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TIAGO SARAIVA AND M. NORTON WISE*

Autarky/Autarchy: Genetics, Food Production, and the Building of Fascism¹

There is a large body of historical literature discussing fascism as a widespread phenomenon and as an historical concept in its own right.² As “the major political doctrine of world-historical significance created during the twentieth century,” in the words of its historical sociologist Michael Mann, fascism is undoubtedly an essential part of European modernity.³ Although every developed nation in the world with a degree of political democracy had some form of fascist movement in the interwar period, the vast majority of European countries went a step further in their relationship with fascism. In addition to the touchstone cases of Italy and Germany, there were the political regimes of Dollfus in Austria, Horthy in Hungary, Antonescu in Romania, Metaxas in Greece, Pétain in France, Franco in Spain, and Salazar in Portugal.⁴ As we shall see below, there is no consensus in the historiography on the proper typology

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1. The papers in this issue derive from a workshop on genetics and fascism held at the UCLA Center for Society and Genetics in the spring of 2008.

2. For exemplary works on this trend, see Roger Griffin, *The Nature of Fascism* (London: Routledge, 1991); Michael Mann, *Fascists* (Cambridge: Cambridge University Press, 2004); Wolfgang Schieder, *Faschistische Diktaturen: Studien zu Italien und Deutschland* (Göttingen: Wallstein, 2008); Robert O. Paxton, *The Anatomy of Fascism* (London and New York: Penguin Books, 2004).

3. Mann, *Fascists* (ref. 2), 1. Mann also adds environmentalism as the other twentieth-century ideology to take into account.

4. The list of course can be enlarged. Many authors would claim that we should take into account experiences with fascism in non-European contexts, namely Argentina, Brazil, Bolivia, South Africa, and Japan. See Stanley G. Payne, *A History of Fascism, 1914–1945* (Madison: University of Wisconsin Press, 1995); S. U. Larsen, *Fascism Outside Europe* (Boulder, CO: Social Science Monographs, 2001).

Historical Studies in the Natural Sciences, Vol. 40, Number 4, pps. 419–428. ISSN 1939-1811, electronic ISSN 1939-182X. © 2010 by the Regents of the University of California. All rights reserved. Please direct all requests for permission to photocopy or reproduce article content through the University of California Press's Rights and Permissions website, <http://www.ucpressjournals.com/reprintinfo.asp>. DOI: 10.1525/hsns.2010.40.4.419.

of these different regimes. But historians do agree that they all integrated fascist dimensions, forming what Mann calls “hyphenated” fascist regimes: Metaxas’s “monarcho-fascism,” Dolfuss’s “clerico-fascism,” and so on.⁵ At least until the end of World War II, fascism was a crucial component of political regimes in central, southern, and eastern Europe, making it unreasonable to treat it as an historical oddity. Nevertheless, in the historiography of science, despite a lengthy pedigree of engagement with Nazism, there is no single work dealing with the relationship between science and fascism more generally.⁶ When the word fascism appears in history of science, its use refers exclusively to Hitler’s and Mussolini’s regimes, always taken as separate phenomena.⁷

The first aim of the present issue of *HSNS* is to begin to redress this void in the history of science by bringing together contributions on the fascist experiences of Germany, Italy, Portugal, France, and Spain. By exploring scientists’ activities in these different national contexts we seek to begin illuminating the role of science in the historical development of fascism in Europe. In other words, our ambition is to place science at the heart of our understanding of fascism.

From among the possible reasons why history of science has not engaged with fascism, perhaps foremost is the alleged special connection between science and democracy. It is true that few historians of science adhere to the Mertonian ethos of science as an accurate description of scientific undertakings. The considerable work done on science under totalitarian regimes has brought an end to the illusion of equating science with democracy and to the supposed

5. Mann, *Fascists* (ref. 2), 46.

6. For a review of literature on science and Nazism divided in three main categories—racial hygiene and biomedical research, autarky, and militarization—see Susanne Heim, Carola Sachse, and Mark Walker, “The Kaiser Wilhelm Society under National Socialism,” introduction to *The Kaiser Wilhelm Society under National Socialism*, ed. Susanne Heim, Carola Sachse, and Mark Walker (Cambridge: Cambridge University Press, 2009), 1–16. This volume surveys the results of the Max Planck Society’s Research Program on the History of the Kaiser Wilhelm Society in the National Socialist Era, which has produced a total renewal of the historiography of science and Nazism. Previous influential edited volumes were Monika Renneberg and Mark Walker, eds., *Science, Technology, and National Socialism* (Cambridge: Cambridge University Press, 1993); Margit Szöllösi-Janze, ed., *Science in the Third Reich* (Oxford: Berg, 2001).

7. An exception is Moritz Epple, Andreas Karachalios, and Volker Remmert, “Aerodynamics and Mathematics in National Socialist Germany and Fascist Italy: A Comparison of Research Institutes,” in *Politics and Science in Wartime: Comparative International Perspectives on the Kaiser Wilhelm Institutes*, ed. Carola Sachse and Mark Walker, *Osiris* 20 (Chicago: University of Chicago Press, 2005): 131–58. Nevertheless, the comparison does not engage the historical literature on fascism.

“incompatibility between the ethic of science” and the Nazi political creed and practice.⁸ Scholarship on Nazi and Soviet science no longer deals exclusively with scientific exiles or perversions of the scientific method. Mengele and Lyenko now share the stage with a multitude of normal scientists. The exploration of entanglements between scientific practices and political regimes has also led to relevant comparisons both among totalitarian regimes and between totalitarian regimes and democratic ones, namely the United States.⁹

But the issue at stake has been totalitarianism, not fascism, which places such comparisons within the intellectual mindset of the Cold War years, with an interest in drawing a line between totalitarianism and democracy and situating the Soviet and Nazi regimes in the same analytical category. So even when historians of science have refused Merton’s assessment of the nature of science produced in totalitarian regimes, democracy, or its lack, is still the main independent variable used in comparisons. Yet among historians of fascism, one finds considerable discontent with the notion of totalitarianism. Robert O. Paxton, for example, is dismayed at the loss of historical precision involved in placing Hitler and Stalin side by side, while neglecting the sharp differences in their rise to power, their ultimate aims, and their forms of rule.¹⁰ An emphasis on totalitarianism has too often reinforced myths of all-powerful rulers, ignoring the negotiations and consensus typical of fascist regimes. The role of science in such an approach was straightforward: to develop the tools for totalitarian control of societies. However, this picture misrepresents important aspects of how the sciences functioned in these states.

8. Quoted by Mark Walker in Mark Walker, ed., *Science and Ideology: A Comparative History* (London: Routledge, 2003), 2. On this subject see Jessica Wang, “Merton’s Shadow: Perspectives on Science and Democracy since 1940,” *Historical Studies in the Physical and Biological Sciences* 30, no. 2 (1999): 279–306.

9. Paul Josephson, *Totalitarian Science and Technology* (New York: Humanity Books, 2005). See the collection of essays in Walker, ed., *Science and Ideology* (ref. 8), esp. Yakov M. Rabkin and Elena Z. Mirskaya, “Science and Totalitarianism: Lessons for the Twenty-first Century,” 17–34; and Burghard Ciesla and Helmut Trischler, “Legitimation Through Use: Rocket and Aeronautic Research in the Third Reich and the U.S.A.,” 156–85.

10. Robert O. Paxton, “Comparisons and Definitions,” in *The Oxford Handbook of Fascism*, ed. R. J. B. Bosworth (Oxford: Oxford University Press, 2009), 547–65, on 562. Paxton, in this essay, also addresses the criticisms of scholars who deem the term “fascism” unworkable for serious social science. The exacerbation by fascists of national particularities makes them the first critics of any such endeavor to treat fascism as a more general phenomenon. This said, there is a general consensus on the notion that fascist movements and regimes share sufficient common elements to treat them as part of the same family.

A second underlying aim of the present issue, therefore, is to follow general historians in taking seriously the complexity of fascist regimes. Fascism as a movement was allegedly characterized by bottom-up revolutionary dynamics, paramilitarism, and the practice of politics as a secular religion. But fascist leaders always had important connections with traditional economic elites, the regular military establishment, or even the Catholic Church, making it impossible to find a pure fascist regime. Here, we embrace suggestions by scholars such as Aristotle A. Kallis, who questions the usual distinctions drawn between those authoritarian regimes of the interwar years that are normally placed in the category of para-fascist and the only two allegedly authentic fascist regimes, Italy and Germany, where fascist mass movements seized power.¹¹ Kallis reminds us, for example, that the governing practices of Mussolini and Hitler were very distant from the purity of fascist ideology summarized by Roger Griffin as a “palingenetic myth” of populist ultranationalism.¹² Actually, the many negotiations of both dictators with traditional powers earned them fierce criticism from first-hour fellow supporters who had to be violently silenced. On the other hand, deep engagement with the national historiographies of interwar European dictatorships allows Kallis to identify a phenomenon of “fascistization,” which proceeded by incorporating fascist leaders into the authoritarian regime (Hungary, Spain), or by adopting certain fascist staples, such as mass organizations of youth, women, and leisure, while at the same time keeping revolutionary fascist movements at bay (Portugal). In spite of the ineliance of the term “fascistization,” the notion is very productive in placing on a continuum dictatorial regimes being “fascitized” from above by traditional elites or from below by fascist movements. For our present purposes, it is illuminating to place the German and Italian cases side by side with the Portuguese, Spanish, and French ones and to consider the particular historical dynamics of their regimes.

Granted, narratives on science and Nazism have moved far beyond assuming the monolithic nature of the Nazi state. In 1987 Herbert Mehrtens demonstrated how helpful a revised version of the National Socialist order as a cartel of power blocs—Franz Neumann’s *Behemoth*—could be for discussions of science under Hitler.¹³ More recently Carola Sachse and Mark Walker have

underlined the importance of understanding how “individual scientists and institutes within the KWG (the Kaiser-Wilhelm-Gesellschaft, or Kaiser Wilhelm Society of scientific research institutes) operated within the social, economic, and political framework created by the Third Reich.”¹⁴ But even though Sachse and Walker base their argument on Mitchell Ash’s conception of science and society as “resources for each other,” the articles in their excellent collection do not engage processes of regime building.¹⁵ And although “resources for each other” has proved a productive metaphor for dealing with science and Nazism, we are concerned that it still places them in two separate spheres.¹⁶ Our third aim in this issue, therefore, is to explore the role of scientific activities and artifacts in the very building of fascist regimes, a path not usually taken by historians of Nazi science. If, as Sachse and Walker suggest, we ought to “bridge the gap between general history and history of science,” then we should explore the possibility that science occupies a central and active role in the nature of the regimes we are dealing with.¹⁷

In recent years Susanne Heim’s work has granted the apparently modest field of plant breeding an important role in studies of science and Nazism.¹⁸ The

dominant in Renneberg and Walker, eds., *Science, Technology and National Socialism* (ref. 6). Mehrtens’s seminal essay was also reproduced in this volume.

14. Carola Sachse and Mark Walker, “Introduction: A Comparative Perspective,” in *Politics and Science* (ref. 7), 1–20, on 15.

15. Mitchell Ash, “Wissenschaft und Politik als Ressourcen für einander,” in *Wissenschaften und Wissenschaftspolitik: Bestandsaufnahmen zu Formationen, Brüchen und Kontinuitäten im Deutschland des 20. Jahrhunderts*, ed. Rüdiger vom Bruch and Brigitte Kaderas (Stuttgart: Franz Steiner, 2002), 32–51.

16. For a good use of Ash’s concept see, for example, Sheila Faith Weiss, “Human Genetics and Politics as Mutually Beneficial Resources: The Case of the Kaiser Wilhelm Institute for Anthropology, Human Heredity and Eugenics during the Third Reich,” *Journal of the History of Biology* 39 (2006): 41–88.

17. Heim, Sachse, and Walker, “Introduction” (ref. 6), 3.

18. Susanne Heim, *Plant Breeding and Agrarian Research in Kaiser-Wilhelm Institutes, 1933–45: Calories, Caoutchouc, Careers* (New York: Springer, 2008); Susanne Heim, ed., *Autarkie und Ostexpansion: Pflanzenzucht und Agrarforschung in Nationalsozialismus* (Göttingen: Wallstein, 2002). Also, Thomas Wieland, “Wir beherrschen den pflanzlichen Organismus besser. . . .”: *Wissenschaftliche Pflanzenzüchtung in Deutschland, 1889–1945* (Munich: Deutsches Museum, 2004). Regarding the growing interest in plant breeding outside of the Nazi context, see Jonathan Harwood, “Introduction to the Special Issue on Biology and Agriculture,” *Journal of the History of Biology* 39 (2006): 237–39; Jonathan Harwood, *Technology’s Dilemma: Agricultural Colleges Between Science and Practice in Germany, 1860–1934* (Bern: Peter Lang, 2005); Paolo Palladino, *Plants, Patients and the Historian: (Re)membering in the Age of Genetic Engineering* (Manchester: Manchester University Press, 2002); Noel Kingsbury, *Hybrid: The History and Science of Plant Breeding* (Chicago: University of Chicago Press, 2009); Christophe Bonneuil and Frédéric Thomas, *Gènes, pouvoirs et*

11. Aristotle A. Kallis, “‘Fascism,’ ‘Para-Fascism’ and ‘Fascistization’: On the Similarities of Three Conceptual Categories,” *European History Quarterly* 33 (2003): 219–49.

12. Griffin, *Nature of Fascism* (ref. 2), 44.

13. Herbert Mehrtens, “The Social System of Mathematics and National Socialism: A Survey,” *Sociological Inquiry* 57 (1987): 159–87. This approach to dealing with science and Nazism is

subject of research in human genetics unconstrained by moral norms has kept its central position, but Heim has shown how rewarding plant breeding can be in explaining relations between science and Nazi rule. In particular, she explores how agricultural research was targeted at making the seized territories of Eastern Europe into suppliers of food and raw materials for Germany. It is now difficult to ignore breeders' work at the institutes of the Kaiser Wilhelm Society when speaking of *Lebensraum* and German imperial ambitions in the East. Such an approach also resonates with current arguments by economic historians of Nazism who have confirmed the problem of feeding the population of the Reich as a crucial subject in the historical dynamics of the regime.¹⁹ The present issue builds on such claims, not only extending them to other contexts, but also suggesting closer attention to processes of regime-building. In short, our ambitious goal is to write the history of genetics and breeding in fascist states as history of fascism, that is, as constitutive of the political economies of fascist states. We want to see how scientists mobilized the state at the same time as the state mobilized scientists. We are looking at forms of coevolution of scientific research and political economy.²⁰

For that purpose it is helpful to recognize one generic characteristic of all European fascist states, despite their different situations. It is the close relation between autarky and autarchy. Autarky refers to economic self-sufficiency and autonomy, while autarchy refers to absolute or autocratic rule. But the two terms, with their different roots in Greek—*autarkeia*, personal self-sufficiency, and *autarchia*, self-rule—have become thoroughly conflated in usage, spelling, and meaning.²¹ The conflation itself, at least in English, may serve as a marker of the history of fascism, of the ways in which authoritarian rule in the 1920s and '30s came to be bound up with the pursuit of economic independence. But the terms pull in different directions historiographically. Autarchy places the focus on top-down autocratic control, so that scientists and other actors within the state tend to appear as tools of the regime, especially when science

profits: Recherché publique et régimes de production des saviors de Mendel aux OGM (Versailles: Quae, 2009).

19. Adam Tooze, *The Wages of Destruction: The Making and Breaking of the Nazi Economy* (New York: Viking, 2006); Götz Aly, *Hitler's Beneficiaries: Plunder, Racial War, and the Nazi Welfare State* (New York: Metropolitan Books, 2005).

20. Coevolution is the organizing concept of the UCLA Center for Society and Genetics. Extended from evolutionary biology, it highlights the irretrievably entangled dynamics of domains often treated as separate, such as biological and social identity or science and the state.

21. The Oxford English Dictionary uses "autarchy" for both meanings and has no entry for "autarky."

is seen as inherently democratic. Autarky, on the other hand, emphasizes economic policy and the internal processes of constructing the state. It elicits discussion of the engagement of scientists in the process of state-building. This historiographic point is particularly salient when dealing with geneticists involved in projects of food independence. And it has a practical corollary. Agricultural scientists occupied key positions because they could potentially satisfy the demand for food autarky and thereby provide a measure of freedom of action in other areas. Thus the papers in this issue concern primarily the pursuit of autarky. But it would be a mistake to forget that the scientists involved were acting within autarchic regimes, with drastic consequences for their citizens.

Many economic historians rightly claim that autarkic tendencies were widespread in Europe as a generalized response to the Great Depression.²² But the main difference is that fascist regimes did not abandon such policies after the crisis ended, institutionalizing them instead through legal entities and commissions that guaranteed permanent state intervention in the economy. And if economic historians are quick to remind us that autarky was an economic policy doomed to failure in the long run, they are generally oblivious to the crucial role of autarky in the historical dynamics of fascist regime-building.²³ Perhaps those interested in the long-term modernization of a country are right to point out the many flaws associated with autarky and disregard it as an impossible aim. But such a posture is certainly unreasonable for historians dealing with the nature of the fascist phenomenon. The fact that internal self-sufficiency can never be complete is no reason to underemphasize autarky. On the contrary, such limits were openly referred to by fascist leaders to justify territorial expansion.

The *laissez-faire* economist Frédéric Bastiat is widely cited for delivering his succinct warning as early as the 1840s: "If goods do not cross borders, armies will."²⁴ Nearly all of the fascist regimes dealt with in this issue pursued colonial ambitions in the name of autarky (except Vichy France, which was cut off from its colonies). Indeed, although talk of self-sufficiency and import substitution had been present since the mid-1920s in Mussolini's regime, the strident call for autarky officially entered fascist discourse with Italy's invasion and annexation

22. E.g., Charles S. Maier, *In Search of Stability: Explorations in Historical Political Economy* (Cambridge: Cambridge University Press, 1987).

23. Philip Morgan, "Corporatism and the Economic Order," in Bosworth, ed., *Oxford Handbook* (ref. 10), 150–65.

24. Whether Bastiat actually said this is disputed. Jeffrey A. Frieden, *Global Capitalism: Its Fall and Rise in the Twentieth Century* (New York: Norton, 2006), 255.

of Abyssinia (Ethiopia) in 1935–36. Seminal is Mussolini's speech of March 23, 1936 to the National Assembly of Corporations (*Assemblea Nazionale delle Corporazioni*). "Political autonomy, that is the possibility of an independent external policy, is not conceivable without the correlate capacity of economic autonomy. . . . The new phase in Italian history will be dominated by the following assumption: to accomplish as quickly as possible the highest possible level of autonomy in the economic life of the Nation."²⁵ Ruthless gas attacks, atrocities, and terrorist tactics marked the Italian campaign and subsequent colonial rule in Ethiopia.

Citing Mussolini's "genius" in launching the Abyssinian war, Hitler followed with a similar manifesto, declaring as definitive a policy that had been implicit for some time. As recorded in the official notes of the famous Hossbach Memorandum, presented to his chief military leaders on November 5, 1937, Hitler had declared that: "The goal of German policy was to secure and maintain the German population [*Volksmasse*] and to enlarge it. It turned, therefore, on the problem of space." But first he explored the question of whether autarky (*Autarkie*) in raw materials and food could be attained within Germany, even assuming strict National Socialist leadership of the state. He concluded that for food the answer was a "flat no." The only viable remedy lay in the expansion of *Lebensraum* to the East, in Poland and Austria.²⁶

In introducing this policy that linked Nazi expansionary and militaristic intentions with Germany's food self-sufficiency, Hitler requested that "its implementation be regarded as his last will and testament in the event of his death." As Adam Tooze asserts: "When Hitler did attempt to give concrete meaning to his concept of *Lebensraum* it was to agriculture that he turned."²⁷

25. *Scritti e discorsi di Benito Mussolini*, 12 vols. (Milan: Hoepli, 1934–1940), vol. 10, 49–64, on 52.

26. "Die Hossbach-Niederschrift," NS-Archiv. Dokumente zum Nationalsozialismus, <http://www.ns-archiv.de/krieg/1937/hossbach> (last accessed 2 May 2010). Interestingly, the translation prepared for the Nuremberg War Crimes Trial makes *Autarkie* into autarky. See "Hossbach Memorandum," The Avalon Project at Yale Law School, <http://www.yale.edu/lawweb/avalon/imt/document/hossbach.htm> (last accessed 1 May 2010). For the Portuguese connection between autarky and imperial rule see, for example, M. Anne Pitcher, *Politics in the Portuguese Empire: State, Industry and Cotton, 1926–1974* (Oxford: Clarendon Press, 1993).

27. Tooze, *Wages of Destruction* (ref. 19), 198. This strong relationship between food issues and German expansion policy in the East through the establishment of white settlers' colonies is well developed in David Blackbourn, *The Conquest of Nature: Water, Landscape and the Making of Modern Germany* (New York: Norton, 2006), 293–309; Götz Aly and Susanne Heim, *Vordenker der Vernichtung. Auschwitz und die deutschen Pläne für eine neue europäische Ordnung* (Hamburg:

Scientists involved in autarkic projects were also participating in the highest-level policies of the autarkic state—but usually not directly, and we learn relatively little about their action via the top-down route. Taken together, the articles in this collection suggest that one of the key features of the relationship between science and the state in fascist administrations was a proliferation of intermediate agencies, of commissions, boards, institutes, and laboratories created or reshaped for the purpose of governing the political economy in a hierarchical corporatist structure. As all of the articles make clear, scientists played major roles in these agencies, both as directors of scientific research and as agents of the state's aims. That is, they acted directly to construct the administrative hierarchy of the state and to shape its political economy.

Nothing is more revealing in this respect than the pursuit of autarky in food through plant genetics and breeding, on which we focus here. In fact, as mentioned above, the recent historiography on Nazi science has already explored in depth how the agendas of autarky and *Lebensraum* justified the high esteem in which the Nazi regime held plant-breeding research.²⁸ But, as Bernd Gausemeier points out in his contribution to the present issue, we have known little about the ways in which scientists themselves and their practices were able to shape the Nazi political system. He importantly demonstrates how the use of expensive laboratory instruments to deal with new research objects, such as the acquisition of ultracentrifuges in the Kaiser Wilhelm Society's virus project, forged new alliances between big business and political authorities contributing to the structure of the Third Reich.

Such claims are also valid for the other fascist experiences discussed in this issue. Christophe Bonneuil and Frédéric Thomas, Lino Camprubí, and Tiago Saraiva all explore in detail how the development of corporatist structures of the regimes of, respectively, Pétain, Franco, and Mussolini and Salazar were deeply entangled with plant breeders' practices. They stress how the production of genetically standardized forms of life, such as pure lines of cereal crops, was the material basis for a reorganization of agriculture through corporatist agencies (Cereal Board, Vertical Syndicate, National Federation of Wheat Producers, etc.) that formed the institutional backbone of the fascist political economy. In an exemplary case of coevolution, these corporatist organs that supported

Hoffmann und Campe, 1991); Mark Mazower, *Hitler's Empire: How the Nazis Ruled Europe* (New York: Penguin Books, 2008).

28. Heim, *Plant Breeding* (ref. 18); Heim, ed., *Autarkie und Ostexpansion* (ref. 18); Wieland, "Wir beherrschen" (ref. 18).

the new breeds supported in turn, through their extension into the countryside, breeders' field trials, which previously would have been impossible on such a scale. The three articles, as well as the one by Jonathan Harwood on Nazi Germany, start with accounts of breeders' work previous to the fascist seizure of power, and they may evoke similar stories of modernization in the seed sector in the United States, the Soviet Union, and Great Britain. But these are not merely tales of continuity of modernization processes, for every new fascist regime brought a rapid acceleration of the double process of eliminating traditional varieties from the farmers' fields and introducing the standardized varieties developed by plant geneticists. The Italian *Ardito* wheat, the Francoist *Colusa x Nano* rice, and the Vichy virus-free certified potatoes were all technoscientific objects embodying nationalist autarkic political economy and were thus celebrated as main achievements of their respective regimes. They were literally nationalist varieties.

Whether other productions of fascist political economies took on this nationalist character is not yet clear. The exceptional nature of grain modernization owes much to its role in the autarchy/autarky relation. It also has much to do with ideologies connecting fascist rule with the peasantry, the soil, and the national character. But it would be illuminating to find other examples that cut across the various states and suggest other explanatory frameworks.

In summary, we focus attention on the political economy of cereal production in order to emphasize not only the everyday organizational structure of fascism, but also its materiality. Fascist policies and genetics research together produced new tools, new crops, new products, and new landscapes (both urban and rural). Fascism was real, in the strong sense of material reality. That scientists played a major role in making it real is more important for these states' political economies than whether they personally belonged to a fascist political party or subscribed to its ideology. The articles here sustain the view that one cannot understand how such a state is built without passing through the infrastructure of scientific laboratories.