh-mogende Heeren Staten Generael der Vereenighde Nederlanden, ter ander zijde; onderteyckent ende bezegelt den 30 Januarij 1648*. Tot Rotterdam, By Haest Voortganck, Boeck-drucker van de Articulen van de Vrede, 1648): «De Riviere de Schelde, als mede de Canalen en 't Sas, Swijn ende andere Zeegaten, daer op responderende, sullen van de zijde van de Heeren Staten geslooten werden gehouden».

⁵⁰ The major study for this period remains: F. Magnette, *Joseph II et la liberté de l'Escaut. La France et l'Europe* [Mémoires couronnés et autres mémoires publiés par l'Académie Royale des Sciences, des Lettres et des Beaux-Arts de Belgique, in-8°, T. LV] (Brussels 1896-8). Some additional source-material is mentioned in A. Cauchie, 'Le comte L.C.M. de barbiano di Belgiojoso et ses papiers d'Etat conservés à Milan', in: *Bulletin de la Commission Royale d'Histoire*, T. 81 (Brussels 1912), 147-332, esp. pp. 176-200.

the Republic. But the Dutch government remained aloof and it was not before April 1784 that it finally sent its deputies to Brussels. There, the representatives were soon presented with the Emperor's *Tableau Sommaire*, which listed the Austrian claims, though, following the strategy established earlier, it fell short of raising the issue of navigation on the Scheldt⁵¹. The *Tableau* included the claims on the Flemish border, the Dutch forts on the Scheldt within the Austrian Netherlands, on various payments due by the Republic, and also on the sovereignty over Maastricht and the Outre-Meuse territories.

At that stage, Austrian diplomacy had planned to involve its French ally in its scheme. The main thrust of the plan was to ensure that French pressure on the Dutch would buttress the Austrian demands. More specifically, it had been hoped that the French government could be persuaded to convey the demands directly to the Dutch, who would thus be led to believe that the French government fully backed those demands⁵². The plan failed and Joseph II was forced to take up unilateral action by stepping up the pressure on the Dutch even further. As the latter were evidently dragging their feet in the Brussels negotiations, the Emperor decided that only a more robust display of force would bring them to make concessions. On 23 August 1784, an ultimatum which required the Dutch, *inter alia*, to allow free navigation on the Scheldt, expressly stated that any challenge to ships sailing under the Emperor's flag would be regarded as 'a formal act of hostility'⁵³. The prospect of a war and its European ramifications instantly attracted the attention of all the major European powers and triggered off a series of pamphlets which soon circulated among 'European public opinion'. The tension increased when, on October 8th, a ship sailing from Antwerp came under fire from the Dutch guard on the Scheldt and was arrested. Diplomatic relations between Austria and the Republic were broken off and, at least formally, the two countries were deemed to be at war.

At first, the French government, while the Austrian-Dutch negotiations had been deteriorating, attempted to act, or rather to appear to act, as a 'honest

⁵¹ Magnette, *Joseph II et la liberté de l'Escaut...*, pp. 75-6.

⁵² In this instance, again, it may be that the Emperor's strategy prevailed over Kaunitz's more realistic approach to the French government's position: Magnette, *Joseph II et la liberté de l'Escaut...*, pp. 117-8.

⁵³ Cauchie, *Le comte ... di Belgiojoso...*, p. 183.

broker' between the two powers with whom it wanted to remain on friendly terms. After the breakdown of the talks and the preliminaries to an outbreak of war had become public, France decided that it could no longer remain neutral. On 20 November 1784, the King made it known to the Emperor that in this conflict, France would support the United Provinces⁵⁴. At that point, the Austrian government finally decided to back down and avoid an armed conflict where it might well have been isolated. The French determination brought the parties to start peace negotiations in Paris, which started in April 1785⁵⁵. Although by now, the Emperor was ready to forsake the issue by making himself major concessions, the Dutch proved obstinate negotiators and it took much French diplomatic pressure to reach an agreement. Finally, the peace of Fontainebleau was signed on 8 November 1785.

2.2.2 *The Scheldt Question as an issue of the Droit Public de l'Europe*

Art. 14 of the Munster Treaty proved to be a greater obstacle to Austrian ambitions than anticipated. Austrian diplomacy, possibly under pressure from the Emperor himself⁵⁶, seems to have underestimated the importance attached to that article by the Dutch, regardless of the faction they supported in their internal affairs. The closure of the Scheldt was seen as a fundamental achievement of their independence war, and it had been confirmed in the very treaty which finally gave full and formal recognition on the European scene to

⁵⁴ Magnette, *Joseph II et la liberté de l'Escaut...*, pp. 154-5. The French Minister Vergennes, in a letter to the Ambassador, explained that his government's decision was justified by the need to counter a policy «qui subvertirai[t] tout le système dedu droit des gens, et ren[d] précaires les propriétés comme la tranquillité de toutes les nations. [...] [*the French King should make it clear that he does not intend to abandon the*] rôle que sa puissance lui donne le droit de jouer dans toutes les affaires qui peuvent intéresser la balance et la tranquillité de l'Europe» (p. 157).

⁵⁵ Magnette, *Joseph II et la liberté de l'Escaut...*, p. 178.

⁵⁶ Cf. the initially cautious and reluctant attitude of Kaunitz to the Emperor's reaction in 1781 to the English suggestions of reopening the Scheldt to international trade: the Chancellor's memorandum referred explicitly to the importance of art. 14 of the Munster Treaty and its later confirmations (Magnette, *Joseph II et la liberté de l'Escaut...*, pp. 21-3; see also the Austrian authorities' reactions to Brabant revendications, p. 28). The same year, the Emperor himself reminded the burgermaster of Antwerp that the Treaty of Munster was an insuperable obstacle to the reopening of the Scheldt (p. 37).

their independence. Any attempt to erode the treaty, apart from the Dutch concerns to prevent any competition to the position of Amsterdam and to diminish in any way the full sovereign control over Zeeland's waterways, was perceived as a direct threat to the Republic's most fundamental interests⁵⁷.

For other powers, not in the least France, the Treaties of Munster also had a significance beyond the specific arrangements they contained. The 'Peace of

⁵⁷ Magnette, *Joseph II et la liberté de l'Escaut...*, pp. 84-5, quoting the French government's representatives in The Hague, 6 July 1784. The 350th anniversary of the Peace in 1998 has inspired much fresh scholarship on the subject and generated a host of publications, too many to mention here. H. de Schepper, *Rond de Vrede van Munster* (Brussels-The Hague 1999), has reiterated some of his earlier arguments to show that, in spite of the division, some 18th-century sources continued to present or view the Southern and Northern Netherlands as an identity with common features, possibly still with a common destiny. More generally, however, the *Nachleben* of the Westphalian Peace (throughout the Ancien Régime) has enjoyed comparatively less attention. The United Provinces are practically left out from the otherwise eminent collection of essays published by L. Bély and I. Richefort (eds.), *L'Europe des Traités de Westphalie. Esprit de diplomatie et diplomatie de l'esprit* (Paris 2000), which on the other hand contains a contribution on England. They appear more prominently in the three volumes *1648. War and Peace in Europe* (K. Bussmann and H. Schilling, eds.: exhibition catalogue and two volumes of essays, Munich 1998): esp. J. Israel, 'The Dutch-Spanish War and the Holy Roman Empire', pp. 111-31 in the vol. *Politics, Religion, Law and Society*, which contains several articles on the long-term importance of the Peace. For Dutch commemorations (in which the Scheldt Question, unsurprisingly, hardly appears), see a.o.: J. Dane (ed.), *1648. Vrede van Munster. Feit en verbeelding* (Zwolle 1998); *1648. De Vrede van Munster. Handelingen van het herdenkingscongres te Nijmegen en Kleef, 28-30 augustus 1996, georganiseerd door de Katholieke Universiteit van Nijmegen, onder auspiciën van de Werkgroep Zeventiende Eeuw* (Hilversum 1997), esp. the contribution assessing the short- and long-term economic effects of the Peace Treaty by A.M. van der Woude, 'De vrede van Munster en de economische ontwikkelingen in de Republiek', pp. 99-119. H. Lademacher, "'Ein letzter Schritt in die Unabhängigkeit" — Die Niederländer in M_nster 1648', in: H. Duchhardt (ed.), *Der Westfälische Frieden. Diplomatie, politische Zäsur, kulturelles Umfeld, Rezeptionsgeschichte* (M_nich 1998), pp. 335-48. C.G. Roelofsen, 'Völkerrechtliche Aspekte der Verträge von Münster und Osnabruck vom 24. Oktober 1648', in: O. Moorman van Kappen and D. Wyduckel (eds.), *Der Westfälische Frieden in rechts- und staatsrechtlicher Perspektive* (Berlin 1998), 175-88 [= *Rechtstheorie* 29 (1998)]. F. Dickmann, *Der Westfälische Frieden* (Münster 1998, 7th edn.), p. 440 et seqq.

Westphalia' had after all established France's continental supremacy against their Hapsburg rival, partly by diminishing the Emperor's influence in the autonomous territories of the Empire. The Spanish-Dutch settlement, which had ensured the independent position of the Republic against the Hapsburg power, also fitted into that general scheme. Thus, from the French perspective, too, any change to the 'system' of Westphalia, even on an issue which possibly did not directly affect French interests, could be seen, despite the profound transformations European policies had gone through since the mid-seventeenth century, as an overture to far greater changes of an order to which France remained on the whole attached, or which at least, in the present circumstances, it was not willing to give up for the sake of particular Austrian interests. Moreover, France's priority at the time was her struggle with England. As the Austrian efforts to press the Dutch Republic threatened the French policy aiming at an agreement with the United Provinces which would contribute to separate the Republic from England, the Austrian diplomatic initiative was seen as both a threat and an opportunity: if France stood by Austria, or remained indifferent in the conflict, the project of a French-Dutch alliance and the French influence in the Republic were lost; conversely, a strong support of the Dutch cause on an issue which the latter felt touched the very survival of their country, could only benefit the French ascendancy over the United Provinces. In addition, as France had reasons to expect that the Austrian insistence on their claims against the Dutch were strongly subordinated to other, more important geo-political concerns⁵⁸, the French government was in a position to antagonise its ally in Vienna on this issue without too great a risk of putting an end to the Austrian alliance.

In that sense, the controversy over the Scheldt raised by Joseph II can be seen as a classic example of eighteenth-century doctrines and theories on the European law of nations. The *Droit Public de l'Europe* was a concept of international law which strived to combine different, to some extent even diverging, approaches to the normative principles governing international relations between European nations. One of these approaches was strongly influenced by rationalist philosophy: it shared the general rationalist axiom of a

⁵⁸ Cf. Joseph II's efforts to acquire the Bavarian territories in return for abandoning the Southern Netherlands, which would have strengthened his position within the Empire against the growing threat of Prussia (Magnette, *Joseph II et la liberté de l'Escaut...*, pp. 142-5).

general, 'rational' structure in the outer world, including the 'society' in which European nations interacted. Strongly influenced by the scientific models of the time, it assumed a rationally intelligible coherence or system in the way international relations, apparently exclusively moved by the *raison d'état* of each individual actor, had developed. In that view, the European statesman was someone whose insight in the system made him work out a policy which optimally combined the requirements of his country's *raison d'état* and those of the European 'system' of nations. The most salient feature of that rationalist thinking was no doubt the principle of the 'balance of power', which pervaded much of the diplomatic jargon and, more generally, discussions on international relations and the law of nations. The eighteenth-century concept of the 'balance of power' owed much to a general model borrowed from physics, as may be apparent from the insistence in contemporary diplomatic correspondence or political publications on the necessity to find the point of 'rest' or 'balance' in the continuous struggle between the powers or nations. References to the 'tranquillité' or 'repos' of Europe in the French diplomatic language of the time was therefore more than a mere rhetorical flourish⁵⁹.

The *Droit Public de l'Europe* was nevertheless much more than a transposition into legal terms of scientific rationalist thinking. Another approach it expressed was, paradoxically, one of *Realpolitik*: few systems of international law in Western history have been so close to the political principles of international relations, or, in other words, have sought to narrow to such extent the inevitable gap between international politics and the international rule of law⁶⁰. The insistence, in the eighteenth-century law of nations, on the principle of efficiency, is but one example of that concern. The more specific rules governing the dynastic succession in particular countries, or the complex organisation of the Empire, or even the *Barrière* as a general principle, further illustrate how steeped in particular political compromises European

⁵⁹ A. Osiander, *The States System of Europe, 1640-1990. Peacemaking and the Conditions of International Stability* (Oxford 1994), Ch. 3 (on the Peace of Utrecht).

⁶⁰ Notwithstanding, of course, some fundamental doctrinal and theoretical controversies, recently discussed by R. Tuck, *The Rights of War and Peace. Political Thought and the International Order from Grotius to Kant* (Oxford 1999), in particular Ch. 5, 6 and 7 for this period. In many ways, Mably's classic treatise remains the best contemporary outline (recently re-edited with an introduction and notes by M. Belissa: Gabriel Bonnot de Mably, *Principes des négociations. Pour servir d'introduction au droit public de l'Europe* (1757) (Paris 2001)).

international law could be. It also explains why, parallel to the meta-juristic works on international law which sought to elaborate a system of *ius naturae sive gentium* that would match the concept of *Vernunftrecht*, works on topics of international law which can accurately be characterised as early-positivistic were thriving⁶¹. To a legal or political mind of the time, there was no necessary contradiction, for if particular agreements were compatible with the general principles of the 'system', they were simply expressions, in the positive law of nations, of the system's immanent laws.

Even beyond the strictly legal arguments, these concepts played a role in the discussions inspired by political events. Thus, when the Austrian-Dutch dispute over the Scheldt reached a point where it could spill over into a wider European armed conflict, it became a topic for polemics in different countries⁶². Among the pamphlets published in 1784-5⁶³, the controversy

⁶¹ For a recent and, in the current discussion, influential reference-work on 'early-positivism' in eighteenth-century international doctrines: K. Akashi, *Cornelius van Bynkershoek: His Role in the History of International Law* (The Hague etc. 1998).

⁶² Ch. Terlinden, 'The History of the Scheldt', in: *History, The Quarterly Journal of The Historical Association*, New Series, vol. IV (1919-20), 185-97, and vol. V (1920-1), 1-10, which is a brief general outline of the history of the Scheldt from the Middle Ages until the 19th century, gives in the second part, p. 9, bibliographical note V, a useful survey of pamphlets published during the 1780s. I hope to publish a separate article specifically dealing with the law of nations in the light of these polemical writings. F. Magnette, 'Un mémoire inédit sur la liberté de l'Escaut', in: *Compte rendu des séances de la Commission Royale d'Histoire, ou Recueil de ses Bulletins*, Cinquième série, T. V (Brussels 1895), 405-17, published an anonymous and undated argument from a manuscript in the French Foreign Office Records. According to Magnette, the author was a resident in Frankfurt, wrote the piece towards the end of 1784 and was clearly in favour of the Emperor's claim. The manuscript may be incomplete: while its title announces 'Sept questions politiques sur les affaires d'Etat actuelles de l'Empereur avec la Hollande', but Magnette's publication only contains one section (it may be of course that the other sections are not related to the Scheldt controversy). The location of the author in Frankfurt may be spurious: perhaps it is no more than a rhetorical flourish: the author opposes the opinions supported in Amsterdam and Vienna, and then presents himself as a free commentator residing in Frankfurt — a city conveniently located in-between, possibly a device aiming at emphasising that he is «exempt de partialité» (p. 410). Note 1, p. 413, which deals with Dutch fortifications on the banks of the Scheldt just North of Antwerp, might betray a familiarity with the local situation. The author's arguments against the Dutch are mainly based (a) on the freedom of the seas (the

between Linguet and Mirabeau is paradigmatic of the conventional argumentations and reasoning followed by the authors of pamphlets on issues of international politics and law⁶⁴.

For Linguet⁶⁵, the Scheldt incident was an opportunity to support the Emperor's case against the Dutch. His argumentation pretends to consider both the legal and the political issues of the question. In law, Linguet rejects any justification of the Dutch refusal to accept the Emperor's claims for free navigation on the Scheldt. This part of the argument is threefold: the Dutch position is said to be contrary to equity and reason, to natural law, and to the law of nations. Intermittently, these arguments are rhetorically strengthened by attacking the Dutch policies for being in breach of accepted European ethical standards. The general argument denounces the Dutch Scheldt-policy as inequitable, unreasonable and disproportionate⁶⁶. Their reliance on the Munster Treaty is in general, according to Linguet's thesis, a spurious justification, for the author believes that any legitimate pretensions which may have justified the Treaty back in 1648, can now equally be asserted by the Emperor against the Republic. Far from acknowledging any privileged authority to the Treaty, Linguet objects to its validity — either because he

Scheldt estuary being assimilated to a sea-arm); and (b) on the nullity of art. 14 of the Munster Treaty, a.o. because the Spanish Kings' powers did not include the right to cede any part of the Netherlands. More generally, the author challenges the consistency of the Westphalian Peace.

- ⁶³ See also the articles in the *Gazette de Vienne* and the *Gazette the Leyde* referred to by Mirabeau in his pamphlet on the Scheldt Question (full reference *infra*), p. 91, N. 1.
- ⁶⁴ For a brief analysis of the two pamphlets in the wider context of the French government's policy in international relations at the time and its concept of the law of nations: M. Belissa, *Fraternité universelle et intérêt national (1713-1795). Les cosmopolitiques du droit des gens* (Paris 1998), pp. 124-5.
- ⁶⁵ Linguet's text appears in various imprints which would require a more thorough collation. The quotations hereafter rely on: *Dissertation intéressante sur l'ouverture et la navigation de l'Escaut, par M. Linguet*. A Londres; Et se trouve à Bruxelles, Chez De la Haye & Compagnie, vis-à-vis la rue des Lombards. M.DCC.LXXXIV.
- ⁶⁶ *Dissertation intéressante...*, pp. 14, 21, 24, 27-8, 37, 55. Linguet (conveniently bypassing later confirmations in multi-lateral conventions) also doubts whether the Treaty could be opposed to non-contracting Powers (p. 48).

applies a principle which comes close to that of *rebus sic stantibus*⁶⁷, or because he argues that, at its root, it was excessively detrimental to the Southern Netherlands' interests. Moreover, any legitimacy the Dutch could claim for the Treaty was based on their superior power at the time it was concluded; the Emperor was now in a position to avail himself of the same legitimacy against the Dutch⁶⁸. This general argument is then more specifically reinforced by arguing that art. 14 of the Munster Treaty violated fundamental principles of both natural law and the law of nations. The natural law argument⁶⁹ consists mainly in showing that the closure of the Scheldt is purely detrimental to the interests of Brabant and the Austrian Netherlands, without offering any substantial advantage to the United Provinces. The law of nations' argument⁷⁰ is mainly based on the principle of the freedom of the seas⁷¹, which Linguet here extends to a tidal estuary as that of the Scheldt. In line with this argument, and elaborating on the general benefit of international trade, he anticipates the concern the law of nations would soon show for liberating navigation on international rivers⁷² — though his science-fiction analogy with the international status of aircrafts reminds us that he was no infallible prophet⁷³. These 'legal' arguments are rounded off by a series of

⁶⁷ *Dissertation intéressante...*, pp. 23, 26-7 («... et n'est-ce pas ici le cas de mitiger la rigueur du texte par un commentaire, ainsi que le texte lui-même par les variations de la fortune, et le changement des circonstances?» — in the following paragraph, however, Linguet reverts to the deficiencies of the Treaty *a radice*). On the *foi due aux traités*: p. 26.

⁶⁸ *Dissertation intéressante...*, pp. 25-6. Linguet's argument resembles an opinion which the Emperor himself expressed in 1782 to Kaunitz and Mercy (quoted by Magnette, *Joseph II et la liberté de l'Escaut...*, pp. 47-8, a.o. «Pourquoi, au droit du plus fort, du vainqueur de 1648, ne pas opposer le droit de la nature, le droit des peuples?»).

⁶⁹ *Dissertation intéressante...*, pp. 20, 29, 31-2, 35-7; on p. 34, presents a possible Dutch counter-argument against the objections based on natural law.

⁷⁰ *Dissertation intéressante...*, § V, p. 38 et seqq. (*jo. natural law*, p. 48).

⁷¹ *Dissertation intéressante...*, p. 41.

⁷² *Dissertation intéressante...*, p. 47.

⁷³ *Dissertation intéressante...*, pp. 43-4 («... tomberoit-on dans l'esprit d'un peuple quelconque de stipuler, en traitant avec des voisins même vaincus, que les aëronautes ne pourront traverser les nuages qui ombrageront son pays? Un Roi de France interdira-t-il à l'Espagne la faculté de faire voler ses couriers en ligne droite

considerations which are meant to demonstrate the weakness of the Dutch position in the European context. Using arguments which mirror remarkably accurately those expressed by Austrian diplomacy, Linguet, emphasising Holland's established position in international trade, minimises the Dutch fears of a reversal of fortunes for Amsterdam and Antwerp. Neither England nor France (a wrong assessment, as later events proved) had any interest in supporting the Dutch resistance against the Emperor's demand. France, he suggested, would even benefit from the opening of the Scheldt in favour of her Austrian ally. While Russia would see her European policies vindicated by the opening, Linguet doubted that Prussia would find any reason for intervening on behalf of the Republic. Any reader who had been persuaded by Linguet's arguments would have concluded that the Emperor's demand to free the navigation on the Scheldt was not only just, reasonable and lawful, but that the Dutch could not count on pitting the great European powers against each other in order to protect their interests⁷⁴ — which, whatever they claimed, were not as vital for the Republic's survival as they pretended.

Mirabeau's pamphlet⁷⁵, partly written in reaction to Linguet's⁷⁶, takes an opposing view. His arguments are directed against the Emperor, but he also proposes a new, and original, scheme to resolve the question, which no doubt would have been favourable to French interests, without necessarily strengthening the Dutch Republic. With greater emphasis than Linguet, Mirabeau works out his criticisms and proposals within the system of the *Droit*

des Pyrénées aux Alpes, sous prétexte que se seroit déroger à sa souveraineté?»).

⁷⁴ *Dissertation intéressante...*, pp. 62-4, Linguet concludes that if a war breaks out because of the Scheldt Question, it should only directly involve Austria and the United Provinces. His analysis nevertheless shows the interests other European Powers may gain or hope to gain from the outcome of the conflict.

⁷⁵ References are to: *Doutes sur La liberté de l'Escaut Réclamée par l'Empereur; Sur les Causes et sur les Conséquences probables de cette Réclamation*. Par le Comte de Mirabeau. A Londres: Chez G. Faden, Géographe du Roi, Charing-Cross; Et se trouve chez J. Robson, New Bond-Street, & P. Elmsley, dans le Strand [s.d., the Preface dated «A Londres, 28 Décembre, 1784»]; a Dutch translation was published shortly afterwards: *Bedenkingen over de vrijheid der Schelde, door den Keizer gevorderd. Over de oorzaken en waarschijnlijke gevolgen van deze vordering*. Door den graave de Mirabeau. Te Leyden, Bij Frans de Does, MDCCCLXXXV.

⁷⁶ In particular the Third Letter of the pamphlet, pp. 90-153.

Public de l'Europe and the balance of power⁷⁷. Following what appears to have been a widely shared consensus, he concedes that the Emperor's claims for the Scheldt are legitimate in terms of natural law, viz. the principles of free navigation and trade⁷⁸. However, Mirabeau here introduces his own brand of natural law theory, which he opposes to the law of nations. The natural law in his view reflects the state of nature of competing nations; and, as in the case of the primary state of nature of individuals, these natural laws offer no protection to the weaker actors⁷⁹. The law of nations, on the contrary, encompasses the body of rules which govern an organised society of nations. Through treaties, in Mirabeau's view, the society of nations gradually builds up a positive international law which, for the sake of preserving the international legal order, should prevail over natural law⁸⁰. In that context, the Treaty of Munster is seen as one of the most fundamental 'laws' of that European international order⁸¹. Any attempt to violate or to change that fundamental law should therefore be

⁷⁷ In this pamphlet, Mirabeau, does not seem to use the phrase *droit public de l'Europe*, but he regularly refers to the European 'system' and speaks of the whole complex of treaties which, together, «assurent l'existence politique de l'Europe» (*Doutes sur la liberté de l'Escaut...*, p. 25) and form «le code politique de l'Europe» (p. 12; translated in the Dutch version as «het staatkundig wetboek van Europa»); but he rejects any 'utopia' (p. 32), or considering in his own day any politically integrated system such as 'the Republic of Henry IV, or the European Assembly of the Abbé de Saint Pierre' (pp. 26-7). The balance of power, on the other hand, is a concept Mirabeau frequently refers to as a conventional device for securing peace — conventional in the sense that, as a fundamental principle of political theory, it does not appear to be subject as such to critical scrutiny.

⁷⁸ *Doutes sur la liberté de l'Escaut...*, p. 22 et seq.

⁷⁹ *Doutes sur la liberté de l'Escaut...*, pp. 22, 27, 28-9, 32, 91. A brief reference to Rousseau serves the purpose of buttressing the idea that positive laws, not natural law, are the foundation of the social order (p. 26).

⁸⁰ *Doutes sur la liberté de l'Escaut...*, pp. 26 («Les conventions sont donc la case de tous les droits. Faudra-t-il désormais les violer toutes, détruire tous les établissemens politiques, sapper tous les autorités, et porter le trouble dans chaque Etat, sous prétexte d'y ramener les principes du droit naturel dont on s'est écarté [...]?»), 29-30 («...car il n'est que deux droits sur ce globe: celui de la force, et celui des conventions [...]. nulle société n'existe qu'à l'abri des conventions»), 32 (the author, referring to his earlier statements, declares that he will not discuss whether the system of European international relations is good or bad: «Il s'agit de droit public, et non de droit naturel»).

⁸¹ *Doutes sur la liberté de l'Escaut...*, pp. 10, 12.

regarded as a threat to the international order itself. Switching to the register of international politics, Mirabeau argues in favour of French intervention on behalf of the Dutch. His argument rests on the view that England is too weakened to be expected to intervene; and in Central Europe, his analysis suggests that Prussia is hard pressed to counter the combined forces of Austria and Russia. Both the law of nations and the general interest of Europe militate against the Emperor's demands.

Nevertheless, Mirabeau's pamphlet is not just a plea for supporting the Dutch against the Austrian claims and maintaining a status quo. Whether as a more or less realistic proposition or as an intellectual exercise in the theory of international relations, he takes the opportunity to make a proposal which would drastically change the political outlook of the Low Countries, but — perhaps his main purpose — provides an opening for expressing his views in favour of a more free and democratic regime⁸². In the best interest of all the European powers directly or indirectly involved in this conflict⁸³, he advocates the independence of the Austrian Netherlands under a free republican constitution. Inspired by the ideals of American independence⁸⁴, he favours the emergence of free, democratic republics as the best guarantee for peace in Europe. The Belgian provinces, in his somewhat idealistic presentation, offer excellent prospects for such a regime, better at any rate than the United provinces. The political independence and economic prosperity of the Belgian Republic would commend itself to other European nations, remove all threat to

⁸² *Doutes sur la liberté de l'Escaut...*, Fourth Letter, pp. 154-168: «Qu'elles se forment en Etats fédératifs ces dix Provinces favorisées par la Nature, qui leur destina surtout la liberté!» (p. 154), «Que les Pays-Bas Catholiques soient indépendans» (p. 155), «Les Pays-Bas [*i.e. the Southern Netherlands*] sont dans une situation plus favorable que les Hollandais eux-mêmes pour former une République» (p. 156), etc. Some of Mirabeau's remarks echo those he expressed in his Letter to the Dutch regarding the political role of the *Stadhouder*.

⁸³ Cf. his survey, country by country, of the individual interest each Power or principality may have in Belgium's independence as a 'free Republic', *Doutes...*, p. 161 et seqq.

⁸⁴ More or less explicit references to the newly independent United States appear throughout the pamphlet. Even so, Mirabeau takes sides in the debate between Federalists and their opponents (*Doutes sur la liberté de l'Escaut...*, p. 156, and *ibidem* N. 1) advocating for Belgium «une fusion de toutes les parties, qui forme un corps, UN et homogène, dont aucun Etat fédératif n'offre encore de modèle»).

its neighbours, and ensure its security in the European system⁸⁵. Somewhat as a corollary, Mirabeau adds that the new Republic could negotiate the opening of the Scheldt with the United Provinces on an equal footing, and he does not appear to allow for any fundamental objections from the latter. Except for this last part of his analysis, Mirabeau's project anticipated the situation which in very general terms, albeit in a very different political context, and after the European system he had in mind had given way to a thoroughly reshaped international order, would come out of the Belgian independence in 1830 — a prophecy which can, however, hardly be attributed to Mirabeau in 1785.

2.2.3 *The short-term outcome of the 'Kettle-War': the Treaty of Fontainebleau (8 November 1786)*

During the Paris negotiations, the Scheldt estuary was no longer the real issue⁸⁶. The Flemish border, Maastricht and the Outre-Meuse territories, custom duties and the trade in the Indies dominated the agenda. The Scheldt

⁸⁵ *Doutes sur la liberté de l'Escaut...*, p. 166: «Quand [la politique humaine] formera-t-elle de bonne foi le désir d'établir une paix fondée sur l'intérêt de tous; une paix durable, dis-je, c'est-à-dire après la liberté, tout ce qu'il y a de bon sur la terre? — Je ne sais si ce jour luira jamais pour l'humanité; mais si quelque chose pouvoit en hâter l'aurore pour notre malheureuse Europe, ce seroit sans doute la fondation de la République Belgique»; see also p. 167 *infra*. Arguably, this is Mirabeau's main concern in his discussion of the Scheldt Question, *viz.* arguing for the emergence and development of free democracies in Europe as a prerequisite to overcoming the traditional Great Power politics; against a passage from Montesquieu («que les Déserts étoient la barrière nécessaire des vastes Etats»), he argues in favour of: «Des Républiques, des Républiques! Telle est la frontière qui convient aux Monarchies [...]. Ces Républiques, quand elles ne seroient qu'écarter la guerre qui seroit leur ruine, ne peuvent qu'ajouter à la prospérité de leus voisins» (pp. 165-6). This grand geo-political design is not necessarily incompatible with a *realpolitische*, and perhaps more cynical, approach, in the interest of France (pp. 164-5).

⁸⁶ Magnette, *Joseph II et la liberté de l'Escaut...*, pp. 178-94. Cauchie, *Le comte ... di Belgiojoso...*, p. 199, quotes a letter from Joseph II to Belgiojoso dated 29th September 1785, in which the Emperor states: «Voilà donc cette déagréable affaire finie et, dès que l'objet unique, savoir l'entière et libre navigation sur l'Escaut avoit manqué, tout le reste ne valoit plus la peine...» — a statement which is largely confirmed by the Emperor's outline of his strategy in 1783 and in 1784 (quoted *ibidem*, p. 52).

Question nevertheless re-emerged during the discussions because of Vienna's insistence that the peace treaty should not refer explicitly to art. 14 of the Munster Treaty, while the brief of the Dutch delegation aimed at obtaining an explicit or literal confirmation of the same article⁸⁷. The Count of Mercy, Austria's main negotiator in Paris, tried to avert the difficulty by suggesting that the estuary would be regarded as open sea, but the inference of such a proposal was immediately understood and rejected by the Dutch. In the end, Austria succeeded in preventing any full reference to art. 14, but the price for that minor success was high, for art. 2 of the Fontainebleau Treaty stated that «the Treaty of Munster of January 30th, 1648, will serve as the basis for the present treaty», and art. 7 recognised the sovereignty of the States-General over the Scheldt from Saafingen to the open sea (arguably a recognition that went a step further than the Munster Treaty), and confirmed that the Scheldt estuary «would remain closed, as would the channels of Sas, the Zwin and other openings to the sea, according to the Treaty of Munster». Dutch diplomacy, supported by France, had by and large prevailed, while no material concession had been made to the Emperor.

Summary

The diplomatic manoeuvring and the pamphleteers' polemics around Joseph II's unsuccessful attempt to obtain a Dutch concession allowing free navigation on the Scheldt offer in many ways a classic example of the intricate relationship between international politics and international law as *Droit Public de l'Europe* towards the end of the *Ancien Régime*. It shows how heterogenous arguments referring to the theory of international relations, to natural law, and to the law of nations could be pressed into service in order to buttress different political agendas, which all had to accommodate both specific national interests and the more general and vaguer interests of the international community, represented by the flexible concept of the European 'system'.

Many of the strategies and polemical arguments in such a context were a mere *trompe l'oeil*. Linguet can be said to have used the controversy around the Scheldt to promote the paramount importance of great power 'blocks' as the essential elements of the European order. Mirabeau's discursion on the

⁸⁷ Magnette, *Joseph II et la liberté de l'Escaut...*, pp. 179-81, 189-93.

independence of a Belgian Republic served the purpose of propagating his constitutional preferences. More fundamentally, historical assessments of the Austrian claims against the Dutch Republic remained speculative when it came to establishing to what extent these claims were put forward in their own right, or as part of a larger strategy whose aim remained the acquisition of the Bavarian territories.

As the episode of the Antwerp and Brabant representations to the Austrian authorities reminds us, the Austrian Netherlands had been eliminated as an autonomous actor. As many other fringe territories in Europe, their value to their sovereign was that of barter-countries to be used for the grander designs or the necessities of their foreign policies. But even for the great powers, the *raison d'état* was by now more clearly than ever subordinated to the constraints imposed by the interdependence of the European nations. The *Droit Public de l'Europe* and its associations with various concepts of a European 'system' were primarily the expression of that interdependence. The unfolding of the Scheldt Question under Joseph II showed that even for an apparently regionally defined conflict, strategies and priorities had to be assessed in a general European perspective.

Ironically, on the eve of the French Revolution and the ensuing disintegration of the old European order, efforts to break the authority of the Treaties of Westphalia could still be thwarted. The principle of free international navigation and trade, which was to be asserted so strongly in later years, was generally recognised, but set aside when it was deemed to contradict political expediency (expressed either as *raison d'état* or as peace in Europe) or even the fragmentary conventional foundations of the European international order. It may well be that the incidents of 1784-5 contributed to associating the Scheldt Question with the principle of freedom of navigation which would later prevail, but that prevalence, as the contemporary discussions show, was the fruit of a different political order than that which formed the touch-stone of the *Droit Public de l'Europe*.

3. 1863: Bilateral and multilateral diplomacy in the age of positivism and 'absolute' sovereignty⁸⁸ of Nation-States (The Treaties on the Redemption of the Scheldt-Toll)

⁸⁸ This section relies very much on the thorough study of the redemption's political and

3.1 *The recognition of the Scheldt Toll by the Treaty of London (1839): an anachronism?*

Within a decade after Joseph II's failed attempt to change the international status of the Scheldt, the military successes of the French revolutionary armies created a territorial and political reshuffle in the Low Countries which, in France's interest, entailed the reopening of the estuary to maritime trade. The Austrian Netherlands became part of the French Republic, while the United Provinces were able to survive for a while as the Batavian 'sister' Republic. In addition to territorial concessions (the territories administrated as *Staats-Vlaanderen* were included in those annexed by France), the Dutch were forced to give way to the commercial and military importance attached by the French to Antwerp and the Scheldt. As tolls were ideologically included in the ragbag of 'feudal rights' which the revolutionary regime was set to eradicate⁸⁹, navigation on the Scheldt became free and was further strongly encouraged under Napoleon. The creation of the ephemeral Kingdom of Holland and the short-lived annexation of the remaining Dutch territories by the Empire brought the whole of the Scheldt, Meuse and Rhine estuaries into the French orbit. The decision at the Congress of Vienna to bring the Dutch and Belgian territories together into a single Kingdom was part of a global European strategy which aimed at creating around France and in Germany sufficiently resilient territorial 'blocks'⁹⁰ which, in the case of the Kingdom of the Netherlands, were expected to develop a viable national political structure based on the integration of complementary economic assets and interests, and some degree of common cultural traditions. Thus, from about 1795 until 1830, maritime traffic to and from Antwerp (and, to a lesser degree, with the Terneuzen canal, to and from Ghent) was able to develop on a new basis, soon fostered by the incremental Industrial Revolution in some of the Belgian provinces.

These benefits of maritime trade were immediately threatened by the onset of

diplomatic history by R. Depoortere, *Le rachat du péage de l'Escaut* (Brussels 1991), who also provides references to all relevant primary and secondary sources. Essential source-material is to be found in: Baron Guillaume, *L'Escaut depuis 1830* (Brussels s.d. [1903?], 2 vols.

⁸⁹ Cf. the Decree of the Republic's Executive Committee, 22 November 1792, *Moniteur universel*, No. 327, p. 1387.

⁹⁰ A. Osiander, *The States System of Europe...*, p. 227.

the Belgian struggle for independence. The Dutch King promptly closed the Scheldt to any traffic to and from the rebel provinces. In the post-Vienna European order, however, the issue was soon in the hand of the Great Powers. Moreover, the risk of seeing the strategic Belgian territories once again tumble under French influence ensured that the British government took a particular interest in controlling the outcome of the Belgian secession. A provisional settlement⁹¹ ensured a.o. that the Scheldt would remain open to maritime trade pending a definitive agreement. The nascent Belgian state therefore continued to enjoy, during the very first, fragile, years of its existence, a toll-free connection with the sea via the Scheldt. That benefit was not to last. The London Conference, which involved the Great Powers, the Netherlands and Belgium, illustrates how, on this issue, Britain's prominent role strongly contributed to the final settlement laid down in the Treaty of London (19 April 1839)⁹². The Treaty, less favourable to Belgium than the provisional settlement, established that the Dutch were entitled to levy toll on the Scheldt and it also fixed its rate⁹³.

⁹¹ According to Depoortere, *Le rachat du péage...*, pp. 20, 26 et seqq., the plenipotentiaries at the London Conference were unaware that no toll was levied in 1814; on the other hand, it is also clear that the Vienna Act on the Rhine Navigation and, more generally, the restriction of tolls on international rivers were, at the time, interpreted with many qualifications.

⁹² C. Smit, *De Conferentie van Londen. Het vredesverdrag tussen Nederland en België van 19 april 1839* (Leiden 1949).

⁹³ Compare however with Lord Palmerston's 'Theme' of 1832, which specifically stated, regarding the toll: «...S.M. le Roi des Belges aura en outre la faculté de se libérer pour toujours de ce paiement au moyen d'une capitalisation» (draft art. 9, par. 3 *in fine*, as quoted by Baron Guillaume, *L'Escaut depuis 1830*, p. 62). A practical (and long-lasting) result of the London Treaty was the establishment of a joint Permanent Scheldt-Commission: for a well-informed and readable survey of that Commission's background and history, see C.B. Wels, 'De Grote Mogendheden en de Schelde in 1839', *Zeeland* 10 (2001), 1-10, whose analysis emphasises that the 1839 settlement was part of a more general European arrangement agreed by the Great Powers; the author also shows how, following the Congress of Vienna, the Dutch restrictive interpretation and practice regarding the status of the navigation on the Rhine had generated a great deal of apprehension among German merchants in the German Rhineland and more generally among European maritime Powers (see also the illustrated brochure including a general outline of Prof. Wels's thesis: *De instelling van de Permanente Commissie van Toezicht op de Scheldevaart, een wijs besluit van de grote mogendheden in 1839* (s.d.n.l. [=2001]). I am grateful to Prof.

Because of the great commercial impact the toll might have on Belgian maritime trade, but partly also because of the need to avoid any implementation of the toll-system which would have hampered the navigation on the Scheldt and dented the perception of Belgium's independence from the Netherlands, the Belgian authorities decided that the toll would be paid by the Belgian state. This system was enacted (Act of 5 June 1839) but was also included as a Belgian obligation in bilateral commercial treaties concluded during the following years⁹⁴. As time passed and such treaties were (often, tacitly) renewed, the payment of the Scheldt toll tended to be perceived, at least abroad, as a duty which the Belgian state had undertaken at the time in order to obtain recognition of its independence. In 1839, the annual sum total of the toll duties had been expected to amount to a figure around half a million francs. By 1860, it was costing the Belgian state more than one-and-a-half million francs, and the expanding maritime traffic on the Scheldt was making it increasingly onerous. At that time, the Scheldt toll accounted for more than 1% of the expenses of Belgium's total budget⁹⁵.

Meanwhile, the international acceptance of tolls was waning. The Congress of Vienna had already paved the way for a new regime of commercial navigation on international rivers by preparing a status for the navigation on the Rhine. Although in the following years, these openings had often been limited through the restrictive interpretations and practices of governments, the general tendency by the 1850s, fostered by liberal, free-trade policies⁹⁶, was against

Wels for sending me a copy of the brochure and the text of a speech he gave for the Brabo-club in Antwerp on 5 October 2001.

⁹⁴ Depoortere, *Le rachat du péage...*, pp. 38-45 and, as regards the international treaties signed by Belgium, pp. 47, 65, 82.

⁹⁵ Depoortere, *Le rachat du péage...*, pp. 54-5 («Le facteur financier, voilà le principal sinon l'unique motif qui poussa notre pays à vouloir se libérer du péage de l'Escaub»); by 1860, the cost of reimbursement exceeded the 1% threshold (*ibidem*, p. 93).

⁹⁶ « On tablait à Bruxelles sur le fait qu'un à un tous les pays européens — ou du moins les principaux partenaires commerciaux de la Belgique — finiraient bon gré mal gré par adopter le 'free trade' [...] Le rachat du péage de l'Escaut et l'extension de la politique commerciale belge de libre-échange belge sont indissolublement liés» (Depoortere, *Le rachat du péage...*, pp. 124-5; see also the author's general conclusion, pp. 366-7).

levies which impeded the development of industry and trade, especially when they were associated with the political pretensions of a bygone age. Levies on international commercial navigation which could not be justified as the remuneration of real charges and expenses made for the benefit of that navigation, became inadmissible. The law gradually followed suit as the economic doctrine gained ground. An ancient toll such as that on the Sund, which could look back upon several centuries of recognition by the international community, had by now outlived its justification. It was redeemed by a general treaty: the international community of merchant states contributing to its payment, each state paying a share proportional to its part in the maritime trade that sailed through the Sund. A few years later, a similar fate put an end to the *Staderzoll*: here, too, a general treaty arranged for the toll to be bought off by proportionally calculated contributions of the maritime powers whose merchant navies were involved in the navigation on that part of the Elb⁹⁷. In this context, it is little surprising that by the late 1850s, the Belgian government started considering both the redemption of the toll through capitalisation (a modality which had been considered by Palmerston in 1832), and the possibility of involving the international community of commercial maritime powers in contributing to raise the capital sum that would be required.

3.2 *The Belgian government's policy: redemption by capitalisation*

Partly inspired by the outcome of the general treaties on the Sund toll and the Stade toll, the Belgian government's strategy consisted, in the first place, in seeking redemption of the toll by paying out a capital sum (instead of annuities,

⁹⁷ See also the contemporary developments regarding the international status of the navigation on the Danube, for which the Treaty of Paris of 30 March 1856 extended the Vienna Act, stating that this extension would be henceforth regarded and guaranteed by the contracting parties as «partie du droit public de l'Europe» (art. 15). On the discussion in British politics, whether the redemption of the tolls on the Sund and the Elb could be seen as precedents for the Scheldt, cf. the opposing views held by Gladstone (Depoortere, *Le rachat du péage...*, pp. 222 and 248: against the payment by different countries) and Palmerston (*ibidem*, p. 235, N. 113), who accepted that there was an analogy between the different cases; Belgian propaganda in Britain presented the abolition of the tolls on the Sund and Elb as applications of «a principle of equity which has already been embodied in international law», from an article in the *Glasgow Daily Herald*, 12 February 1862, quoted *ibidem* p. 242).

as it had for a while been envisaged during the negotiations of the 1830s); secondly, the scheme seemed only feasible if each maritime state were to contribute to the payment according to its share (calculated by tonnage, as the toll was) in the global commercial traffic on the Scheldt upon which the toll was levied⁹⁸.

The implementation of that strategy was not straightforward, for in its negotiations with both The Netherlands and the other maritime powers, the Belgian government had to overcome two lines of resistance. The first was the refusal to consider the very principle of redemption through capitalisation. The second was that of the amounts to be paid, i.e. both the global amount for the redemption as a whole, and that of each power's share. The two difficulties were in some way linked, particularly in the relations between Belgium and the powers which were invited to pay a share, for their agreement on the principle could be linked to the actual amount they would have to pay, a question which was primarily to be settled between Belgium and The Netherlands.

As regards the capitalisation, its calculation rested on two basic parameters, viz. (a) the annual income of the toll, based on an average calculated over a period of years; (b) the rate of the capitalisation, which in the course of the negotiations fluctuated between 20 and 25. The importance of establishing the parameters, which was ultimately a matter of policy, was highlighted at an early stage of the Belgian-Dutch negotiations, when the Dutch advanced a much lower figure than the Belgians had reached in their own calculations. A misapprehension of the economics of the toll and the Scheldt trade had led the Dutch Ministry of Finance to apply a formula expressed in the Dutch civil code for the redemption of tithes: the formula took into account the average over the past fifteen years and applied a rate of 20. The Dutch government, however, soon realised its mistake⁹⁹; and throughout the later negotiations, it insisted on

⁹⁸ For a general overview of the importance of international navigation on the Scheldt in the years 1842 and 1860, and of the sequence of negotiations: Depoortere, *Le rachat du péage...*, pp. 107 and 109.

⁹⁹ The Treasury's mistake was based on art. 170 of the Dutch Civil code, a section dealing with the redemption of annuities on land, i.e. on an entirely different economic basis (Depoortere, *Le rachat de péage...*, p. 136). The incident may contain a moral for our time, now that, in The Netherlands, ideologically inspired quacks are succeeding in reinstating positive private law as the sole measure of all laws (including international law) in legal education: there may still be a bright

taking into account a much shorter period of the most recent years (as traffic, and therefore the income of the toll, was still growing), and tried to impose a rate of 25. The Belgian government, conversely, sought to extend the period of reference, and remained set on a rate of 20.

2.3 *A purely financial Belgian-Dutch issue?*

The Belgians realised that, in order to succeed, it was essential that their plan should be backed by the Great Powers, and by Britain in particular¹⁰⁰. Not only would this help to convince the other powers to participate in the operation, but it would put additional pressure on the Dutch government to accept both the principle and moderate terms. A difficulty of that scheme was that the Powers, even if they could be persuaded to admit the principle of a collective redemption by capitalisation, wanted to know the figures which would determine the price-tag, both globally and for their individual share, attached to the purchase. A Belgian-DUTch agreement on the purchase-price appeared therefore as a necessary preliminary.

The principle seems to have been agreed by the Dutch at a comparatively early stage. Perhaps the Dutch government considered that in the light of recent developments in international law, the toll would increasingly come under pressure from the international maritime community, and that the time was therefore approaching when it made commercial and political sense to accept a (favourable) deal while the legitimacy of the toll was still widely recognised¹⁰¹. Other considerations may also have played a role. In general,

future for Belgian and Flemish diplomats of the twenty-first century in their dealings with their Dutch counterparts!

¹⁰⁰ Cf. Lambermont's argumentation dated 16 July 1861, emphasising the financial and commercial interests of 'England' in the redemption of the toll on the Scheldt, a river, he pointed out, «qui d'ailleurs fait face à la Tamise, [...] un fleuve plus encore anglais que belge ou néerlandais» (quoted in Depoortere, *Le rachat du péage...*, p. 218).

¹⁰¹ Cf. the message of the Dutch Minister van Zuylen to the Dutch Ambassador at St James, dated 18 August 1861, quoted in Depoortere, *Le rachat du péage...*, p. 135, «dat het hier voor Nederland alleen eene geldquaestie gold; dat het in de rigting van de tegenwoordigen tijd schijnt te liggen om dergelijken hinderpalen op te ruimen», with a reference to the suppression of the tolls on the Sund and the Stade-river. See

Dutch foreign policy wished to iron out any remaining major sources of contention with their Belgian neighbour. On some of these issues, such as the water-tapping (*prises d'eau*) from the Meuse and its effects in the Dutch Limburg and Northern Brabant provinces, the Netherlands had a strong interest in obtaining a more favourable regime. Other issues were more controversial, though perhaps more directly related to the Scheldt: one of the Dutch long-term plans was to connect the Zeeland islands of Walcheren and Beveland to the mainland, which implied the construction of bridges and dams which would cut off the Western Scheldt from the Eastern Scheldt and its surrounding waterways, and as a result also the inland waterway connections between Antwerp, the Western Scheldt and the Rhine. Belgium was paying an annuity in consideration of the Dutch commitment, laid down by international conventions, to ensure that Belgian river navigation would be offered equivalent facilities to reach the Rhine in the case of such alterations in the estuary.

The position of the other maritime powers was more complex. As the diplomatic history showed, both financial and political considerations, including sometimes considerations of foreign policy related to altogether different international regional concerns of the countries in other parts of Europe¹⁰², were often invoked against the Belgian proposals. In addition, the Scheldt toll was not perceived by many to be *eiusdem generis* as the other, recently redeemed, tolls: according to a generally prevailing view, it had been established by the 1839 Treaty, as part of the general deal and agreement arranged by the Great Powers which had secured Belgian independence¹⁰³.

also corresponding considerations in the Dutch press, e.g. the *Nieuwe Rotterdamsche Courant* (quoted *ibidem*, p. 158). At a later stage, the Dutch government became increasingly aware of the political and diplomatic backlash if they broke off negotiations with Belgium (*ibidem*, pp. 177-8, 183, 193, 198-9).

¹⁰² E.g. Prussia's decision, which, according to Depoortere, *Le rachat du péage...*, pp. 285 and 292, was largely inspired by the crisis of the *Zollverein* and the delays in ratifying the Prussian-French trade treaty.

¹⁰³ Cf. the memorandum by Lambermont (one of the main architects, on the Belgian side, of the redemption), dated 23 May 1857, quoted in Depoortere, *Le rachat du péage...*, p. 60, n. 74: «Le Traité de 1839 est, au point de vue extérieur, la base de notre existence comme nation. Il ne reconnaît pas seulement, il garantit notre indépendance et notre neutralité...», emphasising also that the Belgian government could not afford to pick and choose from the Treaty of London those terms that were

The fact that the Belgian state had (albeit on a voluntary basis, which was not always apprehended) taken upon itself the payment of the toll was often understood as a further confirmation of Belgium's sole liability. Furthermore, several governments queried why their country should be required to pay for a burden which, if the Belgian state were to discontinue its policy of payment, would fall upon the private merchant navy, without any obligation on other states. Belgian diplomacy therefore faced the formidable task of conducting parallel negotiations with more than 20 governments while still facing an array of demands from the Dutch government on both the financial terms of the redemption and a series of different issues which the Dutch wished to link to their agreement on the Scheldt toll. The Belgian response to these difficulties was essentially two-fold. It became clear that the reluctance of many powers, including some of the Great Powers, to take part in the scheme, would be overcome if Britain were to express her adherence. Therefore, the main thrust of the Belgian diplomatic effort was directed at obtaining the support of the British cabinet. The second approach followed by the Belgian government consisted in negotiating individually with each power a series of additional commercial advantages, adapted to the specific interests of each nation, including sometimes a new commercial treaty, which to some extent could be regarded as indirect compensation for their financial contribution to the redemption. As a result, by the time the treaties on the redemption of the Scheldt toll were signed, Belgium had reorganised on a new footing its commercial relations with most other maritime powers.

Commercial negotiations were also at the heart of the British-Belgian endeavours to reach an agreement on the redemption of the toll, to which Britain, by far the most important maritime power represented in the Scheldt navigation, would have to contribute about a third of the total price. Even when agreement was reached, the Exchequer remained opposed, and it seems that in the end, political considerations on Belgium's and Antwerp's strategic importance for Britain¹⁰⁴, and the concern to prevent these interests being

favourable, and avoid those that were onerous, without undermining that international foundation of the country's independence.

¹⁰⁴ Cf. the Belgian King's somewhat forced reference, in a letter to the British Foreign Secretary (early 1863), to Antwerp as «a Northern English Gibraltar [...] of sufficient military and political importance to England» (quoted in Depoortere, *Le rachat du péage...*, p. 266). More importantly, Lord Russell and Lord Palmerston appear to have been convinced by geo-political considerations, e.g. the latter in a letter to the

jeopardised by French ascendancy, overcame the Chancellor's resistance. Once Britain's support was assured, most other powers which had expressed their refusal or had preferred to remain on the fence proved willing to negotiate their participation in the redemption.

3.4 *The Belgian-Dutch Treaty of 12 May 1863 and the General Treaty of 16 July 1863*

The redemption of the Scheldt toll required, partly because of its diplomatic history, two distinct treaties¹⁰⁵. The first, concluded between Belgium and the Netherlands, established the price of the purchase and the modes of payment; it also contained detailed provisions aimed at ensuring that the toll would neither directly nor indirectly be revived through other or new levies; and it set the criteria on which other existing taxes would be established or reduced.

former, dated 10 January 1863: «the French have a shut eye upon Belgium, and if amid other constructions they should invade that country Antwerp would be a Tête de Pont for us in its Defence; but in the hands of the French it would be another Cherbourg threatening all the East and South East Coast of England. *It has always been a fundamental Rule of Policy with English Statesmen to keep Antwerp out of the hands of France*» (quoted *ibidem*, pp. 266-7, italics added). Moreover, Depoortere concludes from her study of the British Cabinet's strategy that it decided to agree to contribute to the payment of the redemption independently of the attitude of other European Powers (p. 273).

¹⁰⁵ The combination of a bilateral and a multilateral treaty is in many ways characteristic of the ambivalence of the law of international relations at the time. Throughout the negotiations and preparation of the agreements, there was on the one hand emphasis on the issue as a bilateral one between Belgium and The Netherlands — a position which was often obviously inspired by the individual national interest of those expressing it (examples in Depoortere, *Le rachat du péage...*, a.o. pp. 79 (Dutch Treasury in 1857), 91 (Dutch Foreign Secretary, 1858), 179 (instructions to the Dutch Ambassador in London, 1862), 185 (Conference of London, 1839). On the other hand, it was also widely acknowledged that, if not *de iure*, the wider political, commercial and industrial interests of a large number of (a.o., maritime) nations gave the Scheldt Question a European and international dimension (e.g. the Duke de Broglie to Talleyrand in 1833: «La libre navigation de l'Escaut n'est pas un question hollando-belge; c'est une question européenne», *ib.*, p. 33; and J.-R. Thorbecke in 1858: if the toll were to be paid by the merchants carrying their goods on the Scheldt, the Scheldt-toll would become a European issue and soon or later, it would suffer the same fate as the tolls on the Sund and at Stade, *ib.*, pp. 91-2).

Although a bilateral treaty, it also contained a clause which recognised that the freedom from the toll would be extended to all flags.

The General Treaty was a multi-lateral international agreement between Belgium and twenty other powers. Its main purpose was to establish each country's contribution towards the payment of the redemption. The Netherlands, in spite of its merchant fleet having a substantial interest in the navigation on the Scheldt, was not party to the treaty. A protocol attached to the General Treaty nevertheless emphasised its connection with the Belgian-Dutch agreement. The Dutch plenipotentiary intervened to make a statement on behalf of the Dutch King confirming that the Netherlands was bound to extend the toll-freedom on the Scheldt to all nations.

Other countries, for a variety of reasons¹⁰⁶, only joined later. The United States, who had attended the general conference, did not sign the treaty but signed a separate treaty with Belgium, in accordance with its general policy of avoiding multi-lateral agreements¹⁰⁷.

Summary

The progress and the outcome of the redemption of the Scheldt-toll illustrate both the strength of the nineteenth-century emphasis on the individual responsibility of sovereign states in law and its limits in the (European) organisation of international relations. Ironically, the first hurdle, both legal and political, Belgian diplomacy had to overcome was that the Scheldt toll had been included in an international treaty guaranteed by the Great Powers of the time and which was perceived to be part of a general agreement which had resulted in the formal recognition by the international community of a new actor — but, whereas in 1785-6 this scenario had unfolded in favour of the

¹⁰⁶ A fine example of counter-productive diplomacy was offered by the Holy See, which, because of its refusal to recognise its territorial losses to the Kingdom of Italy, insisted on paying a larger share than due, i.e. including a payment corresponding to its share in the trade before the losses had occurred (Depoortere, *Le rachat du péage...*, pp. 334-5)!

¹⁰⁷ Depoortere, *Le rachat de péage...*, pp. 341-4.

United Provinces on the basis of the Treaty of Munster, it was now the Treaty of London which had established Belgium as a nation-state in the *Concert de l'Europe* which was turned against the claimant. However, the combination of Belgium's relative importance, whether for its industry, its trade and market, or its geo-strategic position as a neutral country, gave it some leverage, which, strengthened by the wave of free-trade liberalism favoured by the leading Great Power, gave the country the diplomatic clout necessary to fight its own corner. A certain degree of anachronism notwithstanding, it could be argued that Austria's political calculations in resisting the Belgian initiative, and which were totally subordinated to its policy aimed against the growing Prussian hegemony in Germany and the *Zollverein* as the latter's instrument¹⁰⁸, illustrate how, almost a century after Joseph II, it would have thwarted the scheme for the sake of its own interests if it had retained any substantial ascendancy over its former territories of the Southern Netherlands. In that respect at least, Mirabeau's argument in favour of an independent and 'liberal' Belgium proved him right, however belatedly.

Political pressure for free trade, the growing objections to tolls and levies on international commercial navigation which could not be justified as a remuneration for services, were among the general factors which would arguably have made it more difficult for the Dutch to maintain the toll indefinitely. The primacy of industry and international trade in international relations during the 'British era' greatly contributed to the eventual success of Belgium's demand. That success was at a price. In its bilateral relations with the Netherlands, concessions had to be made regarding the share of Dutch navigation on the Scheldt, and more importantly, Dutch demands related to the Meuse had to be placated and were now diplomatically linked to Belgian (and later, Flemish) demands about the Scheldt. Other, potentially serious areas of contention directly related to the navigation on the Scheldt, in particular the Dutch plans for closing off the Eastern Scheldt and the Sloe, were not satisfactorily settled and would soon create fresh friction¹⁰⁹. The concessions

¹⁰⁸ Depoortere, *Le rachat du péage...*, pp. 285 et seq., 293 et seq.

¹⁰⁹ In the immediate aftermath of the 1863 Treaty, the celebrations in Antwerp and in Belgium contributed to associating in the mind of a broader public opinion Belgian patriotic feelings with the Scheldt Question. E. Van Bruyssel, *Histoire politique de l'Escaut* (Paris 1864), still expressed (pp. 234-5) a will of renewed cooperation between Belgium and the Netherlands. A few years later, however, the polemical

made to the other maritime powers were largely part of negotiations which reshaped and updated Belgium's relations with her trading partners.

4. 1994-1995: International Environmental Law in the hands of regional and state actors (The 1994/1995 Agreement on the Protection of the Scheldt)

writings around the Dutch works in Zeeland which threatened to cut off the Western Scheldt from the Eastern Scheldt estuary and thus from the Rhine and Maas estuaries, proved far more antagonistic: cf. a.o. H. Vigneron, *Guerre à la Hollande. Révision des traités de 1839* (Brussels 1867); J.W. van Lansberge, *A propos du barrage de l'Escaut* (The Hague 1867); *Du barrage de l'Escaut oriental et du Sloe au point de vue des traités et ds faits. Réponse M. van Lansberge [...] par un diplomate belge* (Bruxelles 1867); [G.A. Fokker], *Le barrage de l'Escaut oriental. Observation sur le rapport de la Commission internationale par un membre de la Seconde Chambre des Etats-Généraux des Pays-Bas* (The Hague 1867); *Erreurs ou sophismes? A propos des brochures d'un diplomate belge et de M. Garcia de la Vega sur le barrage de l'Escaut oriental par un ancien diplomate néerlandais* (The Hague 1867); G.G. Vreede, *Examen de la question du barrage de l'Escaut oriental* (Utrecht 1867). Another issue which would require a fresh historical investigation is the controversy around the 'neutral status' of the Scheldt, particularly before, during and immediately after the First World War: cf. a.o., much earlier, the Leiden dissertation of H.A. Crommelin, *De verplichtingen van Nederland als neutrale mogendheid ten opzichte der Schelde* (Leiden 1880); several pamphlets by J.C.C. den Beer Poortugael, viz.: *De Schelde-Quaestie in de Tweede Kamer* (s.l. 1910), *L'Escaut et la Neutralité permanente de la Belgique d'après les traités de 1839 et 1907* (The Hague 1910), *La neutralité sur l'Escaut* (The Hague 1911), the second of which inspired the Belgian international lawyer and historian of the law of nations E. Nys to write a refutation: *L'Escaut en temps de guerre* (Brussels 1910); W.G.F. Sniijders, *Geen Verdedigingswerken aan de Wester-Schelde!* (Rotterdam 1911); L. Picard, *De vaart op de Schelde in vredes- en oorlogstijd. Het Groot-Nederlandsche standpunt* (Utrecht 1916); R.A. Klerck, *De Schelde-Quaestie* (s.l., 1917). Belgian-Dutch relations regarding the Scheldt did not improve following the (rejected) Belgian territorial demands at the end of the war at the expense of The Netherlands (see, e.g., on a specific aspect of the sea-territory involved: Brugmans, *La passe des Wielingen, droits et intérêts* [The Hague 1920]; H. De Hoon, *L'Escaut et son embouchure. Le différend des Wielingen* [Brussels 1927]), or the abortive attempt at regulating the issue on a new conventional basis (cf. a.o. M. de Vernon, *La question de l'Escaut* [diss. Toulouse 1920-1, Castres 121]; A.J. van Vessem, *De verrassingen van het tractaat met België* [Utrecht 1926]); Siotto Pintor, *Le régime international de l'Escaut* [Académie de droit international. Extrait du recueil des cours 1928]; S. Adanya, *Le régime international de l'Escaut* [Diss. Paris 1929]; A. Blondeau, *L'Escaut, fleuve international et le conflit hollando-belge* [Paris-Bordeaux 1932]).

4.1 *Belgian-Dutch negotiations on the Scheldt issues caught between traditional diplomatic relations, the re-emergence of regional actors on the international scene, and growing European and international commitments*¹¹⁰

Perhaps the most common cliché on the Scheldt Question in the twentieth century became the linkage of the issues surrounding the Scheldt and the Meuse¹¹¹. The linkage, as it has already been pointed out, had been a key-strategy of the Dutch government during the negotiations of the 1863 Treaty; and throughout the twentieth century, the Meuse remained one of the vexed issues in Belgian-Dutch relations. In addition to the traditional interest of the Netherlands in maintaining a sufficient and regulated flow of the river, some of the country's most populated areas became increasingly dependent on water from the Meuse for domestic use and drinking water. Thus, the issue of water quality would join that of quantity levels on the Dutch diplomatic agenda.

In the region of the estuaries, the large-scale development of the ports of Rotterdam and Antwerp, and the competition between the two harbours, ensured that the question of navigation on the Scheldt remained a matter of concern for the Belgian and Flemish side. The need to provide access and

¹¹⁰ The most complete analysis of the successive negotiation rounds, albeit without emphasising specifically the legal aspects (but focusing instead on the management of the decision-making process), is to be found in S.V. Meijerink, *Conflict and Cooperation on the Scheldt River Basin. A Case Study of Decision Making on International Scheldt Issues between 1967 and 1997* (Dordrecht etc. 1999), who, however, privileges Dutch (a.o. parliamentary) sources, but nevertheless provides useful information from interviews with different persons who were directly involved in the negotiations. The legal aspects are dealt with more in detail (and in a broad and conventional historical perspective) by P. d'Argent, 'L'évolution du statut juridique de la Meuse et de l'Escaut: une mise en perspective des accords de Charleville-Mézières du 16 avril 1994', *Revue belge de droit international* 1997, 133-71. For a general overview of the Meuse agreements: N. Bouman, 'A New Regime for the Meuse', *RECIEL* 5 (1996), 161-8. For brief outlines: F. Suykens, 'De historiek van het totstandkomen van de Vlaams-Nederlandse Watervedragten', *Water* 14 (1995), 227-232, and J. Strubbe, 'Het verdrag inzake de verruiming van de Westerschelde in historisch perspectief', *Water* 14 (1995), 233-6.

¹¹¹ For a *status quaestionis* of the legal issues around the Meuse just before the outbreak of the Second World War: J. Barents, *Het internationaal statuut van de Maas* (Amsterdam 1940).

facilities to new generations of much larger ships forced the Belgian and Flemish authorities to consider major structural works in and around the Scheldt estuary, i.e. on Dutch territory¹¹².

4.1.1 *Belgian-Dutch negotiations: the linkage between the Scheldt and Meuse issues*

It is therefore not surprising that negotiation rounds which started in the 1960s remained largely perceived along familiar lines: Belgium was the asking party regarding the Scheldt, while the Netherlands had specific demands concerning the Meuse. The 1975 draft treaties between the two countries reflect the linkage of these respective interests. In 1967, the Belgian government declared its interest in two major projects, the aim of which was to improve the access to Antwerp: first, the straightening of the river-bend and the digging of a new channel near Bath, and secondly, the creation of the Baalhoek-canal, which would connect the West-Scheldt to the left-bank development of Antwerp harbour. Both projects would make substantial inroads into Dutch territory. The Dutch government agreed to negotiate on these issues, provided the negotiations would also deal with the quantity and quality of the water from the Meuse, and the water quality of the Scheldt¹¹³. Among the specific Dutch interests which the government declared it was anxious to preserve, the competition between Dutch and Belgian sea-ports was explicitly mentioned. The result of these negotiations was the three draft treaties of 1975 dealing with, respectively, the works around Bath, the Baalhoek-canal and water from the Meuse. The first draft also contained a chapter on the water quality of the Scheldt.

¹¹² One of the crucial questions is whether maintaining an adequate navigation channel in the Western Scheldt is a Dutch international obligation (comp. Meijerink's reference to some Belgian critics in, *Conflict and Cooperation...*, p. 121: «... an improvement of the navigation channel in the Western Scheldt is a Belgian right that is formulated in the Scheldt statute. Consequently, a deepening of the navigation channel would never require a Belgian-Dutch convention. With the acceptance of the declaration of intent [in 1985] the Belgian government would give up practically the issues of the Baalhoek canal and the bend near Bath, and start negotiations on an issue for which according to international law no convention would be needed. Therefore, according to the critics, "this decision was a major tactical error"»).

¹¹³ S. Van Damme *et al.*, 'De waterkwaliteit van de Zeeschelde: evolutie in de voorbije dertig jaar', *Water* 14 (1995), 244-56.

In Belgium, the political agenda of the 1970s was largely dominated by demands for increased cultural and regional autonomy, especially in Flanders and in Wallonia. The first steps were taken towards what would prove to be a fundamental long-term constitutional reform of the Belgian unitary state. Although the reform of the state into a federal state was on the whole a peaceful and fairly rational process, it inevitably exacerbated existing and new conflicts of interests between the different communities and regions. In such a political context and climate, it is perhaps not surprising that the global compromise which the draft treaties expressed was strongly challenged by representatives of Walloon interests. From the Walloon point of view, the Meuse draft treaty was seen as the Belgian negotiators' main ground for concessions in order to obtain their demands for improving the navigation on the Scheldt. The burden for what was perceived to be a mainly Flemish advantage was thus to be carried mostly by Wallonia. To mention but one example: as the Dutch had insisted on the construction of large dams and reservoirs in Walloon areas in order to secure the water supply it had requested, Walloon public opinion was easily swayed by the argument that their region was being excessively affected by the diplomatic bargaining of the central government. In the context of the internal political controversies which were flaring up in Belgium at the time of the constitutional reform, the Belgian government found itself unable to sign the draft treaties.

It took several years before new bilateral negotiations were able to start again¹¹⁴. In 1985 a joint declaration by the Belgian and Dutch ministers for foreign affairs announced that the draft treaties of 1975 would be reconsidered. Once again, the following negotiations aimed at reaching agreements on both the Scheldt and Meuse issues. As regards the Scheldt, the Belgian demands still included the Baalhoek canal, but the Bath-project had been replaced by demands for deepening the existing channel of the Scheldt on Dutch territory. In Belgium, the ongoing reforms strengthening regionalisation were still affecting the government's diplomatic strategies. In 1982, it had promised that in new negotiations with the Netherlands, the regions would be associated in so far as they were competent. Nevertheless, after it had been officially announced that the Belgian delegation (chaired by E. Davignon) would not include representatives of the regions, the Minister-President of the Walloon Region

¹¹⁴ Meijerink, *Conflict and Cooperation...*, p. 117.

initiated on 3 March 1987 special proceedings of concertation between the central government and the regional executives. These proceedings effectively halted the negotiations. However, international representation was then, according to Belgian constitutional law, still an exclusive prerogative of the King, i.e. the national government. It was only towards the end of 1989 that the Belgian government and the regional executives reached an agreement which guaranteed *inter alia* that each region would be specifically represented in the Belgian delegation.

4.1.2 *Regionalisation in Belgium and its effects on inter-state agreements and policies*

Meanwhile, the Belgian constitution had shifted water management competences to the regions. For a few years, this meant that although the Belgian state remained competent for foreign policy and international agreements on such matters, the regions were competent in domestic law and politics for the same questions. It seems that at government level, this did not in the short term affect Dutch diplomatic efforts insisting on maintaining the link between the Scheldt and Meuse issues. According to some sources, Dutch diplomatic strategy speculated on a Flemish-Walloon political agreement by which Flanders would directly or indirectly compensate Wallonia for the effects of a Meuse Treaty, in order to obtain its support for the Scheldt treaties¹¹⁵. In 1990-1, the Dutch representatives formulated a series of specific proposals for international cooperation and management of the quality of the water from the Scheldt and Meuse. At the same time, the Dutch maintained their demands regarding the water quantity of the Meuse. The proposals met with objections from the Walloon and Brussels representatives, whose willingness to agree on water quality control and management appeared to fall short of the Dutch ambitions; the Walloon authorities may also have wished to consider the Meuse quantity issue on a different footing.

The lack of progress made the Dutch decide to suspend negotiations (8 January 1991) and to submit a unilateral draft proposal (15 April 1991). The Dutch proposals, again, emphasised the need to establish standards for the water quality, and a common, international, institutional and procedural framework

¹¹⁵ Meijerink, *Conflict and Cooperation...*, pp. 143, 145-6, 151 *et passim*. By 1993-4, the linkage had become a Flemish-Dutch issue: p. 147.

for monitoring and cooperation, both for the Scheldt and the Meuse basins and drainage areas. The proposals also expressed the concern for coordination in preventing floods and confirmed, on the strength of the findings of expert technical research, that the deepening of the Scheldt channel did not raise insuperable objections. The Belgian delegation eventually submitted its own draft proposals, which, in the Dutch view, failed to improve the water quality of the rivers and did not comply with the Dutch (and European) 'polluter pays' principle. As regards the deepening of the Scheldt, the Belgians had stated that their demand was within the requirements of the international Scheldt status, but the Dutch delegation apparently was unwilling to include the status in the negotiations¹¹⁶.

In March 1992, a meeting of Dutch and Belgian (including regional) ministers confirmed the will to maintain a link between negotiations on water quality and the deepening of the Scheldt. Later that year, an updated Dutch draft proposal nevertheless extended the scope of the treaties to include the entire course of the rivers, drawing France into the negotiations. And still later that same year, the Belgian-Dutch negotiators abandoned the project of a general treaty in favour of three distinct treaties (besides separate agreements on other related issues, which, however, were deemed to be of lesser importance): a multilateral convention between the basin states and the European Commission; and two bilateral Belgian-Dutch treaties on, respectively, the water distribution of the Meuse, and the deepening of the Scheldt.

In 1993, a further step forward in the regionalisation of the Belgian state was taken. Within their areas of competence, the regions were now given 'treaty-

¹¹⁶ On references to the international status of the Scheldt during successive negotiation rounds, cf. Meijerink, *Conflict and Cooperation...*, pp. 105, 110 («The Belgian government was of the opinion that the Dutch linkage between the 48'/43'/38' deepening programme and the Meuse issues was a violation of the Scheldt Statute»), 121 (the Belgian position was that «an improvement of the navigation channel in the Western Scheldt is a Belgian right that is formulated in the Scheldt statute. Consequently, a deepening of the navigation channel would never require a Belgian-Dutch convention»), 126, 134, 160, 186, 200. In 1994, the Antwerp Port Association (AGHA) suggested that the Belgian government should start proceedings before the International Court of Justice, following that «according to international law (the Scheldt Statute) the implementation of the deepening programme is a Flemish right» (pp. 170, 180). The question is still controversial (p. 200).

making power' (art. 167 Constitution). At that moment, it seems that the political dynamics and considerations of some of the (main) actors in the negotiations had shifted. To some Dutch observers (and participants), the acceptance of involving France (and other basin states) in the negotiations (an idea which had earlier on been mooted by Wallonia) implied that the strategy of linking Dutch demands (mainly, to Wallonia) on the Meuse and the (mainly, Flemish) demands regarding the navigation on the Scheldt had been abandoned. In the Netherlands, the linkage had been criticised for several years, although on different grounds¹¹⁷. To some, the issues relating to each basin and drainage area had become too complex to be amalgamated. By the end of the twentieth century, the issue of the water quality of the Scheldt, and concerns about the combined effects of the development of the harbours of Antwerp, Ghent and Flushing, and the ensuing increase of navigation, on the ecology of the estuary and its region were now deemed much more important than before and were put on the international agenda. Also, Dutch experience of negotiations with Belgium had convinced several observers that the Netherlands could not expect that their global linkage of Scheldt and Meuse issues would force a deal between Flanders and Wallonia. Many had come to the conclusion that Dutch interests, both economic and environmental, in better water quality from the Meuse and the Scheldt, would be better served if the Netherlands became more actively involved in projects facilitating such improvements.

Accordingly, a new, more flexible organisation of the negotiations was set up. Multilateral negotiations discussed the issues of the water quality of Scheldt and Meuse, while Flemish-Dutch negotiations discussed the deepening of the Scheldt and issues related to the flow of the Meuse in so far as under their control. Thus, in different contexts, the linkage of Scheldt-Meuse issues survived or was revived. Moreover, diplomatic — or, some would say, undiplomatic — linkages of the Scheldt issues to other issues were soon to be given even greater emphasis in some of the negotiations. In June 1993, the Flemish government apparently proposed linking the negotiations on the deepening of the Scheldt to those on the planning and construction of a high-speed railway line connecting Antwerp to Holland. If this was the case, it would seem that the move — which would later be referred to as a tactical blunder — backfired: the Dutch government accepted the Flemish proposal,

¹¹⁷ Meijerink, *Conflict and Cooperation...*, pp. 130 and 132.

but it soon became clear that whereas an agreement on the deepening of the Scheldt could now be worked out within a short space of time, the discussions on the railway line would prove to be far more arduous. The Dutch government, it seems, nevertheless insisted on obtaining an agreement on the railway line before it would accept signing an agreement on the deepening of the Scheldt¹¹⁸.

Meanwhile, the extended multilateral negotiations were making headway, and perhaps because of their eventual success, several of the actors would later claim to have taken the initiative of reopening the talks between the contracting parties¹¹⁹. In spite of diverging views on what the treaties should regulate, an agreement was reached in March 1994. The convention was signed on April 26 at Charleville-Mézières¹²⁰ by the Netherlands, France, the Walloon Region and the Region of Brussels, but not by Flanders. A few days before the exchange of signatures, the Flemish government notified the Dutch government that although it approved the multilateral agreements reached on the Scheldt and Meuse, it would not sign the treaties until the Netherlands were willing to sign the agreement on the deepening of the Scheldt. This was interpreted by some as a Flemish ploy to break the linkage (said to have been put forward by the Flemish government in the first place) between the

¹¹⁸ Meijerink, *Conflict and Cooperation...*, p. 170. Cf. the author's general assessment regarding these strategies and policies of linking different issues, *ibidem...*, p. 215 (an assessment which turns out to be more positive than that by the Dutch Minister after the signing of the treaties («... that she, just like her Flemish colleague, [did] not want to hear the word linkage anymore»; for a direct quote: *ibidem*, p. 183).

¹¹⁹ On the Dutch initiative: Meijerink, *Conflict and Cooperation...*, p. 141. On the Walloon initiative: P. d'Argent, 'L'évolution du statut juridique...', p. 149; similarly: J. Verhoeven, 'Les accords de Charleville-Mézières du 26 avril 1994 sur l'Escaut et sur la Meuse', *Annuaire français de droit international* 43 (1997), 799-809, at p. 802; and, inevitably, the Executive of the Walloon Region (cf. the parliamentary works: *Conseil Régional Wallon*, session 1994-5, No. 330/1, 16 March 1995, *Projet de Décret portant assentiment à l'accord concernant la protection de la Meuse, fait à Charleville Mézières, le 26 avril 1994, Exposé des motifs*, p. 2); the Council of State (*ibidem*, Appendix 1, p. 6), mentions the Belgian Foreign Office's intervention encouraging the regions to negotiate directly (see also No. 330/2, *Exposé du Ministre*, p. 3).

¹²⁰ English translation: 34 I.L.M. 851 (1995). See also the special issue of *Water, Tweemaandelijks tijdschrift over waterproblematiek* 14 (1995), 227-68 (with appendices pp. I-XX).

deepening of the Scheldt and the high-speed railway line, and at the same time to re-establish a link between the navigation on the Scheldt and quality of water issues related to the Meuse (and Scheldt). Some six months later, the Flemish and Dutch governments agreed on the proceedings for reaching a decision on the high-speed railway route. At that stage, the Dutch government was satisfied and both governments agreed (on 1 December 1994) to sign conventions on the deepening of the Scheldt, on the water-flow of the Meuse and on the revision of Scheldt regulations; the Flemish government would also sign the multilateral treaties on the protection of the Scheldt and the Meuse. This took place the following month: on 11 January 1995, Flanders and the Netherlands signed at Middelburg the convention on the revision of the Scheldt regulations; on 17 January, the same signed in Antwerp the conventions on the deepening of the Scheldt channel¹²¹ and on the water-flow of the Meuse. That same day, Flanders also signed the two multilateral treaties on the protection of the Scheldt and the Meuse.

4.1.3 *The pressure of European integration and international environmental issues*¹²²

As one of the critical commentators of the 1994/5 multilateral treaties on the protection of the Scheldt and the Meuse rightly observed, these agreements did not occur 'in an international legal vacuum'¹²³.

¹²¹ H. Belmans, 'De verdieping van de Westerschelde', *Water* 14 (1995), 259-64.

¹²² For a *status quaestionis* of initiatives in the United Nations shortly after the Scheldt and Meuse Agreements were reached: T. Nussbaum, 'Report on the Working Group to Elaborate a Convention on International Watercourses', *RECIEL* 6 (1997), 47-53.

¹²³ F. Maes, 'The Content of the Agreements on the Protection of the Rivers Scheldt and Meuse', *Revue belge de droit international* 1997, 661-81, at p. 667; this article provides (p. 664 et seqq.) a very clear survey of the relevant authorities of international environmental law which form the context of the 1994-5 conventions. Meijerink, *Conflict and Cooperation...*, p. 66 et seqq., mentions the context of the international Rhine issues (important «because of the rapid development of the intensity and scope of international cooperation in the Rhine basin, [which means that the International Commission for the protection of the Rhine against Pollution is often used] as an example for the rivers Scheldt and Meuse», p. 67), the EU policies, the North Sea policies and the United Nations-Economic Commission for Europe river-policies (on the latter, see also pp. 140, 156, 163); on the resolution of the

Throughout the long period of negotiations (and delayed negotiations), various broader, international factors played a role. Direct interference from international bodies, whether from the Benelux or the European Communities, may on the whole be discounted. At critical stages of the negotiations, it could be anticipated that some pressure groups would advocate an action before the International Court of Justice. (Incidentally, legal actions by other pressure groups, threatened or pursued, before the national courts, are said to have been more effective in affecting the outcome of particular issues). Nevertheless, the negotiations remained in the hands of the states, and later (for Belgium) regions, directly concerned by the river basins and drainage areas of the Scheldt and Meuse.

The international influence on both the negotiations and their outcome was of a different nature. Gradually, in particular from the 1960s onwards, a growing concern for environmental issues was reflected in both domestic law and international agreements. The Netherlands, partly because of the concentration of population in the Randstad and its dependence on the Meuse for drinking water, was the actor who, at first, placed greatest insistence on water quality. One recurrent issue during the discussions was whether the treaty should set norms beyond those imposed by European law, and, if so, how the costs for achieving these higher standards should be distributed. In spite of persistent diverging approaches among the actors, there is little doubt that, through a combination of cultural and political factors (greater awareness of environmental issues and the emergence of 'Green' political parties and pressure groups), the Belgian regions became more willing to take on board the idea that environmental improvements (of a.o. the situation of the waterways) were not just a bargaining counter, but a common duty of the basin states and regions. During the late 1980s and early 1990s, the extensive coverage by the media of 'global' environmental issues and international conferences on those issues, and their resonance at different levels of Western-European society at large, put further pressure on political decision-makers to set up a visible institutional framework to deal with specific environmental problems. The Helsinki convention of 1992 on the protection and use of transboundary watercourses and international lakes¹²⁴ was one major catalyst for the basin

Benelux Parliament (13/14 March 1992), p. 137.

¹²⁴ 31 I.L.M. 1312 (1992).

states of the Scheldt and Meuse which pressed them into institutionalising their cooperation¹²⁵.

In spite of all these factors, both domestic and international, and of the long history of negotiation rounds, the treaties of 1994/5 have not received unqualified acclaim. Most commentators concede that the obligations imposed on the contracting parties remain very limited, and that the main achievement of the agreements consists in providing a permanent forum for the exchange of information and experience, which may facilitate the use of common standards and techniques in assessing environmental river issues, and perhaps more specific common purposes¹²⁶. As they stand, the treaties are not much more

¹²⁵ R. Zijlmans, 'Het verdrag van Helsinki: wegbereider voor de watervedragten', *Water* 14 (1995), 242-3.

¹²⁶ Meijerink, *Conflict and Cooperation...*, p. 68, N. 22 («The Scheldt water quality convention concluded in 1994 marked the beginning of the preparation of joint water quality policies for the Scheldt basin, but did not yet contain concrete policy objectives or policy programmes»), 183, N. 100, 211, 216, 219. As a forum for technical cooperation: J. Verhoeven, 'Les accords de Charleville-Mézières du 26 avril 1994 sur l'Escaut et sur la Meuse', p. 808. P. d'Argent, 'L'évolution du statut juridique...', p. 156, concludes a legal analysis of the contracting parties' obligations and its restrictions and strikes a more positive note: in spite of the somewhat vague expressions and qualifications, «il serait [...] abusif de déduire des formules qui y sont employées que les accords de 1994 ne seraient pas des conventions en droit mais de simples engagements 'politiques' soustraits aux règles élémentaires de la responsabilité internationale», and who reminds the reader that as regards water quality, the substantive law is in any case mainly governed by European directives (p. 1p. 158, 160). F. Maes, 'The content of the agreements...', pp. 680-1, on the contrary, concludes his (otherwise very similar) analysis of the conventions by deploring that these are «rather weak in expressing the obligations [...] There are no real obligations of result, except the financial contributions of the different parties in the budget of the Commissions», and notes that the 1992 Helsinki Convention (of which the 1994-5 convention is supposedly an specific legal implementation) imposes higher standards of quality and control; the same author, 'De verdragen ter bescherming van de Maas en de Schelde in een diplomatieke en internationaal milieurechtelijke context', *Tijdschrift voor Milieurecht* 1996, 329-44, reiterates his critical assessment, and remarks that, as Belgium is not a contracting party, the jurisdiction of the International Court of Justice may implicitly be excluded (p. 344). A. Gosseries, 'The 1994 Agreements Concerning the Protection of the Scheldt and Meuse Rivers', *European Environmental Law Review* 1995, 9-14, recognises that the actual object of the conventions is rather institutional than a substantive

(nor less) than cooperation agreements. The paradox remains that to many observers, the decision-making power and the authority of the European Union may prove to offer a more adequate political lever for imposing more active and exacting environmental policies than international negotiations between a limited number of member-states, even though the common denominator acceptable to all members of the European Union would inevitably be lower. The paradox, if justified, would be a strong argument against the technique of linking different issues (environmental and non-environmental) in negotiations on specific environmental matters. If, as one may object, a material connection exists between per se non-environmental issues and their environmental effects, which is clearly the case in the demands for improving commercial navigation on the Scheldt, a global integrated approach, at least at the level of the river basin and drainage area, appears to be necessary.

4.2 Flanders and the Scheldt Treaties of 17 January 1995

4.2.1 Flemish foreign policy on the Scheldt — a mixture of international cooperation and 'Realpolitik'?

If, as may be expected in the foreseeable future, environmental concerns will continue to claim a more prominent place on the domestic and international political agendas, this is bound to impose more constraints on the development of Flemish ports depending on the Scheldt navigation. That will only make it more difficult to reach a compromise in the conflict between economic and environmental interests, and this difficulty will affect the Flemish Region more than any of the other actors around the Scheldt estuary.

Already during the early stages of regionalisation, the Flemish authorities had realised that in order to gain credibility and good-will in their relations with their Dutch counterparts, Flanders had to provide tangible signs of its commitment to improve the quality of the Scheldt water. A few incidents notwithstanding (such as the attempt to give an alternative use to the Tessengerlo pipe-line), the Flemish Region (to some extent of course also influenced by domestic pro-environmental political pressures), may have successfully established its willingness to address such issues. In the long-term however, it is uncertain whether the price (one is tempted to use the phrase,

toll!) to pay in order to satisfy legitimate environmental demands may not adversely affect the competitive position of the Flemish ports, Antwerp in particular. As cooperation between the members of the International Commission for the protection of the Scheldt develops¹²⁷, demands for further programmes towards the improvement of water quality can be expected to be proposed. The pattern of negotiations which led to the signing of the 1995 water-treaties suggests that, under pressure, the Flemish Region could be tempted to subordinate negotiations on an integrated approach of the environmental and economic Scheldt-issues to agreements on other, unrelated, issues.

Such a temptation ought to be resisted. It should be clear that the 'treaty-making power' which the Belgian regions acquired in 1993 should not be viewed (as some self-congratulatory comments at the time the 1995 treaties were signed and ratified might suggest) as a belated step towards a sovereignty as it was conceived in the heyday of Western nation-states. Even the Belgian federal state or the unitary Dutch state no longer enjoy such sovereign prerogatives (if they ever did). It is significant that during the course of the negotiations, traditional foreign office diplomacy seems to have been increasingly sidelined and that the process of working out bilateral or multilateral agreements was largely delegated to government departments with ad hoc (technical) competences and experience. Without denying that even at that level, conflicts of territorially defined interests occurred, it is evident that the cooperation of such technical departments may benefit from a greater degree of common purpose, in particular if their task is focused on a particular (transboundary) region. Nevertheless, the lack of any substantial decision-making competences of the International Commission for the protection of the Scheldt is a reminder that its activities are still closely dominated by political actors of the traditional mould, albeit as regions of a federal state.

4.2.2 *The long shadow of the Belgian state over the Scheldt issues*

The Kingdom of Belgium, i.e. the federal state, was not a contracting party to

¹²⁷ For an early example: H. Maeckelberghe, 'Internationale Commissie voor de Bescherming van de Schelde (ICBS). Samenvatting van het rapport: "De kwaliteit van de Schelde in 1994"', *Water* 14 (1997), 107-12; F. Van Sevenscoten, 'De Internationale Commissie voor de bescherming van de Schelde', *Water* 14 (1998), 338-42.

the 1994/5 treaties on the protection of the Scheldt and Meuse, although admitted as an observer and although the treaty leaves open the possibility of its later accession. Perhaps this was the result of a political will to advertise the newly-acquired power of the regions to negotiate and conclude international treaties in their own right (and within their areas of competence), and the agreements on the Scheldt and Meuse certainly would have in that respect a highly symbolic significance. Another, more traditional, reason, may have been the reluctance of one or more of the states (i.e. especially Belgium, France, The Netherlands) to commit themselves in regard of radioactive waste and the risks of pollution.

The exchange between the Belgian Council of State and the Flemish Government may serve as an example of the avoidance of issues which would have required the involvement of the Belgian federal state¹²⁸. Formally, the exchange was simply part of the obligatory procedure (though in this case, forced through as an alleged matter of urgency) whereby the Council had to verify that the proposed agreement was not trespassing on federal competences (in which case it would qualify as a 'mixed' treaty, i.e. involving both federal and regional competences). Even so, beyond the purely formal legal questions on constitutional competences, fundamental flaws are recognisable in the treaties' scope and restrictions¹²⁹. Two of the issues raised by the Council of State make the point very clearly. The first, already mentioned, is that of radioactive and nuclear pollution — not a merely theoretical hypothesis, considering the presence of nuclear plants directly situated on the Meuse and Scheldt, and, for the latter, on Belgian territory in Doel. The potential objection was eluded by a statement that the states wished to reserve those issues because they were covered by the terms of the Euratom Treaty. As a result, only non-

¹²⁸ Parliamentary works: draft of the Decree ratifying the Treaty on the Protection of the Scheldt (Charleville-Mézières 26 April 1994/Antwerp 17 January 1995), Flemish Council 1996-6, No. 162/1, 16 November 1995: *Advies van de Raad van State* (11 July 1995), pp. 14-21. Similar document regarding the Treaty on the Protection of the Meuse (No. 163/1, pp. 14-21). The (formal) discussion in the Flemish Council (*Vlaamse Raad, Handelingen*, No. 16, 20 December 1995, pp. 879-90), aptly illustrates the priority most Flemish interest-groups and political parties gave to the improvement of the navigation on the Scheldt.

¹²⁹ On the lack of clear policies and objectives in the treaty of 1994, comp. Meijerink, *Conflict and Cooperation...*, pp. 68 N. 22, p. 183, N. 100 (criticisms expressed by NGOs), 211, 216, 219.

radioactive and non-nuclear waste and pollution from the plants are deemed to be a matter for the Commissions. The second issue was no less significant, because it was not possible to pass the responsibility to the European level: the Council wondered whether art. 5,1 of the Agreement, which assigns to the International Commission, among other tasks, «to organise cooperation between the different national and regional warning and alert networks and to promote the exchange of information with a view to preventing and combatting accidental pollution» (a somewhat attenuating translation, as the Dutch original refers to 'calamiteuze verontreiniging', i.e. literally 'calamitous pollution'), did not imply an involvement of the emergency services of 'civil protection', which, in Belgium, were still under the authority of the federal state. The Flemish government's reply to the objection was that the agreement did not include the intervention of that emergency service, as the Commission's task was limited to 'cooperation and exchange of information obtained from the warning and alert networks'.

At a different level, the international status of the Scheldt is another issue over which the Belgian state may well continue to cast its long shadow. At successive stages of the negotiations, some Antwerp and Flemish interest groups claimed that issues such as the deepening of the Scheldt fell under the river's international status, which would impose an obligation on the Dutch state to ensure that the river remained accessible to maritime navigation, even if the requirements of that navigation had altered. All actors seem to have preferred in the end to set aside the issue for the purpose of the negotiations and agreements, but in the light of the future development of the navigation on the Scheldt, it is inevitable that, if only in order to determine the respective rights and obligations of the Belgian state and the Flemish Region regarding the international status of the Scheldt, the question will in due time resurface¹³⁰.

Summary

During the last thirty years of the twentieth century, the dynamics of

¹³⁰ Belgium's involvement may also be required when negotiations on the Scheldt are linked to other issues, for which the federal state is competent or has an interest (comp. Meijerink, *Conflict and Cooperation...*, p. 212).

international relations around the Scheldt estuary have been influenced by several factors. As regards the actors, the (re-)appearance of the Belgian regions as international subjects was no doubt a significant phenomenon. The gradual transfer of powers from the Belgian state to the regions not only affected diplomatically and politically the course of the negotiations, it also forced the other actors (both the Netherlands and Belgium, in particular) to reconsider their strategies and aims. Continuing European integration was another factor. On questions of trade, for example, the competition between Dutch and Belgian interests — such as the rivalry between the ports of Rotterdam and Antwerp —, though still very much alive, has been somewhat restrained by a trans-national concern for cooperation which is not merely inspired by a sense of European solidarity, but also by economic arguments in favour of a larger, integrated complex of infrastructures which only together can form an attractive pole for maritime shipping and internationally oriented investments in trade, commercial services and industry. A third factor has been the rapid internationalisation of environmental issues and its political weight in Western European politics.

So far, the results of these developments fall short of the problems international cooperation around the Scheldt estuary have had to address. Only comparatively short-term goals have been achieved. Moreover, whatever the official political messages to reassure public opinion, even these achievements remain largely contradictory. A comprehensive, trans-national restructuring of the harbour facilities along the North Sea from the Northern French ports to the Dutch harbours is still wanting. Even within the Flemish region, it may be difficult to discern a constant and global strategy in the use of the resources of Antwerp, Ghent and Zeebrugge. The environmental 'compensations' for the continuing expansion of the Flemish harbours remain vulnerable to further expansion, and elude the issue of environmental and cultural damage to a vastly growing geographic area of harbour activities and their ramifications. An analysis of the negotiation rounds which led to the 1994-5 treaties gainsays the official stance of Flemish political leaders at the time, to whom the treaties made the point that 'what the Flemish region was doing on its own strength, it did better'. No doubt the direct participation of the regional actors — one would have wished that Zeeland interests had been allowed to voice their concerns more independently and officially¹³¹ — is both legitimate and

¹³¹ On the involvement of Zeeland interests in the negotiation rounds, cf. Meijerink,

necessary for a balanced outcome, but the outcome of the negotiations also shows that on both economic and environmental issues involved in the Scheldt estuary, the unravelling of the states' sovereignty (not only in Belgium, which was the most spectacular case) has not yet been adequately replaced by effective governmental power in the context of the European Union. Ultimately, regional actors and weakened state actors are unlikely to achieve by themselves trans-boundary decisions which may sufficiently offset particular regional and inter-regional interests.

Conflict and Cooperation..., pp. 104 (criticisms of the Dutch national authorities' approach (in 1984) expressed by provincial authorities and by local authorities); 112 («an important regional arena in the Dutch province of Zeeland, which consists of regional directorates of national ministries, regional and local governments, and NGOs»); 123, N. 16 (1986); 124-5 (in 1987, various NGOs voiced their protests against what they perceived would be the environmental effects of the decisions-in-progress, and following these protests, «the regional Directorate Zeeland of Rijkswaterstaat [took] the initiative to start informal deliberations with Flemish water managers to discuss Scheldt water quality issues»; in 1988, the Province of Zeeland requested the mediation of the European Commission in the negotiations on the water quality of the Scheldt, see also p. 160); 127, 132 (Zeeland opposition to the Baalhoek canal); 135 (1988: the Dutch delegation in the Technical Scheldt Commission refers to the need to foster public support for the projects in Zeeland); 138, 150 (the regional Directorate for Zeeland is represented in the 'OostWest' working party, 1990-2); 144 (joint meeting of representatives of the Dutch provinces of Zeeland, North-Brabant and Zeeland discussing the creation of a fund for the cleaning of the Scheldt and Meuse rivers); 160 («Partly because the Dutch national government seemed to be more interested in the water quality and quantity of the Meuse than in the water quality of the Scheldt, some Dutch municipalities along the Western Scheldt tried to reduce their dependence on the national governments of the basin states. They took decisions, which made it obligatory to apply for a permit based on the Dutch Act on Land-use Planning for dredging and dumping activities on their territories. By that the municipalities did get an indispensable resource for the implementation of the deepening program. In addition, the municipalities founded the Task Group for the Western Scheldt, and by that formed an important coalition»); 171 (opposition of the Southern Dutch provinces and several NGOs and pressure groups to the Dutch government's decision «to unlink the negotiations on the deepening programme and the water quality of the Scheldt and the Meuse, and the decision to make a linkage between the deepening programme and the HSL», which meant that «the environmental problems in Scheldt and Meuse [were] made subordinate to the economic interests of the Dutch Randstad»); 189 (involvement of representatives of the Province of Zeeland and of the Task Group for the Western Scheldt in preparing the 'Scheldt Action Programme' 1995-7).

Understandably, much emphasis was laid, especially by the regional actors, on their emergence as fully emancipated subjects of international law for the purpose of negotiating and concluding international treaties within the ambit of their competence. It may also explain why their action on that international stage was largely modelled on that of traditional state-actors in international relations. All that, however, should not obfuscate the fact that their emergence (or, in a wider historical perspective, re-emergence) is primarily a symptom of profound changes in the structure of the West-European international community, where the classic concept of sovereignty has been eroded by both supra-national and infra-national factors.

Conclusion

Until the late sixteenth-century in theory, and much longer — if not always — in practice, sovereignty, however it was expressed, was a relative concept. During the middle ages, that allowed a great variety of actors to intervene in inter-polity relations and inter-polity law. Moreover, the 'international community' of these actors was, at least within Latin Christendom, sufficiently integrated so that a minimum of common values and norms were shared, and a politically flexible hierarchy recognised. When, under Burgundian rule, the conflicting economic interests of the regional actors around the Scheldt estuary had to be settled through peaceful means, the political and military power of the Duke may have been the decisive consideration for those actors bringing them to accept a peaceful settlement, but such a settlement was only possible because a legal mechanism of peaceful conflict resolution was available and already widely established throughout Western Europe.

In the age of Enlightenment, sovereignty was still an ambivalent political concept. Theoretically, there may have been equal sovereignty over all the territories ruled by a monarch (or, in some cases, a 'republic'), but in fact not all the territories within a realm were on a par with each other. A monarch's dynasty had its own heartlands and power-base, which somehow had become more strongly identified with their political sovereignty on the European stage. More peripheral territories, often the object of bartering during negotiations, may have added to the prestige, wealth or security of the realm, but were not as essential to the monarch's status as sovereign. Moreover, sovereignty was seen

as a force within a coherent 'system' of nations, which ultimately deferred to the principles which maintained the system in place. Peripheral territories, in such a 'rationally' conceived system of the international community, were mainly envisaged as masses (in the physical sense) which were driven (or manipulated) by outside forces. Whatever the respective skill and force of the players on this European political billiard-table, the effects and ultimate outcome of each move were meant to be ruled by principles which were no less inescapable and immanent than the 'laws of nature' in the physical world. The diplomatic strategies and the pamphleteers' arguments inspired by Joseph II's ill-fated attempt to 'open' the Scheldt to international maritime navigation illustrate how the issue was primarily analysed with regard to its anticipated effects on the dynamic balance of powers within Europe, taking into account both the immediate neighbours (provided they could act as an autonomous force) and the Great Powers.

The nineteenth century was the high-water mark for the sovereign nation-state. The principle of equality among these exclusive actors of the international community was strongly mitigated by the recognised superior authority of the Great Powers. Again, this is reflected in the negotiations and the formalisation of the 1863 Treaty on the Redemption of the Scheldt-Toll. The agreement as such was a bilateral issue between Belgium and the Netherlands. However, as the diplomatic history of the negotiations clearly demonstrates, the issue was also a concern of the larger maritime international community, and, of course, Britain's role in the acceptance and implementation of the multi-lateral agreement between Belgium and the maritime powers was crucial. It is also clear that the principles governing the international relations around the redemption of the toll were not exclusively of a legal nature, but belonged to prevailing (though not universally accepted) ideas of economic and trade policy, for which Britain, again, was a decisive actor.

Finally, the 1994-5 treaties show, though still very modestly, that the (Western European) international community is engaged in a new process of metamorphosis. The political will to co-operate in what is perceived to be a common, transnational interest may have become a driving force, but the actual means of cooperation remain very limited. Even so, the return of regional actors on the international stage, which may herald a greater variety of such actors, but also, in future, of other actors (such as NGOs, whose actions became increasingly important during the latest negotiations rounds), and the

so far rather indirect influence of the European institutions, are all indications that not only the nature of the actors is changing, but also the structure of the international community in which they evolve. So far, the development is one of transition, and a coherent theoretical model of the new international community that is emerging from the relative erosion of the sovereign state in favour of sub-national, trans-national and supra-national actors has yet to be worked out and to reach a relative consensus.

LAUDATIO GEORGES THEVES

Patrick De Backer

The members of the Sarton Committee, on the proposal of the Faculty of Veterinary Medicine, have elected Dr. Theves as a recipient of the George Sarton Medal and diploma for the academic year 2001-2002. It is my pleasure to introduce this colleague from the Grand-Duchy of Luxemburg, our neighbouring country.

Georges Theves (born in 1942) is the right person in the right place to deal with the theme of this Sarton medallist lecture which has to do both with animals and humans, with veterinary as well as with human medicine. As a veterinarian he is well acquainted with both sides of the medal. Not only is he the son of a mother *pharmacienne* and a father *médecin-dentiste*, since 2001 he has been the editor of the *Bulletin de la Société des Sciences Médicales du Grand-Duché de Luxembourg*. Dr. Theves became a member of the administrative council of the *Société des Sciences Médicales de l'Institut Grand-Ducal* in 1980 and from 1991 until 1999 he served as a vice-president for this organisation.

Also in his professional life Georges Theves was active in a multifaceted way. After graduating at the veterinary faculty of Brussels (1967) he started as a practitioner in large and in small animal medicine at Strassen and at Bridel (1968-1978). No doubt that this is the best way to become familiar with the very essence of veterinary medicine. Then Dr. Theves turned his attention into the second most important field of the veterinary profession: he became *directeur-adjoint* of the municipal slaughterhouse of the city of Luxemburg and he was active in this function until 1993. After a reorganisation, this task was to be continued along the same lines in the governmental veterinary inspection team, and in 1997, he finally became inspector in four large food companies.

Meanwhile Georges Theves developed an increasing interest in the history of his professional discipline. He became a member of the World Association of Veterinary Medical History in 1990 and in 1998 he was appointed member of the board of this organization and in the same year Theves assumed the function of assistant-editor of the journal "*Historia Medicinae Veterinariae*", a highly demanding and important job. His greatest prouls in relation to this journal was the edition of a well-stuffed "Festschrift" in honour of Prof. Ivan Katic, the

“founding father” of this unique journal who acted as editor-in-chief during 25 years.

As a concluding remark, I would like to add that there is no better illustration of the passionate interest of Georges Theves in these matters, than the fact that he authored over fifty publications in the field of veterinary medical history and domestic animals.





TIERE ALS HEILMITTEL **Früher und Heute**

Georges THEVES

Einleitung

Die Anfänge des Gebrauchs von Tieren und tierischen Stoffen als Heilmittel verlieren sich im Dunkel der Geschichte. Es besteht kein Zweifel, dass von den in diesem Beitrag vorgestellten Arzneimitteln tierischer Herkunft das meiste nur Kurioses aus der Vergangenheit ist und heute therapeutisch völlig obsolet ist. Es trifft aber sicherlich nicht zu, dass das Tier in der modernen Medizin ausgedient hat. Heilmittel tierischer Herkunft sind in unseren Zeiten sogar hochaktuell, wie später noch zu zeigen sein wird.

Thema dieses Beitrags sind die aus Tieren, deren Organen und Produkten in der alten Medizin und Chirurgie gewonnenen Arzneien und Hilfsmittel. Einige Beweggründe unserer Vorfahren, die zur Anwendung solcher Heilmittel führten, werden zusammengefasst und in einem 2. Teil werden die noch heute in der Medizin gebrauchten animalischen Medikamente kurz vorgestellt.

Tiere als Heilmittel in der alten Medizin

Die tierischen Heilmittel waren bereits den alten Griechen und Römern wohlbekannt. Plinius der Ältere und Dioscurides beschrieben im 1. Jahrhundert n. Chr. eine Vielzahl animalischer Medikamente, die regelmäßig zubereitet und verabreicht wurden. Hildegard von Bingen (1098-1179) empfahl in ihrem medizinischen Werk ebenfalls eine Reihe von Tieren und deren Organe zu Heilzwecken in Verbindung mit der antiken Säftenlehre. Die Zahl der Drogen aus Tieren nahm im 16. und 17. Jahrhundert erheblich zu (Kunst des Heilens, 1991). Der Schweizer Arzt und Naturforscher Conrad Gesner (1516-1565) hob in den ausführlichen Beschreibungen der Säugetiere, Vögel und Fische, welche er unter dem Titel „*Historia animalium*“ veröffentlichte, stets auch den medizinischen Nutzen der jeweiligen Tiere hervor. „*Von der Arzney und Nutzbarkeit / so von diesem Thier herkompt*“, so heisst es in der deutschen Übersetzung dieses

grundlegenden Werkes der modernen Zoologie. Viele sogenannte Heilmittel aus Tieren waren bis weit ins 19. Jahrhundert überall erhältlich. Auch heute ist einiges davon noch in Apotheken zu haben. Nur eine beschränkte Auswahl von „Medikamententieren“ kann hier vorgestellt werden, sicherlich gab es in der Vergangenheit mehr davon und in Zukunft rechnet die Pharmakologie noch mit einer ganzen Reihe von Tieren, welche dem Menschen wirksame Heilmittel liefern können.

Haustiere

Das Pferd

Käse aus Stutenmilch war ein hochgepriesenes Mittel gegen Durchfall. In Russland bestehen heute noch mehr als 100 Stutenmilch-Institute zur Behandlung von Magen-, Darm- und Leberkrankheiten, die sich konstanter Beliebtheit erfreuen. Bei Zahnschmerzen soll eine magische Methode geholfen haben: es genügte den kranken Zahn mit einem Pferdezahn zu berühren. Ein Mittel, den Husten bei Schwindsucht zu lindern, bestand darin, den Speichel eines Pferdes drei Tage lang mit etwas Wasser einzunehmen. Falls das Mittel zum Erfolg führte, genas der Kranke, das Pferd aber soll verendet sein. Ein Beispiel für die Übertragung einer Krankheit, die nach alter Auffassung auf ein sündiges Leben zurückzuführen war, auf einen Sündenbock, der dafür mit dem Leben bezahlen musste.

Das Rind

Bei den alten Griechen genoss der Stier besondere Verehrung als Symbol übernatürlicher Kräfte. Der Stier, seine Organe und Produkte waren nach hippokratischer Humorallehre warm und trocken oder warm und feucht, so dass sie dem Kranken mit viel Kraft wieder auf die Beine helfen konnten. Dagegen wurde die Kuh, das weibliche Prinzip, für kalt und feucht gehalten, so dass von ihr kaum heilende Kräfte zu erwarten waren (*Medicina Antiqua*, 1996). Auffallend ist, dass die Gallenflüssigkeit vom Stier, die als warm und trocken betrachtet wurde, vielfach als Heilmittel genutzt wurde. Mit dieser Galle wurden der graue Star, Ohrenschmerzen, Ausschlag im Gesicht und vieles mehr behandelt. Darauf wird später eingegangen werden. Die Herzknochen, die sich in der Regel nur bei älteren Rindern bilden, standen in hoher Wertschätzung bei Herzbeschwerden.

Das Schwein

So wie die Rinder wurden die Haus- und Wildschweine ebenfalls ausgiebig zu Heilzwecken gebraucht. Die große Fruchtbarkeit der Schweine setzte die Menschen immer wieder in Erstaunen, deshalb ist es nicht verwunderlich, dass die Hoden des Ebers, die Galle und das Knochenmark der Sau als Aphrodisiakum hoch im Kurs standen.

Der Hund und der Fuchs

Der Hund war im Altertum zweifellos das als Heilmittel am meisten genutzte Tier. Im alten Ägypten waren die Hunde dem mit Schakalkopf dargestellten und für die Einbalsamierung zuständigen Gott Anubis geweiht. Neben den bekannten Schlangen spielten auch Hunde eine gewisse Rolle im Heiligtum des Asklepios. Während der Nachtruhe streiften sie durch die Schlafsäle, beleckten die Wunden der Kranken und halfen somit Entzündungen zu heilen (Serpell, 1990).

Der Hund war nicht nur ein treuer Wächter bei Haus und Hof, er wurde auch öfters geschlachtet, so dass seine Organe stets frisch zur Verfügung standen. Frisches Hundeblood war nach volkstümlicher Auffassung gegen allerlei Krankheiten wirksam und Hundefett soll Frauen zu viel Kindersegen verholfen haben (Medicina Antiqua, 1996). Aber auch der lebende Hund war als Heilmittel beliebt. So war in der mexikanischen und peruanischen Volksmedizin bereits 250 v. Chr. der zu Heilzwecken gezüchtete Nackthund als lebende Wärme flasche gegen rheumatische Schmerzen im Gebrauch.

Ein Produkt des Hundes wurde lange Zeit sogar in der Apotheke verkauft. Das „Album graecum“ oder „Griechisch Weiß“ mit viel phosphorsaurem Kalk half gegen Durchfall, als Wundpflaster soll es Geschwüre zum Abheilen gebracht haben. Das „Album graecum“ war nichts anderes als Kot von Hunden, die sich regelmäßig von Knochen ernährten. Heute ist dieses Wundermittel zur Seltenheit geworden, moderne, mit Dosenfleisch gefütterte Hunde produzieren kein „Griechisch Weiß“ mehr.

Der Rotfuchs war bei vielen Entzündungskrankheiten, die von hohem Fieber und geröteter Haut begleitet waren, von Belang. Seine Zunge wurde bei rotlaufähnlichen Leiden von Mensch und Tier dem Kranken drei Tage lang um den Hals gebunden, dann wurde sie einem Hund zum Fraß vorgeworfen.

Die Zunge sollte die Krankheit in sich aufnehmen; war sie dann im Magen des Hundes verschwunden, sollte die Heilung eintreten. Dieser Transferstrategie zur Behandlung von Krankheiten kam in der Volksmedizin bis ins 20. Jahrhundert eine große Bedeutung zu.

Die Katze

Vieles von der Katze war als Heilmittel hochbegehrt. Ihr Fett, ihre Exkreme, ihre Galle, besonders aber ihr Fell, wurden gegen Rheuma, Gelenkschmerzen und Schwindel angepriesen. Katzenfleisch war als hervorragendes Mittel gegen Schwindsucht und Tuberkulose bekannt. Im Mittelalter werden dem Mäusefänger Faulheit, Listigkeit, Gefräßigkeit und Verstellungskunst nachgesagt, anthropomorphe Charakterzüge, welche das Tier zur Personifizierung des Bösen abstempelten; deshalb diente die Katze vielfach, lebendig oder tot, zur Teufelsaustreibung und Verjagung der Hexen (Buschan, 1942/ *Medicina Antiqua*, 1996).

Die Taube

Noch bis weit ins 18. Jahrhundert war die Taube als Medikament im Gebrauch. Sie wurde bei lebendigem Leib gespalten, bei einem Hirnschlag auf den Kopf des Kranken, bei Fieber auf die kalten Füße gelegt. Waren die Augen blutunterlaufen halfen ein paar Tropfen frischen Taubenbluts (*Medicina Antiqua*, 1996).

Der Hahn, das Huhn und seine Eier

Gegen Pestgeschwüre soll der Hahn sich besonders gut geeignet haben. Die Federn des Hinterteils wurden ihm erst mal vollständig ausgerupft, dann wurde sein After auf das zu behandelnde Geschwür gedrückt. Falls er verendete, kam der nächste an die Reihe bis zu dem Zeitpunkt, wo dann doch einer diese Tortur überlebte. Das war das sichere Zeichen, dass die Pest vollständig vom Kranken auf die Hähne übergegangen und der Kranke auf dem Wege der Besserung war (Eberhard-Metzger & Ries, 1996).

Die Hühnereier waren als Heilmittel sehr geschätzt. Das Ei war etwas ganz besonderes, kam doch aus ihm neues Leben (Crantz, 1765). Fast alle Krankheiten sollen auf Eierkuren angesprochen haben, von den Augenkrankheiten über Durchfall und Leibschmerzen, von schlechten

Monatsblutungen und Husten zu Abszessen, Quetschungen und Blutstürzen; sie alle konnten mit rohen, mit Heilpflanzen vermischten, gekochten oder zu Asche verbrannten Eiern geheilt werden.

Die Ziege und die Gams

Die Ziege war ein vielbegehrter Lieferant von sogenannten „Bezoaren“. Diese Magen- und Darmsteine sind Konkreme aus Haaren, Pflanzenfasern, Kalk- und Magnesiumphosphaten, sie werden durch die Magen- und Darmbewegungen zu kugel- oder eiförmigen Gebilden geformt und können faustdick werden. In der arabischen Medizin wurden Bezoare als Mittel gegen allerlei Gifte angewandt. Die begehrtesten Steine waren die der wilden Ziegen, welche im Orient beheimatet sind, in Europa standen die Bezoare der Gemsen und Steinböcke besonders hoch im Kurs. Oft wurden kleinere Magensteine in Trinkbecher gelegt, um das eventuell heimlich beigemengte Gift zu neutralisieren (Kunst des Heilens, 1991). Gift war bekanntlich jahrhundertlang in höheren Kreisen ein sehr beliebtes Mittel familiäre und dynastische Probleme zu lösen.

Die gebratene Leber der Gams, die bekanntlich mit sicherem Tritt von Fels zu Fels springen kann, ohne sich zu verletzen, wurde im 17. und 18. Jahrhundert von vielen Ärzten gegen Kurzsichtigkeit und Sehschwäche empfohlen (Bruyérin-Champier, 1560).

Die Milch

Die Milch wurde von der Medizin bis ins 19. Jahrhundert als eine ideale Mischung animalischer Säfte angesehen. Zu medizinischen Zwecken wurde Frauenmilch bevorzugt, in der Beliebtheitsskala folgten Eselsmilch, Ziegenmilch und an letzter Stelle Kuhmilch. Von der mit allerlei Kräutern vermischten Milch versprach man sich Hilfe bei Hysterie, Rheuma, Gicht, Gliederschwäche und vielem mehr. Warme Umschläge mit süßer Milch sollten die entstellenden Pocken heilen helfen (Crantz, §1765).

Kranke Haustiere

Die bisher erwähnten tierischen Heilmittel stammten in der Regel von gesunden Tieren. Ein pathologisches Produkt hat in der Geschichte der Medizin eine hervorragende Rolle gespielt. Es waren die Pocken der Kuh

„Blossom“ mit denen Sarah Nelmes sich angesteckt hatte und die Edward Jenner (1749-1823) 1796 mit Erfolg von der Hand Sarah's auf den Arm von James Phipps übertrug. Dies war der Anfang der Impfung gegen Pocken, die 1979 weltweit zur Ausrottung dieser gefährlichen Krankheit führte.

Ab 1892 ging die Sterblichkeit der Kinder-Diphtherie drastisch zurück, auch gegen Starrkrampf konnte nun erfolgreich vorgegangen werden. Im Blut sogenannter Serum-Pferde, die vorher mit einer Mischung von Bazillen, Toxinen und Jodtrichlorid beimpft worden waren, entdeckte Emile Behring (1854-1917) in Zusammenarbeit mit seinem japanischen Kollegen Shibasaburo Kitasato (1852-1931) 1890 Antitoxine, welche die Gefährlichkeit dieser Krankheiten dramatisch reduzierten. Diese Heilseren wurden ab 1892 industriell hergestellt und retteten fortan zahlreichen Menschen das Leben.

Der Mensch

Selbst der Mensch wurde als Heilmittel benutzt, besonders kleine Kinder, die bekanntlich Gott näher sind als sündige Erwachsene, waren als Heilmittellieferanten begehrt. Urin und Kot, Ohrenschmalz und Speichel, Haare und Schweiß wurden eifrig zu Heilzwecken gesammelt. Der Urin kleiner Knaben soll gegen vereiterte Ohren und Halsentzündungen, gegen grauen Star und Haarausfall wirksam gewesen sein (Thomas, 1999). Die Therapie mit Eigenurin hat heute wieder in verschiedenen Kreisen Hochkonjunktur. In diesem „Heilwasser“ sollen Abwehrfermente entdeckt worden sein, die gegen vielerlei Gebrechen Hilfe versprechen.

Ein nicht alltägliches Medikament war das Produkt mit dem Namen „Mumia“. Es waren Teile ägyptischer Mumien, die zur Herstellung von Wundsalben verwendet wurden. Im 14. Jahrhundert nutzten erstmals arabische Ärzte aus bitumenhaltigem Gestein gewonnene teerartige Substanzen zur Wundbehandlung. Später wurden Einbalsamierungsharze, die zur Mumifizierung dienen, gebraucht, doch schließlich wurden ganze Mumien zu Salben verarbeitet (Kunst des Heilens, 1991 / Pomet, 1717). Bekanntlich enthält Teer eine Reihe desinfizierender, antiseptischer, granulationsfördernder und antiparasitärer Substanzen, die von der Human- und Veterinärmedizin heute noch genutzt werden.

Wilde Tiere Europas

Der Biber

Ein Heilmittel, das in vielen Gegenden zum Ausrotten einer Tierart beigetragen hat, ist das sogenannte „Castoreum“ oder Bibergeil. Diese Substanz wird von zwei Drüsen, welche sich beim Biber zwischen After und Geschlechtsorganen befinden, abgesondert. Das „Castoreum“ soll gegen den Biss giftiger Tiere, gegen Ohrenschmerzen und Epilepsie geholfen haben, besonders dann, wenn der Biber reichlich Weidenrinde gefressen hatte. Bibergeil enthält, wie heute bekannt, unter anderem ein Salicylderivat, das 1899 in der abgeänderten Form von Acetylsalicylsäure zum „Aspirin“ wurde (Crantz, 1765 / Meyer, 1990). Der Biber, welcher das ganze Jahr über im kalten Wasser lebt, ohne krank zu werden, muss demzufolge ein Mittel besitzen, das ihm hilft Kopf-, Ohren- und Gliederschmerzen von sich fern zuhalten. So will es die Signaturenlehre („*théorie des signatures*“). Diese besagt, dass Pflanzen und Tiere deutlich zeigen gegen welche Krankheiten sie wirksam sind. Näheres darüber später.

Der Bär

Vom Bär mit seinem dichten Fell und seiner dicken Speckschicht, die es ihm ohne weiteres gestatten, auch bei bitterer Kälte, eine angenehme Winterruhe zu halten, wurde das Fett gegen Haarausfall und Rheuma gebraucht. Ein weiteres Beispiel der Signaturenlehre. Die Galle des Bären, mit warmem Wasser vermischt, soll dazu beigetragen haben, Brustschmerzen zu lindern (Medicina Antiqua, 1996). Über die Bedeutung der Galle als Heilmittel wird ebenfalls noch zu sprechen sein.

Der Dachs und das Marmeltier

Weil Dachs und Marmeltier selbst bei großer Kälte ihren Winterschlaf problemlos überstehen, soll auch ihr Fett wirksam gegen Fieber, Fußschmerzen und Rheuma gewesen sein. Gekochtes Dachshirn soll gegen Kopfschmerzen und Epilepsie geholfen haben und durch ein unter der Türschwelle vergrabenes Dachsherz konnten nach altem Volksglauben Krankheiten aus Haus und Hof ferngehalten werden (Medicina Antiqua, 1996). Auch Marmeltierfett ist heute immer noch ein beliebtes Mittel gegen Gliederschmerzen, die Wintersportler oder Wanderer im Gebirge sich leicht

zuziehen, auch wenn dem in jeder Apotheke angebotenen „Murmelin“ wohlweislich entzündungswidriges und wundheilungsförderndes Arnika oder Calendula beigemischt wird.

Der Hirsch

Die Medizin gebrauchte so manche Organe vom Hirsch: das Geweih, die Klauen, das Fett, das Herz, die Hoden, die Lungen und die Leber. Dem Hirsch wurde nachgesagt, er leide nie an Fieber, aus diesem Grunde sei er imstande alle möglichen Arten von Fieber zu heilen. Sein Geweih, das jedes Jahr nach Abwurf neu heranwächst, wurde zum Symbol für ein langes Leben, deshalb waren Hirschhornpulver und Hirschhornöl als Heilmittel in der Volksmedizin so begehrt.

Das Hirschhornpulver, mit Asche vermengt, war bekannt als Mittel gegen schlechte Zähne, in Wein aufgelöst soll es gegen Durchfall geholfen haben. Das Öl aus Hirschgeweih, das durch Destillation gewonnen wurde, war wohl eines der wichtigsten Heilmittel. Es soll souverän gegen Schlangenbisse gewesen sein. Der Sage nach war der Hirsch ein Todfeind der Vipern und soll diese in großer Zahl verzehrt haben, er war demzufolge immun gegen Schlangenbisse und konnte diese Tugend auf denjenigen übertragen, der sein Fleisch oder seine Produkte zusichnahm. Dem Hirschhornöl wurde nervenstärkende und krampflösende Eigenschaften zugeschrieben, in der Tiermedizin war es ein beliebtes Mittel gegen Eingeweidewürmer und als Aphrodisiakum soll es älteren Herren wieder zu „ehelichen Werken“ verholfen haben.

Trockene Tränen vom Hirsch waren bei Vergiftungen und ansteckenden Krankheiten sehr gefragt (Buschan, 1942/ Lebrun, 1995/ Medicina Antiqua, 1996). Diese sogenannten Tränen sind in Wirklichkeit ein getrocknetes Sekret aus Drüsen unterhalb der Augen mit dem der Hirsch an Bäumen sein Revier markiert.

Die Kniescheibe eines Hirsches, um den Hals getragen, bewahrte vor Schmerzen in der Leistengegend und der Herzknochen, eine Verknöcherung des Herzgewebes zwischen oberen und unteren Herzkammern, garantierte Schwangeren eine leichte, komplikationsfreie Geburt. Diese beiden Bräuche spiegeln die magischen Kräfte des Hirsches wieder, der, wie bereits angedeutet, Tod und Auferstehung im Rhythmus der Natur darstellt.

Das Eichhörnchen

Zu allen Zeiten wurde das Eichhörnchen wegen seines Felles und seines Fleisches eifrig gejagt, als Heilmittel aber war vor allem sein Gehirn gefragt. Ein Tier, das, wie das Eichhörnchen, so schwindelfrei von Baum zu Baum springen kann und vielfach kopfunter am Stamm hinunter saust, dessen Hirnmasse muss besonders geeignet sein, Schwindelgefühle beseitigen zu helfen: ein weiteres Beispiel der Signaturenlehre.

Der Habicht

Der Habicht, ebenso wie der Geier und der Adler, mussten ihre Galle und ihr Fett für die Medizin hergeben. Mit der Galle wurde ein Mittel gegen Glaukom und Sehschwäche zubereitet und das Fett wurde zu einer Salbe gegen Rheuma gemixt. Der Habicht mit seinem scharfen Blick war, gemäss der Signaturenlehre, vorausbestimmt Augenleiden zu heilen. Da er aber auch noch ein exzellenter Flugartist ist, konnte von ihm nur wirksame Pflaster gegen Gelenkschmerzen stammen (Medicina Antiqua, 1996).

Exotische und mythische Tiere

Das Einhorn und das Rhinozeros

In der Literatur und der Malerei des 15. bis 17. Jahrhunderts taucht regelmäßig ein Fabelwesen auf, eine Art Pferd mit einem Horn auf der Stirne, das Einhorn. Dieses Horn soll das wirkungsvollste Mittel gegen Gift und ansteckende Krankheiten gewesen sein. Wenn auch niemals ein Mensch einem solchen Wesen begegnet war, wurde das Horn jedoch hie und da gefunden. Es handelte sich in Wirklichkeit um den Stosszahn des Narwals, der an manche Küsten angeschwemmt wurde und als Wundermittel im Handel war (Pomet, 1717/ Kunst des Heilens, 1991). Auf dem schwarzen Kontinent und in Südasien wurde dann später handfester Ersatz für das Stirngelbe des Einhorns entdeckt: das Nasenhorn des Rhinozeros. Heutzutage ist das Horn in China immer noch als Mittel zur Bereitung von Liebestränken hochbegehrt. Diese Begierlichkeit gepaart mit unendlicher menschlicher Dummheit brachte das Rhino fast an den Rand des Aussterbens

(Meyer, 1990), vielleicht kann nun die Potenzpille „Viagra“ die Gefahr der Ausrottung bannen helfen.

Kaltblut-Tiere

Die Haifischzähne

Haifische zählen zu den Knorpelfischen; nach ihrem Tode bleiben nach einiger Zeit nur die widerstandsfähigen Zähne übrig, die, an die Strände angeschwemmt, als Steinzungen angesehen wurden. Viele Menschen waren der Meinung, diese Steinzungen („glossopètes“) seien vom Himmel gefallen und waren überzeugt Wundermittel gegen Schlangenbisse, bösartige Fieber und Verzauberungen in den Händen zu halten (Gayrard-Valy, 1993 / Kunst des Heilens, 1991). Als in Gold eingefasste Amulette wurden sie von den Reichen gerne als Vorbeugungsmittel getragen.

Die Krebse

Vom Krebs waren die sogenannten Krebsaugen von Bedeutung, sie standen in reichverzierten Gefäßen auf den Regalen jeder Apotheke. Was steckte hinter diesen Krebsaugen? Sie wurden in reinen Bächen angeschwemmt, waren weiß, rund und auf der Innenseite etwas ausgehöhlt. Sie glichen tatsächlich Augen, waren aber in Wirklichkeit Magensteine - „Gastrolithen“-, eine Kalk- und Magnesiumreserve, mit denen der Krebs nach der Häutung im Mai und Juni nach kurzer Zeit einen neuen Panzer aufbauen konnte (Crantz, 1765 / Kunst des Heilens, 1991). Diese Krebsaugen wurden auf kranke Augen gelegt, wenn ein Fremdkörper Schmerzen bereitete. So sollte der Tränenfluss angeregt werden, um das Auge vom Fremdkörper zu befreien. Ein weiteres Beispiel für die Signaturenlehre. Bis weit ins 19. Jahrhundert wurden Krebsaugen gegen Magensäure eingesetzt, sie waren auch lange Zeit Bestandteile vieler Zahnpasten (Pomet, 1717 / Littre & Robin, 1873).

Die Kröte

Getrocknete Kröten wurden gegen Herzschwäche verschrieben, das Mittel war in den Apotheken stets vorrätig. Wenn auch heutzutage die Behandlung von kranken Herzen mit Kröten als etwas überspannt erscheint, so muss man

wissen, dass das in den Hautdrüsen der Kröten gebildete „Bufotalin“ eine den Digitalis-Glykosiden ähnliche Wirkung zeigt. Dies ist eines der seltenen tierischen Heilmittel aus alten Zeiten, das die moderne Pharmakologie bestätigen konnte.

Die Viper und der Skorpion

Vipernfleisch wurde bis zum Anfang des 20. Jahrhunderts eifrig verschrieben. Es war ein wesentlicher Bestandteil des sogenannten „Theriak“, eine Mischung aus 60 bis 70 Substanzen mineralischer, pflanzlicher und tierischer Herkunft, das als Gegengift gegen Schlangenbisse Berühmtheit erlangte, dann aber im Laufe der Zeit zum Allheilmittel wurde, mit dem alle Krankheiten bei Mensch und Tier erfolgreich behandelt werden konnten. Schlangenfleisch gegen Schlangenbisse zu nutzen, ging von der nur teilweise richtigen volkstümlichen Meinung aus, dass Schlangen gegen ihre eigenen Gifte immun sind und dass sie diese Tugend auf den übertragen können, der von ihrem Fleisch isst. Madame de Sévigné (1626-1696) schrieb im 17. Jahrhundert an ihre Tochter, Madame de Grignan, folgendes: « *C'est aux vipères que je dois la pleine santé dont je jouis ... elles tempèrent le sang, elles purifient, elles rafraîchissent. ... Prenez-en deux tous les matins; coupez-leur la tête, faites les écorcher et couper par morceaux et garnissez-en le corps d'un poulet* » (Godlewski, 1972). Die Haut der Viper in Wein mazeriert galt als ein unfehlbares Mittel die Jugend wieder zu erlangen. Die Schlange erneuert jedes Jahr ihre Haut, indem sie die alte abstreift. Demzufolge muss Schlangenhaut, in entsprechender Form eingenommen, runzelige Menschenhaut wieder weich und geschmeidig machen, aber auch Leprageschwüre, mit getrockneten Vipern eingerieben, sollten zum Abheilen gebracht werden. Manchmal sollten auch mit Schlangen gefütterte Brathühner dem Leprakranken nützlich sein, seine Hautprobleme lösen zu helfen (Eberhard-Metzger & Ries, 1996). Das aus Skorpionen gewonnene Öl stand hoch im Kurs um Skorpionsstiche, Fieber und Pest heilen zu helfen und um anderen Giftbissen ihren oft tödlichen Schrecken zu nehmen (Buschan, 1942 / Lebrun, 1995).

Der Kabeljau

Seit dem Mittelalter wurde im Februar/März vor Norwegen und Island, von Mai bis September vor Neufundland der Kabeljau in großer Zahl gefangen. Das aus der Leber dieser Fische gewonnene Lebertran war ein beliebtes

Mittel gegen Rheuma und Gicht, gegen Knochentuberkulose und chronischen Ausschlag. Es half ebenfalls gegen Rachitis, ein Gebrechen, das als englische Krankheit bekannt war und das der englische Anatom und Philosoph Francis Glisson (1597-1677) 1650 ausführlich beschrieb, da es in England häufig anzutreffen war. Die heilende Wirkung des Lebertrans ist auf das im Fischöl vorhandene Vitamin D zurückzuführen, das der deutsche Chemiker Adolf Windaus (1876-1959) in den 1920er Jahren chemisch rein darstellen konnte. Er wurde dafür 1928 mit dem Nobelpreis geehrt.

Die Biene

Hildegard von Bingen im 12. Jahrhundert und Paracelsus im 16. Jahrhundert legten großen Wert auf den Honig, der nicht nur als Süßstoff, sondern auch als Heilmittel bei allerlei Krankheiten, insbesondere der Atemwege, Verwendung fand. Heute wird der Kittharz - Propolis -, den die Bienen an verschiedenen Baumarten einsammeln und mit dem sie undichte Stellen an ihren Behausungen ausbessern, als Allheilmittel angesehen. Die alten Griechen legten Propolis bereits mit Erfolg auf eiternde Wunden, heute werden dieser Substanz antibakterielle, antivirale und antimykotische Eigenschaften zugeschrieben. Magengeschwüre sowie Rückenschmerzen und Hämorrhoiden sollen auf die Propolis-Therapie günstig angesprochen haben. Die bekannte und vielfach angepriesene „Gelée Royale“, mit der befruchtete Bienenköniginnen reichlich gefüttert werden und zum ergiebigen Eierlegen angespornt werden, soll gegen Rheuma, Schlafstörungen, Müdigkeit und Depressionen helfen. Diese Spezialnahrung trägt wesentlich dazu bei aus der Königin eine Superbiene zu machen, die über 3 Millionen Eier legt und 5 bis 7 Jahre alt wird, während gewöhnliche Arbeiterinnen höchstens 7 bis 8 Wochen leben. Dass einem Produkt wie der „Gelée Royale“ außerordentliche Wirkungen zugeschrieben werden, wen wundert's. Eine moderne Version der Signaturenlehre?

Die alten Ägypter haben wohl zum ersten Mal Bienengift gegen Gelenkschmerzen gebraucht. Sie haben entweder mit toten Bienen schmerzende Stellen eingerieben oder lebende Bienen auf die Haut gesetzt, damit sie ihr Gift einspritzten. Mit in Weißwein gekochten Bienen wurden Blasenentzündungen therapiert, und zu Pulver verrieben sollen Bienen gegen Haarausfall nützlich gewesen sein (Uccusic, 1984 / Zotter, 1988). Studien ergaben, dass Bienengifte die körpereigene Cortisonproduktion anregen und eine Reihe Stoffe enthalten, die entzündungshemmend sind.

Die Kanthariden

Die Kanthariden, auch als Spanische Fliegen bekannt, sind getrocknete Käfer der „*Lytta vesicatoria*“-Art. Sie enthalten ein Giftstoff, das Cantharidin, das auf der Haut zu Blasenbildungen führt. Zu Salben verarbeitet, waren spanische Fliegen das Mittel der Wahl gegen chronische Entzündungen der Gelenke, Sehnen und Muskeln. Sie riefen an erkrankten Stellen eine frische Entzündung hervor, welche beim Abschwellen die alte beseitigen sollte. Das Cantharidin, das eine nachhaltige Wirkung auf die Geschlechtsorgane besitzt, wurde vielfach als Aphrodisiakum gebraucht, aber auch als Abtreibungsmittel gebraucht (Kunst des Heilens, 1991).

Der Regenwurm

Das aus abgekochten Regenwürmern gewonnene Öl soll wirksam gegen allerlei Geschwüre gewesen sein. Das nekrotische Gewebe der Haut- und Schleimhautgeschwüre wird im Laufe des Eiterungsprozesses abgestoßen und in der Regel nach einiger Zeit durch Granulationsgewebe ersetzt. Da aber jedermann zu wissen glaubte, dass der Regenwurm seine Wunden nach kurzer Zeit heilen konnte, war es nur natürlich, dass diese Regenerationskraft von der Volksmedizin bei Geschwürbildung nutzbar gemacht wurde (Lebrun, 1995). Hier begegnet man wiederum der Signaturenlehre.

Die Dreckapotheke

Die Dreckapotheke, in der getrocknete Exkremente von Hunden, Katzen, Hühnern, Tauben, Pferden, Rindern, Schweinen und Menschen zu finden waren, hatte bis weit ins 19. Jahrhundert hinein ihre unermüdlichen Anhänger. Schweine- und Pferdekot wurde zur Blutstillung der Wunden aufgelegt. Zu jener Zeit, als die Schweine noch zur Eichelmast in die Wälder getrieben wurden, enthielt Schweinekot reichlich Gerbstoffe, so dass, von sehr wahrscheinlichen Wundinfektion durch Darmkeime einmal abgesehen, eine astringierende, eventuell blutstillende Wirkung tatsächlich nicht auszuschließen war. Pferdekot muss aber in den Gegenden, wo Starrkrampf herrschte, als Wundpflaster verheerende Wirkung gehabt haben, da die Sporen des „*Clostridium tetani*“ sich bevorzugt im Darm des Pferdes aufhalten. Volkstümlicher Meinung zufolge sollte der abstoßende, übelriechende Dreck die bösen Krankheitsgeister, die von Mensch und Tier

Besitz ergriffen hatten, aus dem Körper vertreiben. Um die Wirkung noch zu erhöhen, wurde der Kot dann doch vorsichtshalber mit Heilpflanzen vermischt (Anonyme, 1714). Es ist aber anzunehmen, dass die Stoffwechselprodukte der Abermillionen Darmbakterien, welche mit dem Kot ausgeschieden werden, durchaus antibiotische Wirkungen, wenn auch nur in geringem Masse, haben können. Die Ärzte im alten Ägypten jedenfalls nutzten die Kot-Therapie auch zur Behandlung von Infektionskrankheiten und waren von dessen Wirkung so überzeugt, dass im Niltal der Kot sogar zum göttlichen Heilmittel erhoben wurde (Böttcher, 1959).

Nach der vorangegangenen Aufzählung zahlreicher altbekannter tierischer Heilmittel, von denen man heute mit Sicherheit weiß, dass die meisten davon ohne jegliche Wirkung sind, muss die Frage nach den Beweggründen, welche die Menschen vergangener Zeiten veranlassten, diese Art von Heilprodukten in ihren Medikamentenschatz aufzunehmen, gestellt werden. Viele Motive liegen im dunkeln, einige Grundideen lassen sich trotzdem herauskristallisieren.

Bereits vor 30 000 Jahren machten sich die Menschen Gedanken über die Tiere. Sie hielten sie für göttergleiche Wesen, mit denen selbst der Schamane nicht reden konnte. Wie die Wissenschaft heute meint herausgefunden zu haben, sollen die Höhlenmenschen im Trancezustand versucht haben besondere Kräfte, auch Heilkräfte, von den Tieren zu erlangen. Dies soll der tiefere Sinn der 25000 Jahre alten Felsenmalereien sein. Es ist deshalb nicht verwunderlich, dass die Menschen damals den Tieren und ihren Produkten übernatürliche Kräfte zumaßen. Später gingen diese Ansichten in die griechische Mythologie über und behielten bis ins 19. Jahrhundert feste Wurzeln im Volksglauben (Prieur, 1988). Daraus entstanden im Laufe der Zeit eine Reihe von Sympathiemittel, denen geheimnisvolle Effekte zugeschrieben wurden, Mittel mit „Placebo-Effekt“, die, wenn auch ohne nachweisbare Wirkungen, trotzdem Linderung und manchmal sogar Heilung brachten, weil der Kranke an sie glaubte und ein tiefes Vertrauen in denjenigen hatte, der ihm diese Placebo-Mittel verabreichte.

Paracelsus (um 1493-1541) hat im 16. Jahrhundert mit seinem Werk „De signatura rerum naturalium“ in die medizinische Literatur eingeführt, was seit langer Zeit im Volksglauben verankert war: wenn es Krankheiten gibt,

so muss es auch in der Natur Heilmittel dagegen geben – „*ubi morbus, ibi remedium*“. Diese Heilmittel sind in Pflanzen, Mineralien und Tieren versteckt, man muss sich nur die Mühe geben, sie zu finden. In dem vorliegenden Fall haben Tiere und ihre Produkte eine bestimmte Form, Größe, Farbe, Geruch oder andere Tugenden, die an jene Krankheit erinnern, die geheilt werden soll. Mit Hilfe dieser Signaturenlehre kann jeder Arzt bei genauer Beobachtung des Universums auch die richtigen Heilmittel in der Natur finden, so Paracelsus. In einer Gesellschaft, die ihr Wissen von Generation zu Generation meist mündlich überlieferte, war die Signaturenlehre ein bewährtes Mittel, auf die als Medikamente brauchbaren Pflanzen, Mineralien und Tiere hinzuweisen. Ein klassisches Beispiel der Pflanzenheilkunde ist die an Bächen stehende, mit ihren Wurzeln bis ins Wasser reichende Weide, die, trotz Eis und Kälte, keinen Schaden nimmt. Folglich muss ihre Rinde, die ihr Schutz gewährt, ein Mittel gegen Fieber, Rheuma und Gelenkschmerzen enthalten, so jedenfalls lehrt es die Signaturenlehre (Kunst des Heilens, 1991). In der Tat enthält die Weidenrinde Salicylsäure, die Felix Hoffmann (1868-1946) 1897 mit Hilfe der Acetylierung in Acetylsalicylsäure umwandelte und die Bayer 1899 zum Verkaufsschlager „Aspirin“ machte. Die Mehrzahl der tierischen Produkte aber, welche die Signaturenlehre mit Lob überschüttete, war ohne nennenswerte Wirkung, vom Bibergeil einmal abgesehen. Wer aber nun glaubt, die Signaturenlehre gehöre längst der Vergangenheit an, der kann in einschlägigen Zeitschriften nachlesen, dass Haifischknorpel das Mittel der Wahl gegen Rheuma sein soll, weil, wie behauptet wird, "Haie kein Rheuma bekommen".

Der hippokratisch-galenischen Humorallehre zufolge hängt die Gesundheit des Menschen von der Eukrasie oder dem idealen Mischungsverhältnis der 4 Körpersäfte zusammen. Diese Körpersäfte stehen in einem engen Verhältnis zu den vier Elementen des Empedokles und des Aristoteles: Feuer, Luft, Wasser, Erde. Die gelbe Galle, die vom Feuer stammt und in der Gallenblase gebildet wird, ist warm und trocken; das Blut, das mit der Luft in Verbindung steht und in der Leber sich bildet, ist warm und feucht; der Schleim, der dem Wasser nahe steht und den Lungen und dem Gehirn entspringt, ist kalt und feucht und die schwarze Galle, die aus der Erde kommt und in der Milz produziert wird, ist kalt und trocken. Ist die Eukrasie gestört, kommt es zum Ausbruch einer Krankheit. Allen Heil- und

Lebensmittel werden genau wie den Körpersäften bestimmte Eigenschaften zugeschrieben und meistens wird die Behandlung nach dem Prinzip der Gegensätze eingeleitet, so werden Erkältungen mit dem Gegenteil, der Hitze, kuriert. Es ist deshalb nicht verwunderlich, dass die gelbe Galle, die vom Feuer stammt und warm und trocken ist, viel Kraft und Heilwirkung gehabt haben soll. Wie bereits mehrfach erwähnt, war die Galle ein beliebtes Mittel, das gestörte Humoralsystem des Kranken wieder ins rechte Lot zu bringen. Wenn auch diese traditionsgebundene, autoritätsgläubige Lehre am Ende des 18. Jahrhunderts allmählich aus den Medizinbüchern verschwand, so konnte ihr Gedankengut sich in der Volksmedizin noch jahrzehntelang behaupten.

In vielen Fällen sollten die Krankheiten der Menschen und ihrer Haustiere auf das Tier übergehen, das als Heilmittel verwendet wurde. Bei dieser Transferstrategie wurde ein Sündenbock, mit allem Leid beladen, sozusagen weit in die Wüste hinausgetrieben. Der Kranke wurde mit einem Organ eines Heil-Tieres berührt, von dem man hoffte, es werde die Krankheit in sich aufnehmen. Sodann wurde dieser Körperteil in einem tiefen Loch vergraben, weit weggeworfen oder einem anderen Tier zum Fraß hingeworfen, mit anderen Worten, sein Verschwinden versprach dem Kranken allmählich Heilung.

Angesichts der recht dürftigen therapeutischen Möglichkeiten aus Pflanzen und Mineralien in den vergangenen Jahrhunderten war der Gebrauch tierischer Heilmittel letztlich doch nur der verzweifelte Versuch, den zur Verfügung stehenden Medikamentenschatz durch Substanzen ergänzen zu wollen, von denen man sich auf Grund volkstümlichen Gedankenguts Hilfe versprach. Derartige Heilpraktiken in unserer Zeit abschätzend bewerten zu wollen, zeugt von geringem Geschichtsverständnis. Nur wer diese hoffnungslosen Heilversuche in den Kontext der Zeit stellt, kann unsere Vorfahren in ihrem Bemühen verstehen, Wege zu suchen, um ihr diesseitiges Befinden zu verbessern und ein möglichst leidenfreies Dasein zu fristen.

Tiere und ihre Produkte als Instrumente in der Chirurgie

Die Tiere und ihre Produkte können auch als Instrumente in der Chirurgie eingesetzt werden. Vier davon sollen hier erwähnt werden.

Seit dem 2. Jahrhundert unserer Zeitrechnung kam in der Chirurgie dem Produkt eines Tieres eine gewisse Bedeutung zu. Es war die Seide des echten Seidenspanners „*Bombyx mori*“, ein Material, das ein Drittel der Stärke eines Drahtfadens besitzt und von dem eine Seidenpuppe bis zu 600 Meter verwendbaren Werkstoff liefern kann. Im Jahre 1867 machte der englische Chirurg Joseph Lister (1827-1912) die antiseptische Wundbehandlung in der Chirurgie bekannt, bald wurde auch die Seide in Karbol oder Jodoform gelegt, um die Eiterung der Wunden zu verhindern.

Auch das „Catgut“ – Katzendarm – das heutzutage meist aus Schafdärmen gewonnen wird, war seit dem 2. Jahrhundert bekannt. Dieses organische Material, das sich langsam im Körper auflöst, ist heute immer noch ein unentbehrliches Hilfsmittel (Schott, 1997). Es muss aber im Hinblick auf die übertragbaren Encephalopathien (BSE) besonders streng kontrolliert werden.

Noch heute verwenden primitive Indianerstämme in Südamerika eine außergewöhnliche Klammer zum Wundverschluss. Auf durchtrennte Gewebe wird eine große Ameisenart - „*Ecton burchelli*“ - gesetzt, deren kräftige Kieferzangen beim Zusammenschlagen sogleich die Wundränder fest aneinander drücken. Danach wird den Ameisen der Rumpf vom Kopf getrennt und die organische Wundagraffe ist perfekt. Die alte indische Medizin kannte bereits diese Art der Wundbehandlung und soll damit sogar verletzte Darmteile ohne Komplikationen wieder miteinander verbunden haben, da sich die Klammer langsam im Körper auflöste (Majno, 1991).

Seit dem Altertum ist der Blutegel, besonders die Art „*Hirudo medicinalis*“, im Gebrauch. Galen (um 131- um 201) legte großen Wert auf die Blutegel-Therapie, sollte doch dem Körper mit dem abgesaugten Blut allerlei Schädliches entzogen werden. Angesichts der Bedeutung, die dem Aderlass in den vergangenen Jahrhunderten in der Medizin zukam, wundert es kaum, dass der Blutegel so beliebt war, um eine Säfteableitung an verschiedenen Körperstellen herbeizuführen. Ein gesunder Blutegel kann ohne weiteres 16 g Blut saugen. Da das Tier das gerinnungshemmende „Hirudin“ aus seinen Speicheldrüsen in die kleine Bisswunde spritzt, um das Blut flüssig zu halten

und es somit leichter aufnehmen zu können, fließt, nachdem der Blutegel entfernt wird, noch bis zu 200 g Blut aus der Verletzung. Im 18. und vornehmlich im 19. Jahrhundert genoss der Blutegel hohe Wertschätzung. Berufssammler trieben alte Pferde in Moore und zogen sie wieder heraus, wenn ihr Körper mit Blutegel übersät war. Sie streuten reichlich Salz auf die Haut, damit die wertvolle Waren von den unglücklichen Tieren ablassen sollte und bequem in Pokale gefüllt werden konnte. Sie gingen aber auch selbst mit entblößten Beinen durch die Moore und konnten derart bis zu 2500 Blutegel pro Tag einsammeln. Zwischen 1829 und 1836 verbrauchten allein die Pariser Krankenhäuser 5 bis 6 Millionen dieser gierigen Blutsauger. 1859 klagte Dr. Niederkorn beim hiesigen Ärzte-Kollegium gegen den Apotheker Krombach, weil dieser keinen Vorrat an Blutegeln hatte. Niederkorn war der Meinung, der Einsatz eines so wertvollen Hilfsmittels leide keinen Aufschub, andernfalls fatale Folgen für den Kranken zu befürchten seien. Der „Larousse Médical“ aus dem Jahre 1936 listet noch folgende Krankheiten auf, bei denen Blutegel mit Erfolg eingesetzt werden können: Blutstauungen in Lungen-, Leber- und Hirn, akute Herzbeutel- und Nierenentzündungen, Schwellungen und Quetschungen (Fields, 1991 /Lévy, 1995/ Loutsch, 1970).

Tiere als Heilmittel in der modernen Medizin

Der Blutegel leistet heute wieder wertvolle Hilfe in der Mikrochirurgie. Die plastische und rekonstruktive Chirurgie hat öfters große Mühe, die venöse Blutzirkulation wieder in Gang zu bringen. Hier kann der Blutegel in 3 bis 5 Tagen mit seinen gerinnungshemmenden, gefäßerweiternden und lokal narkotisierenden Substanzen helfen, den Venenfluss zu aktivieren. Fachärzten zufolge willigt der Patient meist problemlos in den Einsatz von Blutegeln ein, wenn ihm von kompetenter Seite mit klarverständlichen Worten die Angst vor den wurmähnlichen Beißern genommen wird. Der Darm des Blutegels enthält „*Aeromonas hydrophila*“- Bakterien, die zur Verdauung des Blutes unentbehrlich sind. Unter bestimmten Umständen können diese Bazillen bei Patienten Infektionen hervorrufen, deshalb werden Blutegel, die im Gegensatz zu früheren Zeiten heute nur ein einziges Mal zum Einsatz kommen, vor Gebrauch mit Antibiotika behandelt.

Die Blutgerinnung am Herzen, in den Lungen oder dem Gehirn ist bei modernen Zivilisationskrankheiten und bei manchen Operationen gefürchtet. Auch hier kann der Blutegel mit seinem gerinnungshemmenden Hirudin,

einem der wirksamsten Antikoagulantien, Samariterdienste leisten. Seit etlichen Jahren wird Hirudin auf breiter Basis gentechnisch hergestellt, was die Anwendung erheblich erleichtert und kostengünstiger gestaltet. Der Speichel der Blutegel enthält ebenfalls die ödemhemmende Hyaluronidase mit dem Anstauungen von Gewebeflüssigkeiten erfolgreich bekämpft werden können.

Im Jahre 1989 begannen an der Universität von Kalifornien klinische Studien über den Einsatz lebender Organismen in der Chirurgie. Diese „Bio-Chirurgie“ bedient sich zur Behandlung chronischer, schwer heilbarer Wunden, vor allem bei Patienten mit diabetischer Gangrän, steriler Fliegenmaden. Die Maden werden unter Gaze auf die Wunden gebracht, verbleiben dort 2 bis 3 Tage und werden dann durch neue emsige Saubermacher ersetzt. Sie sondern ein stark eiweißzersetzendes Verdauungsssekret ab, verflüssigen das abgestorbene Gewebe und nehmen diesen Nährbouillon gierig auf. Die millimeterkleinen Larven, denen nachgesagt wird, sie würden antibakterielle Substanzen ausscheiden, entfernen so totes Gewebe, Eiter und Bakterien. Sie beseitigen in kurzer Zeit den ekelregenden Wundgestank und fördern den Heilprozess (W.C. on Biosurgery, 1996).

Baron Dominique Jean Larrey (1766-1842), Chef-Chirurg der „Grande Armée“ konnte während den napoleonischen Kriegen feststellen, dass die verletzten Soldaten, deren Wunden von Fliegenmaden nur so wimmelten, eine weit geringe Sterblichkeit durch Wundbrand und Starrkrampf aufwiesen, als Verwundete ohne diese Heilfresser. Auch im Ersten Weltkrieg konnten die Chirurgen ähnliches jeden Tag beobachten und nach dem Krieg wurde die Madentherapie auch zu zivilen Zwecken genutzt. Pharmazeutische Firmen züchteten sterile Maden zur Behandlung besonders schwieriger Knocheninfektionen. Mit dem Aufkommen der Sulfamide und Antibiotika, welche die Wundbehandlung effektiver gestalten sollten, geriet die Therapie mit den kleinen Maden wieder in Vergessenheit. In England wurde 1995 eine „Biosurgery Research Unit“ gegründet um, angesichts steigender Antibiotikaresistenzen, nach alter Methode wieder Schmeißfliegenlarven zum Reinigen schwer heilbarer Wunden einzusetzen. Kritiker aber warnen vor allzu sorglosem Umgehen mit den kleinen Biochirurgen. Sie behaupten, dass die Maden auch vor gesundem Fleisch oder Blutgefäßen keineswegs

Halt machen. Es ist deshalb dringend geboten, die Maden bei ihren Mahlzeiten genauestens im Auge zu behalten, um eventuelle Schäden zu vermeiden.

Von einer eigenartigen, erst seit einige Jahrzehnten eingeführten Methode, Tiere medizinisch zu nutzen, soll nun die Rede sein. Es handelt sich um die sogenannte „Xenotransplantation“, das Übertragen von tierischen Organen auf den Menschen. Wohl gab es bereits im 17. Jahrhundert erste Versuche von Bluttransfusionen vom Tier auf den Menschen, meist mit katastrophalen Folgen. Um 1870 waren einige Ärzte der Meinung, mit übertragenem Schafsblut Tuberkulose heilen zu können, viele ihrer arglosen Patienten aber mussten diese Prozedur mit dem Leben bezahlen. Der deutsche Chirurg Richard von Volkmann (1830-1889) argwöhnte damals, zu solchen Transfusionen seien drei Schafe notwendig: *eines, dem man Blut entnimmt, ein zweites, das es sich übertragen lässt und dazu ein drittes, das die Übertragung ausführt* (Chronik der Medizin, 1997). Im Jahre 1889 hatte der französische Physiologe und Arzt Brown-Séquard (1817-1894) sich im Alter von 71 Jahren mit Hodenextrakten von Meerschweinchen wieder fit gemacht, er hoffte so den fortschreitenden Alterungsprozess aufhalten zu können. Serge Voronoff (1866-1951), ein französischer Physiologe russischer Abstammung, übertrug mit einigem Erfolg, der jedoch nur von kurzer Dauer war, in den 1920er Jahren Affenhoden auf ältere Herren (Larousse Médical, 1934). Und 1954 hat der Schweizer Mediziner Paul Niehans (1882-1971) den schwerkranken Papst Pius XII. mit der von ihm um 1930 entwickelten sogenannten „Frischzellentherapie“ behandelt. Diese Frischzellen, die von Föten oder neugeborenen Tieren stammten, sollten den alternden Zellen neue wirksame Elemente zuführen und den angeschlagenen Organismus wieder „revitalisieren“. Niehans hatte beim Papst guten Erfolg, der seiner Methode international zum Durchbruch verhalf (Chronik der Medizin, 1997). Heutzutage wird von der „Frischzellentherapie“, als einer doch nicht ungefährlichen Behandlungsmethode, wieder abgeraten, da unvorsehbare allergische Reaktionen, bis hin zum tödlichen Schock, auftreten können. Auch kann die Übertragung von Krankheitserregern nicht mit Gewissheit ausgeschlossen werden.

Die ersten Versuche, Nieren von Schweinen und Affen auf den Menschen zu verpflanzen, wurden in den Jahren 1905 bis 1913 durchgeführt. Es war der

Beginn des Abenteuers der Transplantation. Fortschrittliche Chirurgen setzen anfangs der 1960er große Erwartungen in die Transplantation von Schimpansen- und Pavianorganen, doch waren, wie sich bald herausstellte, diese Hoffnungen reichlich verfrüht (Küss & Bourget, 1993). Momentan stehen in den Vereinigten Staaten auf der Warteliste derer, die auf ein neues Organ – Nieren, Herz, Leber oder Lungen - hoffen, mehr als 40 000 Patienten. Menschliche Organen fehlen überall, deshalb wurde eifrig nach tierischem Ersatz Ausschau gehalten; zurückbehalten wurden zwei Arten, der Pavian und das Schwein, die in Zukunft ihre Organe zur Rettung menschlichen Lebens zur Verfügung stellen sollen. Doch noch sehr viele Hindernisse werden zu überwinden sein, bis die Xenotransplantation zum gängigen chirurgischen Verfahren werden kann. Bekanntlich stellen die Abwehrreaktionen beim Empfänger eines fremden Organes das größte Hindernis dar. Der Organismus mobilisiert alle Abwehrkräfte, um artfremdes Gewebe mit Hilfe der weißen Blutzellen und von aggressiven Antikörpern in kurzer Zeit zu vernichten. Die Medizin führt daher eine ganze Reihe spezifischer Medikamente ins Feld, um diese Abwehrreaktionen möglichst erfolgreich zu unterdrücken. Bei Transplantationen mit tierischen Organen hängen die Abstoßungsreaktionen davon ab, wie weit der Empfänger phylogenetisch vom Spender entfernt ist. Verpflanzungen von Affenorganen auf den Menschen sind leichter in den Griff zu bekommen, als solche von Schweinen. Die moderne Forschung versucht deshalb menschliche Gene in das Schweinegenom („humanisierte Schweine“) einzuschleusen, um das menschliche Immunsystem so leichter täuschen zu können (Küss & Bourget, 1993).

Ein dorniges Problem bleibt bis auf weiteres die eventuelle Übertragung von Viruskrankheiten vom Spendertier auf den Menschen. Die Infektionsgefahr mit AIDS-Viren und anderen Retroviren, die vom Affen stammen, darf nicht unterschätzt werden, denn Retroviren können beim Menschen 10 bis 20 Jahre nach der Infektion noch bestimmte Krebsarten auslösen (Wasielewski, 1996). Diese infektiösen Probleme sind beim Schwein, das phylogenetisch viel weiter vom Menschen entfernt ist, besser in den Griff zu bekommen, als beim Affen. Schweine können in großer Zahl „germ-free“ gezüchtet werden, doch sind damit die Abwehrreaktionen gegenüber Schweineorganen nicht zufriedenstellend gelöst. Die Xenotransplantation muss noch so manche Hürde nehmen, bevor sie zur alltäglichen chirurgischen Praxis werden kann. Der Europarat hat sogar ein Moratorium für alle Xenotransplantationsversuche gefordert, um die Chancen und Risiken besser

abschätzen zu können. Einige namhafte Biotechnologie-Firmen wollen bereits in Kürze ihre Forschungsarbeiten an humanisierten Schweinen wegen der Übertragungsgefahr von gefährlichen Viren einstellen. Optimistische Wissenschaftler aber sehen in der Übertragung von tierischen Organen auf den Menschen ein in 10 bis 15 Jahren weltweit praktiziertes Verfahren.

Schlussfolgerung

Tiere haben in der Geschichte der Medizin eine bedeutende Rolle gespielt, eine Rolle die auch heute noch nicht vorbei ist. Sie wird mit modernen wissenschaftlichen Methoden neu definiert, aber auch ökologisch und ethisch neu überdacht. Man braucht in unseren Tagen keine Tierart mehr in ihrer Existenz zu gefährden, um von ihr Heilmittel gewinnen zu können, die analytische Chemie und die Grundstoffsynthese können dies ohne weiteres verhindern. Kürzlich hat die Presse das Schnabeltier als neuen Lieferanten wirksamer Schmerzmittel vorgestellt. Ein besonderes, synthetisch hergestelltes Eiweiß dieses Tieres soll eine neue Ära in der Behandlung von Schmerz einleiten. Bekanntlich wurde das erste gegen AIDS wirksame Medikament aus Heringssperma gewonnen. Die Wissenschaft beschäftigt sich seit geraumer Zeit eingehend mit den zahlreichen Komponenten der Schlangen- und Skorpiongifte. Ihr Augenmerk ist auf jene Proteine und Peptide der Toxine gerichtet, welche das Nervensystem, das Herz, die Blutgerinnung und die Sauerstoffversorgung der Zellen beeinflussen. Erste Erfolge sind bereits erzielt, aus Viperngifte werden seit etlichen Jahren Medikamente zur Vorbeugung von Blutgerinnungsstörungen und gegen Bluthochdruck hergestellt. Da Schlangengifte ohne weiteres und in kürzester Zeit Zellbarrieren durchbrechen können, setzt die Medizin große Hoffnungen in diese Substanzen, um Medikamente gezielt in bestimmte Zellen einschleusen zu können. Ziegen sollen in den nächsten Jahren mit einem Spinnen-Gen so manipuliert werden, dass ihre Milch die zur Heilung von Knochenbrüchen und Gewebezerstörungen benötigte reißfeste Spinnenseide, „spider silk“, enthalten wird. Genmanipulierte Kühe sollen in Zukunft nicht weniger als 50 verschiedene Eiweißstoffe, die als Medikamente gebraucht werden, mit der Milch ausscheiden, so zum Beispiel das Wachstumshormon und das Antithrombin 3, dem eine wichtige Rolle bei der Blutgerinnung zukommt. Raupen, mit einem das menschliche Immunsystem steuernden Gen manipuliert, produzieren bereits heute das Antikrebsmittel „Interleukin 2“. Australische Riesenkrokodile liefern sich in

den stark verschmutzten Mangroven-Gewässern oftmals erbitterte Kämpfe. Dabei abgerissene Gliedmassen heilen meist komplikationslos. Studien haben ergeben, dass das Blut dieser Krokodile stark antibakterielle Substanzen enthält. Ein neues hochwirksames Antibiotikum könnte aus diesen Forschungen hervorgehen. Dies sind nur einige wenige Beispiele, die darlegen sollen, dass die Tiere als Heilmittellieferanten immer noch gefragt sind und eine große Zukunft vor sich haben. Deshalb ist es unabdingbar, die Artenvielfalt und die mannigfaltigen Lebensräume der Tierwelt zu erhalten, denn nur „bessere Beziehungen zu den Lebewesen, die den Planeten mit uns teilen, wird uns eine bessere Zukunft garantieren“ (Plotkin, 2000).

Zusammenfassung: In vergangenen Zeiten wurde eine Vielzahl von Tieren und deren Produkte als Heilmittel in der Medizin und der Chirurgie angewandt. Der Autor stellt im folgendem Beitrag eine Reihe davon vor, ohne Anspruch auf Vollständigkeit zu erheben. Es werden einige historische Beweggründe zur Verwendung tierischer Medikamente dargelegt und zum Schluss die Rolle der Tiere in der modernen Heilkunde betrachtet.

Abstract: In former times many animals and their products were used in medicine and surgery. The author describes in the following article a certain number of them, without making any demands on completeness. Historical motives for the use of animals as drugs are explained and finally the role of animals in modern medicine considered.

Résumé: Dans le passé beaucoup d'animaux et produits animaux furent utilisés en médecine et en chirurgie. L'auteur en présente dans cet article un certain nombre sans avoir la prétention d'être complet. Quelques motivations historiques concernant l'usage de médicaments d'origine animale sont exposées, elles sont suivies de quelques considérations sur le rôle des animaux dans le cadre de la médecine moderne.

Bibliographie:

Anonyme, 1714.- Neu-vermehrte, heylsame Dreck-Apotheke, Berlin: Faksimileausgabe des pharmazeutischen Verlages Govi, 1988, Frankfurt am Main, 80 p.

Böttcher Helmuth M., 1959.- Wunderdrogen. Die abenteuerliche Geschichte der Heilpilze, Kiepenheuer & Witsch, Köln – Berlin, 555 p.

Buschan Georg, 1942.- Tiere und tierische Produkte als Heilmittel in der Volksmedizin.-Tiere im Kult und im Heilaberglauben, Ciba-Zeitschrift, Nummer 86, November 1942, 3019-3022, Basel.

Bruyérin-Champier Jean, 1560.- L'alimentation de tous les peuples et de tous les temps jusqu'au XVIIe siècle, traduit du latin par Sigurd Amundsen, Edition Intermédiaire des Chercheurs et Curieux, Paris, 1998, 666 p.

Crantz Henr. Joh. Nepom., 1765.- *Materiae Medicae et Chirurgicae. Iuxta Systema Naturae Digestae. Editio Secunda, Tomus Primus, Ionnanis Pauli Kraus, Viennensis*, 208 p.

Eberhard-Metzger Claudia & Ries Renate, 1996.- Verkannt und heimtückisch - Die ungebrochene Macht der Seuchen, Birkhäuser Verlag, Basel, 339 p.

Fields William S., 1991.- The History of Leeching and Hirudin.- Haemostasis 1991; 21 (suppl. 1), 3-10, Basel.

Gayraud-Valy Yvette, 1993.- Les fossiles, empreinte des mondes perdus, Découverte Gallimard Sciences, 208 p.

Godlewski Guy, 1972.- Des Médecins et des Hommes, édition l'Expansion, Paris, 389 p.

[Kunst des Heilens, aus der Geschichte der Medizin und Pharmazie], 1991, Niederösterreichische Landesausstellung Kartause Gaming, Ausstellungskatalog, Druck- und Verlagsanstalt Gutenberg Ges. m. b. H., Wien.

Küss René & Bourget Pierre, 1993.- Une histoire illustrée de la greffe d'organes. La grande aventure du siècle, Editions Frison-Roche, Paris, 175 p.

Larousse Médical Illustré, 1934.

Lebrun François, 1995.- Se soigner autrefois. Médecins, saints et sorciers aux XVIIe et XVIIIe siècles, Editions du Seuil Histoire, Paris, 206 p.

Lévy Isabelle, 1995.- Histoire anecdotique des instruments médicaux. De l'abaisse langue aux ventouses, Editions Josette Lyon, Paris, 140 pages.

Littré, E. & Robin, Ch., 1873.- Dictionnaire de Médecine, de Chirurgie, de Pharmacie, de l'Art Vétérinaire & des Sciences qui s'y rapportent, Baillière et Fils, Paris, 1836 p.

Loutsch Henri, 1970.- Aperçu historique sur les origines et les activités du Collège Médical.- Le Collège Médical 1818 - 1968, Imprimerie Coopérative Luxembourgeoise, Esch-sur-Alzette, 96 p.

Majno Guido, 1991.- The Healing Hand. Man and Wound in the Ancient World, Harvard University Press, London, 571 p.

Medicina antiqua: Codex Vindobonensis 93, Faksimile von Hans Zotter, 1996, Akademische Druck- u. Verlagsanstalt, Graz, Faksimile + 107 p.

Meyer Rolf, 1990.- Vom Umgang mit Tieren, Geschichte einer Nachbarschaft, 2. Auflage, Gustav Fischer Verlag, Jena, 224 p.

Plotkin Mark, 2000.- Les médicaments du futur sont dans la nature, Editions First, Paris, 261 p.

Pomet Peter, 1717.- Der aufrichtige Materialist und Specerey-Händler oder Haupt- und allgemeine Beschreibung derer Specereyen und Materialien, ins Teutsche übersetzt, im Verlag Johann Ludwig Gleditschs und Moritz Georg Weidmanns, Neudruck 1987 by Edition Leipzig.

Prieur Jean, 1988.- Les animaux sacrés dans l'antiquité, Ouest-France Université, Rennes, 201 p. + index.

Schott Heinz (Herausgeber), 1997.- Die Chronik der Medizin, Chronik Verlag, Gütersloh/München, 648 p.

Serpell James, 1990.- Das Tier und Wir. Eine Beziehungsstudie, Müller Verlag Rüslikon-Zürich, 259 p.

Thomas Carmen, 1999.- Ein ganz besonderer Saft - Urin, durchgesehene Taschenbuchausgabe, Piper Verlag, München, Zürich, 277 p.

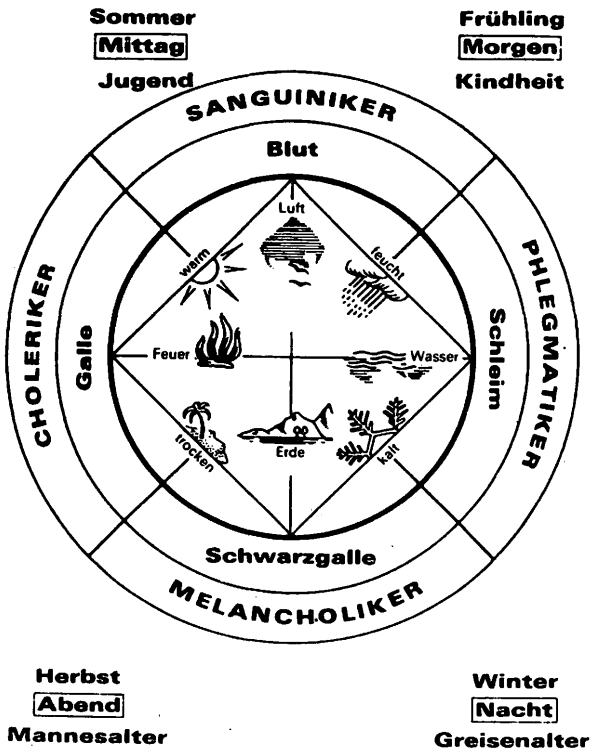
Uccusic Paul, 1984.- Doktor Biene. Bienenprodukte - ihre Heilkraft und Anwendung, Heyne Verlag, München, 198 p.

Wasielewski Susanne, 1996.- Xenotransplantation: um welchen Preis?.- Deutsche Apotheker Zeitung, 136/21, 23.5.96.

Zotter Hans, 1988.- Das Buch vom gesunden Leben. Die Gesundheitstabellen des Ibn Butlân in der illustrierten deutschen Ausgabe des Michael Herr. Nach der bei Hans Schott erschienenen Ausgabe Straßburg 1533, Akademische Druck- u. Verlagsanstalt, Graz, 295 p.

World Conference on Biosurgery (1st), 1996.- Abstracts, [http://www.smtl.co.uk/WMPRC/Biosurgery/Conference/abstracts 96.html](http://www.smtl.co.uk/WMPRC/Biosurgery/Conference/abstracts%2096.html).

Elementen-Schema



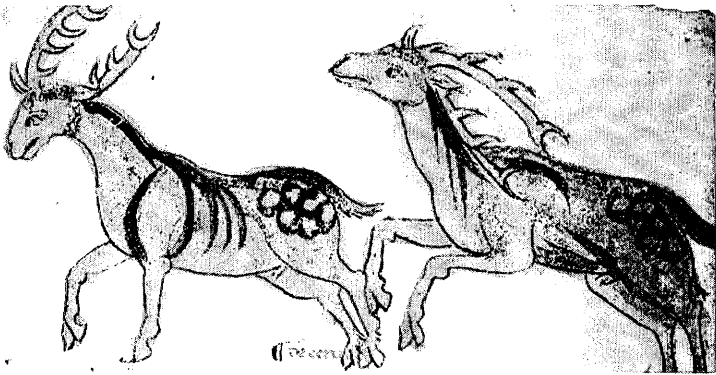
Vom idealen Mischungsverhältnis der Körpersäfte hängt die Gesundheit ab (Schipperges, H.: Der Garten der Gesundheit, Medizin im Mittelalter, 1987).



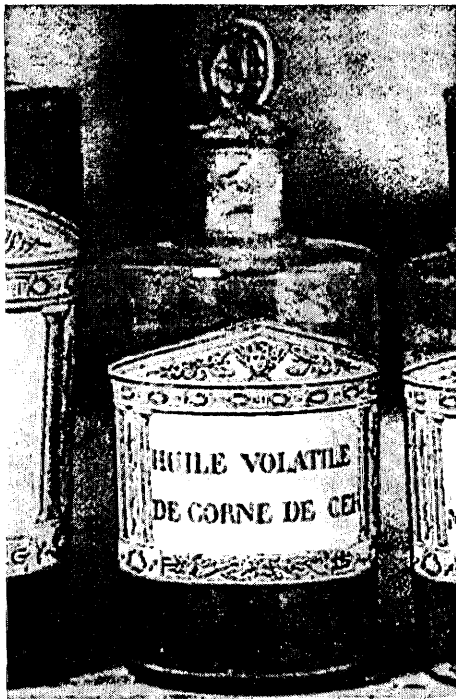
Tiere als göttergleiche Wesen
(Chauvet/Deschamps/Hillaire: Grotte Chauvet, 1995)



Paracelsus (um 1493-1541)
(Girre, L.: Traditions et propriétés des plantes médicinales, 1997)



Organe vom Hirsch ware begehrte Heilmittel
(Medicina antiqua, Codex Vindobonensis 93, Fac-simile, 1996)



Hirschhornöl, ein vielseitiges Medicament aus alten Zeiten
(Hospices de Beaune, Musée de l'Hôtel-Dieu, Postkarte, 1997)

