The Synthetic Situation: Interactionism for a Global World

Karin Knorr Cetina

University of Konstanz and University of Chicago

Presented as the Distinguished Lecture at the annual meeting of the Society for the Study of Symbolic Interaction in Boston, Massachusetts, on August 1, 2008, this article rethinks central assumptions of the interaction order as conceptualized by Goffman and others with respect to global domains of activity.[1] It proposes two new concepts, that of the synthetic situation and that of time transactions. Synthetic situations are situations that include electronically transmitted on-screen projections that add informational depth and new response requirements to the "ecological huddle" (Goffman 1964:135) of the natural situation. Global situations invariably include such components; we also find that temporal forms of integration may substitute for joint territoriality of copresence in the natural situation. Based on research on global currency trading and other empirical examples, I identify four types of synthetic situations and describe the synthetic situation's informational character, its ontological fluidity, and the phenomenon that synthetic situations may become role-others for participants. I outline the response system of synthetic situations, sketching out the concepts of response presence and its implications in this context as well as the importance of embodiment. I also discuss time transactions and the idea of fatefulness as a symbolic charge linked to the synthetic components of the situation.
Keywords: interaction order, synthetic situation, scopic systems

THE SYNTHETIC SITUATION

A talk like this, Goffman (1983:1) once said when he spoke at a celebratory event, is something quite different from a scholarly article. Although some journals publish such talks, the editor is free of responsibility for standards that submissions rarely sustain—such as originality, logical development, readability, reasonable length. Instead, authors are given a license to ride their hobbyhorses and discuss projects of

passion. I want to make some original claims in this talk, but I also will take the license to present something I have not yet thoroughly researched. Goffman's hobbyhorse at the time was the interaction order, which he tried to recommend to his American Sociological Association audience as a reality in its own right and a rich field of study. I have been riding different hobbyhorses throughout my academic life—the construction of scientific knowledge, financial markets, a postsocial world. All point away from a research focus on the generic performances of everyday life that interested Goffman. Yet these hobbyhorses delivered me, again and again, to the doorsteps of his territory, to interaction order. What I want to do here is move beyond that threshold. I bring along questions that my hobbyhorses also prompted me to confront—questions related to the reality of the global order of activity in the contemporary world. This global order was present in the field, whether I liked it or not, and it had teamed up with the interaction order. I found the two orders of activity combined in the financial markets I studied, in large-scale science projects, in terror-related fields, in parts of the corporate world. Genuinely global domains, it appears, span all major time zones, yet they run on microsocial principles illuminated by interactionist ideas. The backside of this finding is that these global forms also challenge core assumptions embedded in received notions of interaction order. Genuinely global social forms need a microsociology more than any other sociologies; yet this microsociology also needs some revisions to become theoretically adequate for global forms.

This article is about the direction of such revisions. A central question I wish to ask is how we rethink Goffmanian and other interactional assumptions to deal with situations that are genuinely global in scope and yet appear not well served by the existing world system and global institutional paradigms. I begin to answer this question with the help of two concepts: that of the synthetic situation and that of time transactions. Global situations, I argue, include synthetic components that change received forms of the interaction order. For example, global situations tend to be informational, gain weight relative to the interaction, require specific response systems, and be centered on forms of embodiment. I also argue that the territorial focus of the received notion of interaction order neglects temporal integration formats that we cannot ignore in a global world. Phenomenologically speaking, the global is not simply a territorial extension of the local. In the financial markets I have studied it is first and foremost time zone coverage; it also implies encounters in time and the temporal extension and specification of situations.

I draw mainly on Goffman in this discussion, simply because his articles on the interaction order and the social situation provide convenient summaries of the principles I wish to question. What were Goffman's points? Goffman (1983:2), as we all know, chose—much as before him Schutz and branches of ethnomethodology at the time did—a "body-to-body starting point." For him the primordially real thing was the face-to-face situation, its necessity rooted, presumably, in universal preconditions of social life—the mundane need for intimates and strangers to come together at fixed times and places to get things done. He defined social interaction narrowly as

"that which uniquely transpires in social situations—in environments in which two or more individuals are *physically* in one another's response presence." Microanalysis was the recommended method for studying this domain, and the social situation its "basic working unit." Goffman was not a rampant situationalist; he recognized that behavioral settings may extend in space and time beyond a single situation and that an interaction order should in fact apply to whole classes of dispersed settings. Yet despite these nods at more extended goings-on, Goffman's strength remained the situational—its definition and framing, the coordination it afforded, its reversals of and escapes from the macro-order. His notion of the situation was, in its core, a spatial idea. The situation was a physical setting or place with a physical coming together, a human encounter, typically taking place (Goffman 1964:135). Goffman (1981:84; 1972:63) defined the situation as "any physical area anywhere within which two or more persons find themselves in visual and aural range of one another."[2] He emphasized the inevitable physical and "psychobiological element" of the interaction order, and provided, with the latter emphasis, an early formulation of concerns with the material body and its accoutrements in social life (Goffman 1983:3). Ethnomethodologists have expressed something similar through the idea of the "local accomplishment" of social order, where local means "witnessable" through sight or hearing, as opposed to imputation or inference.[3]

Globally oriented interactionism will have to abandon three major assumptions prominent in these and other microsociological writings.

- The assumption that the prototypical unit of an interaction order is a physical setting and involves the physical copresence of participants.
- The assumption that the interaction order can be based theoretically on territorial relatedness rather than on the temporalities of encounters.
- The assumption that there is somehow a deep divide between the interaction order and the situational dynamics at the core of microanalysis, and structure or macrosocial phenomena.[4]

In the following discussion, I examine how we may go beyond such assumptions. The argument is based on in-depth research on the global foreign exchange market described in detail elsewhere (Knorr Cetina and Bruegger 2002; Knorr Cetina 2003). I also draw on other research on trading (Laube 2008; Preda forthcoming) and on everyday examples.

THE SYNTHETIC SITUATION AND ITS VARIATIONS

The first interaction-order assumption I wish to challenge is that there is something analytically prior and theoretically foundational about physical encounters in physical settings. The simplest reason for this, one we all know, is that a substantial and increasing portion of everyday life is spent not in the physical copresence of others but in virtual spaces. The face-to-face domain, then, simply no longer has the structural importance it once had. This is a somewhat tricky hypothesis to prove empirically,

since we lack comprehensive data, but we can make it plausible by calling to mind the many areas of everyday life that have now migrated to the Internet. An increasing portion of banking, travel booking, shopping (including grocery shopping), even reading or what substitutes for it are now no longer handled face-to-face but electronically.[5] So are some parts of our jobs—from student advising and lecturing to library searches and meetings. A recent global consumer survey released by IBM suggests that people now spend as much or more time online as they do watching TV: accordingly, 19 percent said they spend six or more hours a day online, versus 9 percent who watch six or more hours of TV; and 60 percent said they spend one to four hours a day online, versus 66 percent who watch one to four hours of TV (Blodget 2007). Even in digitally deprived groups, innovative ways are being found to use fast and facile electronic transmission and storage for intermediary business links, with material inputs and outputs limited to the beginning and end of a chain of transactions.[6] We can also note, as an aside, that the production of some things we hold to be unavoidably material become transferred to electronic media. For example, futurist design efforts now make use of three-dimensional printers that print out furniture-like chairs (e.g., see works by Patrick Jouin [MOMA 2008]).

But what I am really interested in here is not the transition from more face-to-face interaction to less in areas of everyday and institutional life, but the need to conceptualize, *within* microsociology and the interaction order, the presence of different electronic media and their contributions to both "situations" and the coordination of interaction. In the context of global financial markets, I have offered my own description of the working of such a system, referring to it as a scopic system in accordance with the scoping functions it performs (Knorr Cetina 2003, 2005b). When combined with a prefix, a scope (derived from the Greek *scopein*, "to see") is an instrument for seeing or observing, as in periscope. In such markets, a scopic system is an arrangement of hardware, software, and human feeds that together function like a scope: like a mechanism of observation and projection, here collecting, augmenting, and transmitting the reality of the markets, their internal environments and external context. Within this domain, the mechanism is reflexive: the system mirrors a world that participants confront like an external reality while also being part of it and contributing to it through their postings and transactions. The foreign exchange market is an interbank market conducted between the trading floors of large global banks in global cities; it is the largest market worldwide, with an average daily turnover of approximately US$3.2 trillion (3,200,000,000,000) when last measured (Bank for International Settlements 2007). Traders in these markets take their own "positions" in currencies in trying to gain from price differences while also offering trades to other market participants.[7] In doing deals, all traders on the floors have technological equipment at their disposal; most conspicuously, up to five or more computer screens displaying the market and allowing trading to be conducted. Figuratively speaking, traders strap themselves to their seats in the morning; they bring up their screens, to which their eyes will be glued from then on, their gaze captured even when they talk to or shout at each other. In this way, their bodies and the screen

Figure 1. Financial trader observing market on screens. I am greatly indebted to Stephan Jäger, Global Head of Foreign Exchange, Bank Julius Baer, Zurich, for the use of the trading floor picture. Many thanks to Urs Bruegger for taking the picture.

world melt together—an apparently total immersion in the actions in which they are participating. The market composes itself through these absorbing displays, and the displays and what sustains them make up the scopic system. The foreign exchange market is a fully scoped market (see Fig. 1; for further ethnographic detail, see Knorr Cetina and Bruegger 2002).

Why and how is the presence of scopes of interest to the interaction order? The first answer to this is that on a global scale a "situation" invariably includes, and may in fact be entirely constituted by, on-screen projections—it becomes a *synthetic situation.* In the markets studied, the environment in which two or more individuals find themselves in each other's response presence consists of a foregrounded, attention-demanding electronic situation and, separately for each participant, a background section of the physical trading floor: that section of the floor to which traders are sensorily attuned and over which they command some auditory attention while focusing on the electronic environment. The electronically projected situation reaches far beyond what would ordinarily be visible in a physical setting; not only does it include many layers and windows providing geopolitical and epistemic depth and

Figure 2. Elizabeth Taylor and Richard Burton in *Who's Afraid
of Virginia Woolf?* (1966). Copyright by MPTV.net.

internal contextualization, but it also stitches together an analytically constituted world made up of "everything" potentially relevant to the interaction. Let's imagine an argument between spouses not dulled and impeded by the actual material environment in which it takes place, composed, for example, of irrelevant living room furniture or kitchen equipment (see Fig. 2).

Let us now imagine the argument conducted in an entirely synthetic situation containing strictly what is relevant to the argument, nothing more: the past history of togetherness, the significant others that come up in the argument, psychobiological states and needs, money and accounts, expert opinions, legal advice, sample cases of relationships that one of the quarreling spouses may wish to invoke. Such synthetic situations are what scopes provide (see Fig. 3).

Synthetic situations need not be all-encompassing. The synthetic material may also be a limited segment of a real-life situation, for example, that cone of sensory images and chatter that emanates more or less continuously from the TV set in our living rooms. In fact, I distinguish between four types of synthetic situations. The first type is manifest in the above-described trading floor: the inclusive face-to-screen arrangement that absorbs almost all interactions within the system. There is an anchor to the physical

Figure 3. Elizabeth Taylor and Richard Burton in a synthetic situation. Copyright by MPTV.net (Taylor and Burton). Background image courtesy of Space Intl. Denmark. Concept and editing by Stefan Beljean.

world via the body of participating traders working from particular floors. They exhibit a split in sensory attention that is institutionally required and organized—eyes fixed on the screen, ears picking up what goes on within aural range, behind the face-to-screen setting. In this sense even the most inclusive synthetic situation is always something of a hybrid that joins a scoped reality with physical elements.

Somewhat farther down the scale of "full" scoping, the second type is well represented by the marital argument. Its hallmark is a clean distinction between the synthetic environment present in the first type and an interaction that is not synthetic in that it remains face-to-face. Type 3 is yet farther down the scale, and the most encountered: there are synthetic components in the situation, but the physical world is more encompassing. We can here imagine a living room with a TV streaming information (say in the form of a sports game) to those present. The case is tricky in that the synthetic component, albeit limited, may nonetheless dominate the encounter. What takes place on TV is likely to capture and hold participants' attention. A *New Yorker* cartoon picturing people talking around a Thanksgiving dinner table in a room without a TV and then ceasing to talk and turning all their attention to the TV when it appears in the room illustrates this well.[8]

Figure 4. Videoconferencing system in action (Cisco TelePresence Multipoint). Courtesy of Cisco Systems, Germany.

Another version of type 3 is the case of a surgeon operating on a patient, guided by screen images of the body section involved and the instrument moving through it, while also monitoring the body's vital function signals to keep informed on how the patient is doing during the operation. The peculiarity here is that the screened reality turns the patient inside out—although the patient is present live, it is his or her scoped, augmented version that provides the relevant information. A final arrangement (type 4) that I distinguish from the earlier ones involves the participants to the encounter having a telepresence, as in a videoconference setting (see Fig. 4). What we mostly see in videoconferences are blurred and somewhat ghastly upper-body images of a few others with whom we conduct surrogate face-to-face interactions against a nearly empty background.

There are more complex cases involving combinations of various features, as when dispersed teletechnologies (Clough 2000) provide linked content to dispersed audiences, and that content then takes on the qualities of an ongoing synthetic situation. Al-Qaeda members, for example, use video- and audiotapes and particular television channels that present identical, sensory rich records of leaders' speeches, gory images of casualties and attacks, and symbolically laden calls to arms and support. One assumes that for those who have become al-Qaeda members and regularly draw on such scoped presentations, the sequences of visual broadcasts begin to constitute something of a referential world—a thick context that situates

individual activities, emotional commitments, and interpretive frameworks. When scopic systems are systematically used they may have "world-making" effects (Goodman 1978; Knorr Cetina 2005a).

The four basic types of arrangements are likely to involve different systematics of reciprocity, accountability, rule-governedness, and so forth. For example, at present the challenge posed by a telepresence arrangement is the lack of synchronicity and of the visibility of facial cues—a problem leading to turn-taking delays and breakdowns of understanding. We can capture these systematics by working out the response systems for such arrangements; I offer an example in section 4. But first, how do we define a synthetic situation? I suggest the following working definition: an environment augmented (and temporalized) by fully or partially scoped components—in which we find ourselves in one another's and the scopic components' response presence, without needing to be in one another's physical presence. With this definition, we (1) abandon the body-to-body starting point of the face-to-face situation—as suggested, the response presence referred to is an accountability for responding, not physical presence (see below). We also (2) abandon an exclusive focus on human interaction and human mutual monitoring—but we do not give up symbolic interaction or monitoring per se, as the next section argues. Finally (3), with the proposed definition we emphasize the translocal and potentially global nature of the synthetic situation. The scopic components enable translocal imports from the outer world to be collected, projected, and augmented on-screen. The boundary condition of the translocal is the global—a horizon and possibility in some areas, an accomplishment in others. To put this more strongly, the synthetic situation not only transcends the local and the face-to-face but also enables global orders of activity.

THREE FEATURES OF THE SYNTHETIC SITUATION

The "naked," nonaugmented face-to-face situation has traditionally been linked to two major concepts: that of the definition of the situation and that of the interaction itself and its negotiated outcome (Strauss et al. 1963; Fine 1984). With the synthetic situation, this duality of concepts will have to make room for further distinctions and properties, largely because the situation is not "naked"—it is scopically articulated and augmented. Three features stand out. First, the synthetic situation is entirely informational; second, it is ontologically fluid; third, it may project a party to the interaction.

First, some comments on the informational character of the synthetic situation. While real-time contexts do of course contain information, they have the feel of a taken-for-granted material world that has emerged over time, in line with evolutionary principles and human efforts at construction (a house, a garden) and transformation (a wildlife refuge). A synthetic situation, in contrast, is a composite of information bits that may arise from many areas around the world and feature the most diverse and fragmented content. Synthetic situations are always in the process

of being assembled: from automatic and less automatic information feeds, from real-life reporting, from the interactions themselves, instantly mirrored on-screen and generating their own contexts. In a global process, much depends, one would think, on *getting the synthetics right*—on assembling the right pieces of information, ordering them adequately, and doing all this within particular time frames (in currency markets, within split seconds). This in itself implies a shift in power and relevance from the interaction to the situation. We cannot take the synthetic situation for granted the same way we do a "natural" situation, the sort of situation confronted in everyday life and in analysis. We cannot simply subsume it under a definition of the situation—the conceptual device bearing much if not all the burden of theoretically dealing with the situation in sociology.

Definitions of participants continue to matter, of course, but other things also matter. For one, a situation that is an informational assemblage does not simply sit there as a silent reference object, the other side of human referring activity. These assemblages emit sounds, produce written utterances self-described as particular speech acts, transaction challenges. Synthetic situations also have to be created specifically and delivered reliably to the interaction. Martha and George (or Taylor and Burton) in the film version of *Who's Afraid of Virginia Woolf?* would not profit from a synthetic environment containing market data, for example; they would need input relevant to their specific state of marital discord and to such matters in general, and that evolves along with pertinent changes. And if we were to analyze this, we, like they, would want to know what gets on these screens by what means and how the interaction between participants and screens develops. The quality of the information may become a moral responsibility of participants. For example, doctors and staff who electronically assemble the test results and routine measurements of a particular patient will have the normative obligation to maintain these records collectively, meticulously, and completely. If the hospital also feeds the scope (i.e., puts on the electronic platform) relevant literature about the treatment of such cases, available medications and their success, and the opinions of medical experts located elsewhere, we would have a strong informational scopic element to which the patient may become a relatively inactive, and at times immobilized, live attachment, as in the picture of the operating theater in Figure 5. What is available on-screen would be crucially important for the embodied treatment of the patient. And in studying the interaction order of patient care, we would need to address questions regarding the preparation, composition, accessing, and updating of the situation's relevant synthetic component.

This brings me to the second feature of the synthetic situation, its temporal nature. It is clear from the previous example that a scoped situation needs continuous updating—with patients, this includes new daily measurements of temperature, blood pressure, and so forth, new test results, the response to treatment, and perhaps observations of caretakers about mood and body function. A synthetic situation's assemblage and projection is a continuous project. A living room serving to situate many encounters may be assembled once and for all. But informational realities

Figure 5. Screens in an operating room. Courtesy of Alps
Surgery Institute, France.

carry a time index; their components tend to require frequent or continuous up-
dating or else their iterated presentation as still "live" and relevant. "The market
always looks for the next piece of information" is the way the traders I studied put
it. Electronic global markets in institutional currency trading provide an interesting
example of this temporalization and the resulting *ontological fluidity* of a synthetic
situation.[9] The scoped global market on the four to six screens traders confront al-
lows for many separate information streams—actual and indicative prices, transac-
tion records, trading conversations, headline and financial news, commentary and
analysis, bulletin board entries, newly published indicators and statistics, technical
and fundamental research and figures, and perhaps a soccer game and Bloomberg
news—all streamed on-screen in separate windows. Streams run at different speeds:
prices may change within split seconds, analysis and headline news trickles in more
slowly and is reiterated repeatedly, transaction records nearly match the speed of
transactions. Everything scrolls down the screen as new information arrives.

Traders are habitually well aware of the fluidity of the market situation, as seen in
the following brief exchange with a proprietary trader:

> KK: I want to come back to the market, what the market is for you. Does it have
> a particular shape?
>
> LG: No, it changes "shape" all the time.

The ontological fluidity of such a situation invites comparison with our everyday no-
tion of reality. The latter is a spatial notion—we see reality as a spatial environment
existing independently of us and in which we dwell. It is the case that the notion of a

world on-screen also suggests spatiality; it suggests that the idea of a spatial environment can be extended to electronic domains as these become—for some of us—a place to work and live. The naked situation, as indicated, has strong spatial connotations. Goffman saw it as a physical environment in which a physical encounter takes place. Spatial concepts do not deny temporal processes. But they imply that time is something that passes in the spatial environment and is extraneous to the environment itself. Presumably we also express durability through spatial concepts. The synthetic situation, however, is inherently in flux; it has none of the durability of a physical situation. Traders perform their activities in a moving field constituted by changing, incoming, and disappearing bits and pieces; as the information scrolls down the screens and is replaced by new information, a new market situation—a new reality—continually projects itself.

The synthetic situation, then, is a patchwork of parallel, itemized flows that manifest themselves as running lines of text and numbers and running (live) pictures, figures, and graphs. It is somewhat like a dynamic version of an impressionist painting, revealing the contours of familiar objects through flickering, temporal, dissociated sensations. To use another image, the screen reality, in these markets, is like a carpet whose small sections are both being woven and rolled out at the same time in front of us. The carpet grounds experience; we can step on it and change our positioning on it. But the carpet composes itself only as it is rolled out; the spatial illusions it affords hide the intrinsic temporality of the fact that its threads (the lines of text appearing on-screen) are woven into the carpet only as we step on it and unravel again behind our backs (the lines are updated and disappear). As the carpet is woven it assumes different patterns; the weave provides specific response slots to which traders react, taking the patterns in different directions. In sum, the screen reality is a process, but it is not simply like a river flowing from one location to another as an identical mass of water. Rather, it is processual in the sense of an infinite succession of nonidentical matter projecting itself forward as a changing situation.

The third feature of the synthetic setting I would like to discuss here has been hinted at earlier but warrants additional comment: this is the fact that synthetic situation features may become symbolic interaction partners for participants. In the typical face-to-screen situation on trading floors, traders interact primarily with what goes on on-screen. More specifically, when a trader makes a deal in the synthetic situation's electronic environment, he or she is oriented to, monitors, engages with, and influences "the market." The trader holds a position "in" an environment (the market) while responding to parts of this environment (prices, trading instruments). Behind the prices and information presented on-screen stand other participants with whom a trader at times engages in mediated person-to-person interaction. An example is when participants trade through "conversational dealing" screens, through which they can conduct a direct, electronically enabled, dyadic dealing-conversation (consisting basically of the demand for a price for an amount of currency, the response, a choice, and a preprogrammed confirmation sequence). But 80 percent and more of the deals are made through more automated venues like the electronic broker

system (EBS). These systems summarize and sequentialize the trading interests of different parties abstractly presented on-screen as changing prices; traders do not engage particular persons but simply hit on a price by typing the instruction on their machine.

It may be worthwhile to consider briefly some of the algorithmic manipulations through which an electronic broker transforms market participants' interests into changing prices (see Goodhart and Schoenmaker 1995). First, bank dealers enter buy or sell prices at which they want to make deals. The system rank orders these and shows the highest bid (offer to buy) and lowest ask (offer to sell) price on-screen. The system also shows the quantity at which the inputting bank is prepared to trade, but suppresses its identity. If more than one bank enters the same price, the system sums up the quantities and shows them. Orders below best bid and above best ask prices (so-called limit orders) remain stored in the system but are not revealed. When several institutions offer the same best price, their offers are met on the basis of the time of entry. If the size of the deal has exhausted the quantity of a currency offered, prices adjust according to the next "best" order in the system—bid prices move downward to the next best bid price, and ask prices move upward. The central point here is that the tradable prices seen on-screen are presorted, sequentialized indications of select market participants' interests—a summarized, abstract version of the aggregate of all participants. We can perhaps say that the system streams multiple market interests nested in space into one global conversation—but this is a conversation traders conduct in the face-to-screen situation with a mostly anonymous market, rather than with particular others. When a trader buys or sells (in sufficient quantity) and influences these prices, he or she influences an intermediate sphere, a symbolic "face" of the aggregate of human traders and a signaling reality in its own right. This reality conforms *to its own* principles and dynamics—for example, to the forces of aggregate supply and demand. The reality also includes contextual information participants see on-screen. For traders "the market is everything" that occurs at a particular point in time and is available in the synthetic situation—an all-encompassing definition that reflects the fact that participants cannot tell in advance which portion of the context may become relevant to responses. Thus, when the screen projects an "other" for participants, with whom these participants interact, it projects a comprehensively synthesized, worldwide situation.

THE SYNTHETIC SITUATION'S RESPONSE SYSTEM: RESPONSE PRESENCE AND EMBODIMENT

What consequences ensue from a synthetic, informational, and processual situation? Let me answer this by turning to the peculiarities of a synthetic situation's *response system*—an umbrella concept for managing the transitions between the synthetic disembodied electronic contexts and embodied processes and coping. As indicated, in the Goffmanian situation participants find themselves accessible to the naked senses of all others who are present and find themselves similarly accessible

(Goffman 1964:135). When in each other's presence, Goffman (1983:3) observes, "individuals are admirably placed to share a joint focus of attention, perceive that they do so, and perceive this perceiving." The "ecological huddle" (Goffman 1964:135) that ensues from the joint ratification and reflexive orientation in the face-to-face situation does not come about in the same quasi-automatic manner on a global level. Rather, the result is much more likely a muddle: a disorderly interactional arrangement struggling with problems of differential access, orientation and perspective, and coordination. Yet, interestingly, synthetic global situations are not miserable interactional arrangements but provide for efficiently, even elegantly organized global encounters. These do, however, have preconditions.

What I here term the response system specifies some of these conditions. A response system includes, first, response presence and the practices articulating what this means in different domains, and second, processes of embodiment, which overlap with these practices but warrant attention in their own right. Let us begin with *response presence*—a term I use for what Goodwin (1981) once called the "mediated" presence afforded by electronic communication technologies. In contrast to Goffman's embodied presence,[10] I define response presence to mean that the interacting party is not or need not be physically present but is accountable for responding without inappropriate delay to an incoming attention or interaction request (see also Knorr Cetina and Bruegger 2002). Response presence provides a precondition for something that Goffman saw as crucial: the sustained, even intimate coordination of action. We are familiar with problems of response presence from e-mail exchanges and the nuisance of a nonresponsive interlocutor. What does response presence imply in synthetic situations? A first answer is that it routinely requires continuous monitoring. An individual's response cannot be appropriate if he or she is unaware of what's going on—and here the enhanced information content and the intrinsic fluidity of the synthetic situation become particularly relevant.

Synthetic situations demand more monitoring—we need to know and keep track of the *now* of the message-multiflows that characterize their augmented and temporalized content. Now in electronic global markets, response presence is a more complex and institutionally organized phenomenon. It always includes, for example, arrangements for substitute responders if the addressed person or bank cannot answer. It can mean a personal (friendship-based) or institutional division of labor across time zones, so that traders and desks are available around the clock to respond to situation changes and pick up requests. On the level of individual traders, response presence also entails more than continuous monitoring: it entails a mode of affectivity that we can circumscribe as *intensity*. With a streaming, ontologically fluid environment, observing the situation (the screen) becomes a core activity that articulates expert work—it is a full-time task in which everyone present on trading floors (supervisors and analysts included) is engaged. This sort of observation runs in parallel to and fills the gaps between transactions. In other words, what we see on trading floors is the simultaneous progress of *two* fast and distinct streams of activities, trading and observing the market—and intensity as a mode of coping corresponds to this

dual involvement. Intensity, as indicated, suggests an affective state. Observation is often seen as a distanced and distance-creating activity, but intensity points in the opposite direction.[11] I would here like to define intensity not simply as a form of mental concentration but as a physical connectedness traders establish with the market. Though traders are not able to slip through the screen and walk into the "life form" of the market, they stand within its intimate space—close enough to feel every "tick" of its movements, and to tremble and shake whenever it trembles and shakes. In one sense, intensity is, in the vocabulary of the American psychologist Mihaly Csikszentmihalyi (1990), the flow experience that matches a flow situation—but the happy absorption Csikszentmihalyi describes is not just a mental state but also a bodily engrossment and involvement. Not just the gaze but all the sensory equipment aiding our processing capacities must be attuned to the situation. Accordingly, traders feel corporeally and sexually violated when a transaction becomes an economic threat. Traders describe these threats in terms that refer, as one participant put it, "basically (to) sex and violence and a lot of them seem to do with anal penetration." Traders might say, "I got shafted," "I got bent over," "I got raped," "I got stuffed"/"the guy stuffed me," "I got fucked," "I got hammered," and "I got killed."

If continuous sensory attunement to the synthetic situation is a feature and requirement of the response system in global trading, it also helps sustain a second feature, *preparedness*. Preparedness can be defined as the readiness to reflexively respond to trading challenges that appear on-screen. Preparedness is accomplished; unlike intensity, which appears almost like an automatic consequence of the ontological fluidity of traders' screens and their dual process involvement, preparedness is visible work. It flows from the intensity of observation, to be sure, but it also involves communication and deliberate information seeking and exchange. This can be illustrated through a trading conversation framed by an information exchange— we find information segments routinely at the beginnings and endings of trading conversations. The following transcript provides an example:

```
 1  FROM GB6 <Name of Bank>INTL LONDON * 1301GMT 251196*/3514
 2  Our terminal: GB1Z Our user : <Name of Spot Dealer>
 3  # TEST BACK LOWER RATES NOW.....
 4  #
 5  #INTERRUPT#
 6  CAN I GIVE YOU 15 MIO USDCHF PLS
 7  # SURE 83
 8  GTEATEE TREE GREAT. TKS
 9  # WELCOME....
10  # BUYING DM SFR HERE....
11  # AOURND 150 MI........
12  # BUT LOOKS DAMN TOPPISH HERE.....THINKING <GB4>...ON
    THE TOP
14  # ......
```

The transcript shows a dealing conversation between two traders, one in Zurich and one in London, at two global banks in the top range of trading; the actual conversation begins in line 3 with information amounting to a warning. The Zurich trader says the dollar is moving lower ("test back lower rates now"). On reading this the London dealer takes his turn (line 5) and a dealing sequence begins (lines 6–9); he asks whether he can sell the Zurich trader 15 million dollars against Swiss francs. The deal closes with the Zurich trader's "sure" and a misspelled "great," "thanks," and "welcome"—only to continue with another information sequence (lines 10–12) that conveys something about volumes of trading, the ending of an upward price trend ("but looks damn toppish here") and a particular bank (here coded "GB4"). Traders use such information sequences to keep abreast of price trends, volumes of trading (that may affect prices), players active in the market, market orders and interventions, and contextual events. Like their monitoring, these more communicative forms of cognitive awareness and learning foster a state of readiness. In this context the crucial point about this readiness is that it takes the form of a sensory state in addition to that of a cognitive potential. Traders prepare themselves to respond to a global situation by springing into action quickly and "unthinkingly" when prompted. Their way of translating this capacity is to say that they trade "by the seat of their pants," based on a "feeling for the market." This suggests that some types of trading conform more to Mead's model of a *conversation of gestures* than to models of deliberation and calculation. Understanding speculative trading may require that we move away from exclusively cognitive and deliberative decision-making frameworks—and that we add to these models an understanding of the preparatory work and the work of seeing and attention that readies participants for "unthinking" responses. Preda (forthcoming) shows how trading by lay online traders takes the form of situated action—it is not the application of a formula or a computation of likely outcomes according to predetermined decision criteria but a situationally contingent adaption of routines based on screen observation. In currency spot transactions, trading tends to be a form of informed tracing—a form of following and anticipating the flow grounded more in a continually "worked" and prepared structure of feeling than in modes of calculation.

Preparedness, then, is a form of managing the preconditions for "gut feelings,"[12] while intensity is the mode of affectivity that sustains, and follows from, monitoring-while-trading. Let me now turn to a third component of the response system, which I wish to call *embodiment*. Preparedness, to be sure, also requires embodiment—the continual incorporation of elicited information enabling one to act at a "blink" (Gladwell 2006). However, there is a more narrow sense of embodiment that we can borrow from the realm of neurophysiology, where it means the creation of congruence between, for instance, a recipient's bodily expression of emotion and a sender's emotional tone of language; the congruence then facilitates understanding the communication, whereas incongruence can impair comprehension (Niedenthal 2007:1002, 1005).

Thus language comprehension may rely in part on the embodied reenactment of the situation that language describes: first, words or phrases are indexed to embodied states referring to these objects, then the observer simulates possible interactions with it, and finally the message is understood when a coherent set of actions is created. An example from a different area is when individuals who are experimentally somehow made to smile grasp the comic meaning of cartoons shown to them better than individuals whose smiles are blocked. My argument here is that synthetic situations may need to be embodied, given their "weird," informational, symbolic character; they may have to be bodily understood, so to speak, to achieve what one might call *response adequacy*—the sort of responsiveness elicited and conducive to success in a particular context.

Embodiment as a process aiding synthetic understanding may explain the routine presence of responsive utterances on trading floors, the sort of vocalizations and outcries that seem highly emotionally laden. In the following observed example, the star trader on the floor (dealing in Swiss francs) suddenly jumped up from his desk and yelled, eyes fixed on his screen:

> Star trader: No Fe:::d !!!
>
> Other traders: (lift head, look at him, look back at screen, hit keys)[13]

What the trader conveyed is that the Swiss Central Bank had not bought or sold a large amount of Swiss francs, against expectations. Goffman (1978) might have subsumed such utterances under his notion of "response cries." He had in mind a verbalization outside a conversation (e.g., self-talk, vocalization) that does remedial work, for example, correcting potential embarrassments for the self that ensue from, say, stumbling over an object protruding from the pavement. In such situations, we may cry out "oops!" to display our awareness of the misstep, together with our unblemished competence, to a potential audience. Laube (2008) collected a number of such outcries in stock exchanges, calling them "alert cries": a notion stressing their communicative function, which is to say, capturing the signaling that may occur when vocalizations alert others present on a trading floor to a changing market situation. Yet Laube also found that when traders were asked about the reason for their outcries, they suggested they were alerting themselves to a new market situation. Preda (forthcoming), who studied a third trading setting, that of lay traders working from home, also reports response utterances embedded in talk with the screen, as illustrated in the following (simplified) transcript:[14]

> Trader: Hah [music playing]. Raking in the cash! ↑ haha ↑. I am taking cash for risk. Hrrh hah. Dim digidim digidim dim dim [slaps hand]. Ohkay. ↓ Ohkay ↓. We're going to learn how it works out. Haha haha hh. [music playing, tapping, computer sounds] Ohkay. ↑ I am not having that kind of day, bud. Hihi Give me a call. [pushes chair] (Preda forthcoming:12)

Lay traders usually trade alone, with no audience present. It is thus unlikely that their vocalizations are designed for recipients. Is it also unlikely that these response cries are remedial, for example, an effort by traders to prove that part of them is

watchful and alert while another part is out of control—is taking a beating from the market or has become unexpectedly lucky. Traders are not in a public situation in which ritualized acts of self-presentation of the kind Goffman had in mind can plausibly be expected; to assume that traders perform in front of an *imagined* audience when there is no real one in place is a somewhat contrived interpretation. Goffman (1978:802) himself suggested that response cries are situational acts of propriety and impropriety designed for surrounding human beings.

Lay traders, then, are an interesting test case for the hypothesis being proposed here, which is that such cries signify a self-other alignment—an interactional arrangement, but one involving a synthetic "other," here the projected market. Synthetic situations, I am arguing, demand management of the transition from the disembodied electronic context to embodied processing and coping in the physical background situation. The fact that traders are not only engaged in dealing but are also harvesting tacit knowledge (the second process discussed above) may augment an explanation of response cries as embodied enactments of the synthetic market situation. Accordingly, participants may somatoviscerally, gesturally (motorically), and verbally move to not only "see" the situation as detached observers but embody it, thereby setting in motion or aiding their latent preparedness and processing potential.[15] The concrete setup of trading desks would seem to promote embodiment. Through facing the screen, traders orient a significant fraction of their sensory equipment and physical reaction-capabilities to the "life form" of the market—to its glaring and eye-catching presence on screens, its continual vocal demands (phone, voice broker), its sometimes frenetic action. When at their desks, participants appear to be already latently viscerally plugged into the screen reality of the global sphere. When they cry out in response to market actions, they embody the drama of particular synthetic circumstances—thereby clarifying the situation to themselves and enhancing response presence. This phenomenon does not preclude, to be sure, other forms of embodiment that are less vocal. Nor does it preclude signaling also going on in exchanges and other trading institutions in which some form of cooperation is required (see, e.g., Beunza and Stark 2005).

More can be said about the embodiment of synthetic situations. An interesting detail of global currency trading is, for example, the tendency to match the perceived emotional habitus of a trader with the perceived "mood" (the consistent behavior over time) of a currency. Accordingly—while it still existed—a very volatile, nervous currency like the Italian lira would be handed to a moody trader not averse to risk taking. Here trading floor lore about the mood of objects and subjects is used to attempt to create beneficial preconditions for embodiment—it should be easier for a hot, "emotional" trader to come to grips with and turn to profit the surprises an emotional currency can create. In this case the field holds its own embodiment theory, which resembles neurophysiological theory—and supervisors see it as their responsibility to create *congruence* between a human trader's emotional tone of behavior and the expressive behavior of a currency. Neurophysiological theories of embodiment are still in an early state. But they do seem to illuminate the achievement of response presence, seen as an interactional alignment involving not only cognitive but

also affective states. Partial reenactments and simulations of referent objects would seem to be called for particularly when the referent is remote, abstract, and synthetic. We know that actors learn to embody emotions in Method Acting—they learn to first accumulate a deposit of emotion memories that recall feelings, and they must learn to later evoke these feelings in acting: they reenact them by visually picturing the details of an experienced situation that included the relevant emotional material (Hochschild 1983:40–42). Embodiment theories can be seen as a neurophysiological translation and articulation of onstage and everyday deep acting of this kind—a kind of acting that has long been incorporated into orders of interaction.

TIME TRANSACTIONS AND THEIR FATEFULNESS

For Goffman, interaction and the interaction order were relational concepts, in a specific sense. Both concepts foreground situational relatedness, the way participants relate to one another as copresent interactors and negotiators of their business. What they do not foreground is the temporal aspects of interaction. Although in his later work Goffman frequently addressed and analyzed conversations, which are temporally extended engagements, what interested him most in his interaction-order writings was the personal and joint territoriality of copresence. Exchange concepts of markets, it might be mentioned, have a similar focus on relatedness when they conceptualize exchange as completable, often spotlike transactions conducted in the present. But in synthetic situations, a focus on the occasion may be misplaced. When interactions migrate online, for example, the interacting parties meet in time rather than in a place; for that reason, response presence becomes important, and temporal rules of coordination begin to matter. When situations cannot be structured by bodily cues and territorially configured, temporal formats of organization, though always implicated, may become a more explicit and exclusive coordination source. Let us again look somewhat more closely at our trading example to see how time matters there. Currency traders become "exposed" to the presence of others when they "take a position" in the informational sphere of the market; position taking means that they acquire a financial instrument with a view to profiting from a change in its value before they sell it again. For the period of time this takes, they are "in" the market and, as they also put it, "vulnerable" to its moves. In this case, territorial copresence has been transformed into something that is more temporal—part of oneself (including one's money) enters an engagement with the market over time. When and how to enter and exit the engagement becomes a matter of great concern, as does what happens during the time that one has exposure. What also matters are continuous projections of the future. Participants put their money on the line based on the promise of financial returns at a future point in time.[16] Buying or selling a financial instrument can be accomplished instantly, but if the transaction is an act of investment or speculation it implies a whole framework of commitments, expectations, and subsequent actions. The orientation to the future is not just an intention or perspective but has a "material" correlate: if one takes a position in the market one acquires an inventory of a currency or other financial instrument whose returns one

Figure 6. Pilots in airplane cockpit before take-off. Courtesy
of Air Mauritius, Germany.

hopes to optimize. And as long as it is there this inventory will influence things and project particular constraints and possibilities onto the situation.

The point I wish to make is that the transactions described here are *time trans-actions*. A time transaction is an engagement in which a future outcome becomes linked to a present commitment. We might say that the present becomes locked in step with the future, from which it borrows both intentionality and a range of concerns. We can here imagine another type of time transaction we are all familiar with, a plane in flight. If you are the pilot you will continually be bombarded with new information from both the cockpit and a tower, indicating which air traffic control center has taken charge of your flight, the height you should travel at, the traffic of other planes around you, the weather and "chop" you will experience, and whether and how to avoid it. You are in a quintessential streaming, synthetic, scoped situation—and one in which all your interactions run forward to the envisaged goal, the destination (see Fig. 6).

A time transaction, then, cannot be completed in the present. With a time transaction, one is trapped in a time envelope, a strong forward connectedness of interactional responses suggesting that we should think of the whole series as belonging together. Though such time envelopes can be broken up into smaller segments—take-off, landing, the serving of drinks during a plane ride, for instance—the connectedness of the whole and the fact that the destination informs every step in the series means we should not ignore the time envelope itself.

Something else is going on in the above example that sustains this argument—the fatefulness of the activities involved, a term I want to borrow from Goffman. Goffman did in fact have something to say on the temporal implications of situations. In his essay "Where the Action Is" (1969), he analyzed casino gamblers' opportunity and risk taking and found that these actions may have lasting consequences—their effects "spill over in the rest of someone's life." When someone is gambling away a fortune, for example, he or she will have to bear the consequences of this action. Goffman saw these consequences as something that occurred beyond the actual situation. He defined a gamble's consequentiality as the "capacity of payoff to flow beyond the bounds of the occasion in which it is delivered and to influence objectively the later life of the bettor" (Goffman 1969:116). In offering this definition Goffman of course knew, but did not emphasize, that *expected* consequences also objectively influence *how the situation itself proceeds*—for example, the dread of losing may contribute to the thrill of gambling. In this context Goffman also used the term "fatefulness," denoting actions that in addition to having consequences are chancy (1969:119). I wish to use this term to point to the fact that situations are often charged with significance—which stems from anticipated consequences or unpremeditated consequential matters one knows may pop up in a given situation. Time transactions tend to be charged in this manner with respect to their time envelopes, and their fatefulness—their "significance charge"—influences the evolving order. For example, many of the official rules regulating both passenger behavior in flight and the forms of conduct flyers adopt informally when coming on board are shaped by an understanding that the plane ride is a time of shared fate. In fact, not only the interaction order of the flight but also that of the various airport sections through which we move before take-off would appear to be informed by this understanding. In financial markets, someone buying a currency or stock creates a claim that the buyer acquires on future growth. The transaction is a time machine in a double sense. It transfers the immediate command of resources to the more remote future[17]— this creates, for the buyer, an extended situation. And the investor's or speculator's money allows the party receiving the money to jump-start the future in the present: to start investing in future outcomes with an eye to creating returns on the investment. As this suggests, the transaction is also an engine of fatefulness, thrusting the investor and speculator into a temporal engagement with a receiving party and the market on whose performance they now depend. Many other situations extend over periods of time and are integrated by forward connections and some degree of fatefulness. Any conversation can be so configured; for example, it may consist of a succession of question-answer pairs to which the fate of a nation becomes publicly attached, as in a presidential debate. One of my main arguments in this respect is that we should extend interaction order tools and principles to time transactions of this sort. Conversely, we should not neglect the various temporal structures of such transactions and situations in the microsociological analyses we conduct.

What does all of this have to do with the synthetic situation and a global world? How are time transactions and their fatefulness related to the synthetics of synthetic

Figure 7. Ultrasound scan of an eight-week-old fetus. Courtesy
of Sperrin/Knorr family.

situations, for instance? We need to here recall that the synthetic components of a
situation are created by what I have termed scopic systems. In many areas—plane
flights, doctor-patient interactions, financial markets—the scopes intimately articulate
a developing fate. They make visible, project, and record things that cannot be seen in
the physical situation or can be seen only in an informationally deprived manner—but
that are causally implicated in the progress of the situation and its later outcomes. In
this respect a medical example will again be useful: say the ultrasound scans offered
to women during pregnancy. The images and videos present the various stages of fetal
development, allowing doctors to measure and assess not only the estimated weight
of the fetus, its sex, and the functioning of vital organs but also many details such as
its abdominal and skull circumference and the length of its femur and spinal cord.
The "anomaly" scan done at twenty weeks, for example, offers a multitude of cross-
sectional views, long views, and sonographic specifications of the fetus that reveal as
many of its "fateful" properties as technically possible.[18] The developing fetus acquires
a second presence in the resulting videos and images (see Fig. 7). There is an external
visual and informational articulation of its features, looks, and internal environment—
an articulation that also projects what the infant will be and suffer when born, what
may happen before birth, and what medical measures should possibly be taken.

Such visual and informational articulations lay open the fatefulness of things, rendering the relevant process available for early adjustment and professional intervention. More strongly put, synthetic situations acquire fatefulness through the informational enhancement their scopic components offer; likewise, through their iterated or continuous articulation, they gain temporal extension.

Why should we extend interaction order concepts and tools to situations that persist in time—that involve time envelopes and are crisscrossed by temporal projections? The answer to this is tied to my introductory claim that genuinely global forms appear to run on microsociological principles that are illuminated by interactionist concepts. Let us now note that global forms are not simply agglomerations of brief encounters—of the sort of occasioned interactions whose analysis led to the articulation of the concept of the face-to-face situation. The crucial point here is that the domains spanned by global microstructures are also often institutional spheres, as in the example of global currency trading used throughout this article. Institutional interactions require, specify, and develop temporal coordinates connected to the substance of what these institutions do—a point not lost on Goffman and other interactionists and microsociologists who have analyzed institutional spheres (see, e.g., Drew and Heritage 1992). Global scientific projects in the area of high-energy physics, for example, work within time schedules extending over three decades—the time it takes now to conduct one experiment. "Situations" that involve a detector in this area, a scientific instrument of the size of a several-story building that takes approximately fifteen years to build, are generally not brief—and the analysis of these situations will have to extend over the time envelopes that these areas take for granted and in which they accomplish some form of coordination. The synthetic components of such situations, then, project and articulate fatefulness and temporal connectedness in unique ways—they substitute temporal depth and informational significance for the ecological huddle of natural situations.

In respect to this essay's main arguments, a last comment is called for. It is plain that neither time transactions, nor fatefulness, nor synthetic situations are somehow limited to global levels of activity, as my less global examples have illustrated. What I have observed about synthetic situations, for instance—their increased prevalence, informational makeup and differentiation into various types, and the requirement of specific response systems and embodiment—should hold true across various levels of activity, not just for global forms. But genuinely global forms invariably involve scopic systems, and, I believe, they cannot be limited to or somehow derived from interpersonal encounters. Arguing for global microstructures is not be confused with a reductionist agenda. What I do believe is that global forms, whether in the areas of terrorism, science, or markets, or in yet other areas, provide an enhanced environment or laboratory for the study of contemporary extensions and reconfigurations of interaction order principles. They define the order of things on which such principles become further articulated and thrive, in revised form, in an increasingly synthetic world. Global currency markets, for example, now exist only in scoped form, involve impressively elaborate synthetic situations, and are structurally based

on time transactions. They also exemplify how "negative" temporal forms become articulated—those that spell out dreaded fates. In this domain, forward runs are part of daily life, and forward panics (Collins 2008) and the more managed temporal turbulences—crises, bubbles, speculative attacks, and market crashes—are normal accidents continually repaired (we can here think of the U.S. savings and loan crises of 1989–91, the Asian financial crisis of 1997–98, the dot-com bubble of 2000–1, the subprime crisis of 2007, and the credit woes and market crashes that followed in September 2008). These breakdowns of financial order also regularly drive home the fact that we cannot rely on territorial closure to provide limits and draw situational boundaries around a problem. The structures of connectivity (the microstructures) that become visible in such crises are global in reach (e.g., MacKenzie 2005). Globality opens the space for other types of closure and other types of order.

NOTES

1. An earlier version of this talk was presented at the Goffman Lecture, Department of Sociology, University of Edinburgh, April 25, 2008.
2. There is a significant body of literature treating aspects of what Goffman called the interaction order (for overviews of important dimensions, see Stone and Farberman 1981; Fine 1984; Scheff 1990). My purpose is simply to indicate some features that seem central to the creation of global spheres and that need to be respecified in regard to this context. There is now also an interesting body of work on human-machine interaction (e.g., Suchman 1987; Turkle 1995) and of related ethnomethodological studies of work (for overviews, see Button 1993 and Ten Have and Psathas 1995; see also Goodwin 1995), but my focus is on transnational interactions in which the computer becomes transparent and third parties are charged with guaranteeing its (and the software's) functioning.
3. This formulation is suggested by the ethnomethodologist Anne Warfield Rawls (2000). The emphasis on witnessability derives from Garfinkel (e.g., 1967:9–13). In their definitions ethnomethodologists have not restricted themselves to physical setting in quite the same sense Goffman did, rather placing greater emphasis on accomplishment. We see this, for example, in the observation that "witnessed settings" also have an accomplished sense (of objectivity, familiarity, and the like; see Garfinkel 1967:9; Atkinson 1988; Drew and Heritage 1992). But this shift in emphasis leaves intact the tendency of ethnomethodological studies to equate fundamental reality with what is

highly focused in a small space, involves talking rather than writing, and points to the nanoworld of the nonverbal signals accompanying such exchanges (Goodwin 1981).

4. For Goffman, the social situation is a reality sui generis, which means its situational happenings cannot simply be subsumed or explained by social structure or a macro-order, and vice versa—the macro-order should not be seen as built up from situational encounters.

5. The *New York Times* observes that "the next generation does not read books" but watches "content" on the Internet or reads other media content (Rich 2008).

6. One example is phone card banking, in which the payout of real money is made redundant, no contracts are necessary, and human interaction is limited to the beginning and end of the transaction chain.

7. A position, in accounting terms, is an inventory of a currency; a trader may hold a large dollar position, for example, hoping to profit from an upward turn in its price. Foreign exchange deals start on the order of several hundred thousand dollars per transaction, going up to a hundred million dollars and more.

8. Chris Ware, illustration, *New Yorker*, November 27, 2006, http://cartoonbank.com/newyorker/061127on_ware_2.gif [retrieved September 28, 2008].

9. The ticker, introduced on the New York Stock Exchange in 1867, promoted a sequentialized record of transactions that can be seen as a precursor of the ontological fluidity produced by scopic systems. As Preda argued (2006), the tape was experienced as "live"; its itemized visualization of market transactions required observation and led to the new clerical tasks of tape watching and data tabulation. The data streamed on-screen by scopic systems are equally alive, but there the tickers' bare price-volume record of past transactions has evolved into a Bergsonian multiplicity of "everything"—real-time market and context (see also Knorr Cetina and Preda 2007).

10. Goffman also uses the notion of response presence in his 1983 paper, but means it in the sense of cobodily presence (1983:6).

11. This may explain why traders resort to notions of "discipline" to try to regain some distance from market activities, enabling them to act in accordance with preestablished plans.

12. See Gigerenzer (2007) for an elaborate account of research that outlines the decision-heuristics involved in gut feelings.

13. Translated from the German. The Central Bank is called the *National* Bank in Switzerland; hence in the original the Swiss trader shouted "Keine Na:::tsi."

14. For the sake of simplification I have here omitted the time indications in Preda's quote. Underlined vowels and words imply emphasis; up and down arrows refer to the intonation collectively.

15. Neurophysiologists refer to the perceptual, somatovisceral, and motorical aspects of this as "embodiment" (Niedenthal 2007).

16. Keynes spoke of the "finance motive" as related to "investment plans adopted because of expectations of *future* profit rather than to *current* income" (Carvalho 1976:72–76; emphasis in original). In other words, when investors and speculators make a financial move they initiate a course of action whose intermediate payoffs (e.g., interest, dividends) and ultimate outcome (e.g., the resale value of the instrument) lie in the future.

17. The notion of a time machine was used by Keynes to make this point (see Davidson 1980:297, cited in Rochon 1999:47, 204).

18. The scan indicates the head's shape and internal structure down to the form of the lip and, potentially, the palate; the alignment of the spinal vertebrae and the spine's skin cover in the back; the abdominal wall and whether it covers all organs at the front; the atria and ventricles of the heart and the valves that open and close with each heartbeat. Further scans reveal the kidneys and the presence of regular urine flow, and inspect the hands, feet, fingers, and toes, the umbilical cord, the amniotic fluid, and the location of the placenta. It is even possible to count the three blood vessels in the umbilical cord (see http://www.babycenter.com.au/pregnancy/antenatalhealth/scans/secondtrimesterscans/#6 [Retrieved September 28, 2008] for further details).

REFERENCES

Atkinson, Paul. 1988. "Ethnomethodology: A Critical Review." *Annual Review of Sociology* 14:441–65.

Bank for International Settlements. 2007. "Triennial Central Bank Survey of Foreign Exchange and Derivatives Market Activity in April 2007: Preliminary Global Results." Retrieved June 13, 2008, from http://www.bis.org/publ/rpfx07.pdf?noframes=1.

Beunza, Daniel and David Stark. 2005. "How to Recognize Opportunities: Heterarchical Search in a Trading Room." Pp. 84–101 in *The Sociology of Financial Markets*, edited by K. Knorr Cetina and A. Preda. Oxford: Oxford University Press.

Blodget, Henry. 2007. "IBM Survey: Time Spent on Internet Now Rivals TV." Retrieved September 17, 2008, from http://www.alleyinsider.com/2007/8/ibm_survey_time.

Button, Graham. 1993. *Technology in Working Order*. London: Routledge.

Carvalho, Fernando Cardim. 1976. "Keynes on Probability, Uncertainty, and Decision Making." *Journal of Post Keynesian Economics* 11:66–80.

Clough, Patricia T. 2000. *Autoaffection: Unconscious Thought in the Age of Teletechnology*. Minneapolis: University of Minnesota Press.

Collins, Randall. 2008. *Violence: A Micro-Sociological Theory*. Princeton: Princeton University Press.

Csikszentmihalyi, Mihaly. 1990. *Flow: The Psychology of Optimal Experience*. New York: Harper-Perennial.

Davidson, Paul. 1980. "The Dual Faceted Nature of the Keynesian Revolution: Money and Money Wages in Unemployment and Production Flow Prices." *Journal of Post Keynesian Economics* 2:291–307.

Drew, Paul and John Heritage. 1992. *Talk at Work: Interaction in Institutional Settings*. Cambridge: Cambridge University Press.

Fine, Gary Alan. 1984. "Negotiated Orders and Organizational Cultures." *Annual Review of Sociology* 198:239–62.

Garfinkel, Harold. 1967. *Studies in Ethnomethodology*. Englewood Cliffs: Prentice-Hall.

Gigerenzer, Gerd. 2007. *Gut Feelings: The Intelligence of the Unconscious*. New York: Viking.

Gladwell, Malcolm. 2006. *Blink: The Power of Thinking without Thinking*. London: Penguin Books.

Goffman, Erving. 1964. "The Neglected Situation." *American Anthropologist* 66:133–36.

———. 1969. *Where the Action Is: Three Essays*. London: Penguin.

———. 1972. "The Neglected Situation." Pp. 61–66 in *Language and Social Context*, edited by P. P. Giglioli. Harmondsworth: Penguin Books.

———. 1978. "Response Cries." *Language* 54:787–815.

———. 1981. *Forms of Talk*. Philadelphia: University of Philadelphia Press.

———. 1983. "The Interaction Order." *American Sociological Review* 48:1–17.

Goodhart, Charles and Dirk Schoenmaker. 1995. "Should the Functions of Monetary Policy and Banking Supervision Be Separated?" *Oxford Economic Papers* 47:539–60.

Goodman, Nelson. 1978. *Ways of Worldmaking*. Indianapolis: Hackett.

Goodwin, Charles. 1981. *Conversational Organization: Interaction between Speakers and Hearers*. New York: Academic.

———. 1995. "Seeing in Depth." *Social Studies of Science* 25:237–74.

Hochschild, Arlie Russell. 1983. *The Managed Heart: The Commercialization of Feeling*. Berkeley: University of California Press.

Knorr Cetina, Karin. 2003. "From Pipes to Scopes: The Flow Architecture of Financial Markets." *Distinktion* 7:7–23.

———. 2005a. "Complex Global Microstructures: The New Terrorist Societies." *Theory, Culture, and Society* 22:213–34.

———. 2005b. "How Are Global Markets Global? The Architecture of a Flow World." Pp. 38–61 in *The Sociology of Financial Markets*, edited by K. Knorr Cetina and A. Preda. Oxford: Oxford University Press.

Knorr Cetina, Karin and Urs Bruegger. 2002. "Global Microstructures: The Virtual Societies of Financial Markets." *American Journal of Sociology* 107:905–50.

Knorr Cetina, Karin and Alex Preda. 2007. "The Temporalization of Financial Markets: From Network Markets to Flow Markets." *Theory, Culture, and Society* 24:123–45.

Laube, Stefan. 2008. "The Sounds of the Market: How Brokers at the Electronic Exchange Keep Pace with a 'Silent' Market on Screen." Unpublished paper, University of Constance.

MacKenzie, Donald. 2005. "How a Superportfolio Emerges: Long-Term Capital Management and the Sociology of Arbitrage." Pp. 62–83 in *The Sociology of Financial Markets*, edited by K. Knorr Cetina and A. Preda. Oxford: Oxford University Press.

Museum of Modern Art (MOMA). 2008. *Design and the Elastic Mind.* New York: Museum of Modern Art.

Niedenthal, Paula M. 2007. "Embodying Emotions." *Science* 316:1002–5.

Preda, Alex. 2006. "Socio-Technical Agency in Financial Markets: The Case of the Stock Ticker." *Social Studies of Science* 36:753–82.

———. Forthcoming. "Brief Encounters: Calculation and the Interaction Order of Anonymous Electronic Markets." *Accounting, Organizations, and Society* (link to preprint: doi:10.1016/j.aos.2008.06.005).

Rawls, Anne Warfield. 2000. Pers. comm., August 15.

Rich, Motoko. 2008. "Literacy Debate: Online, R U Really Reading?" *New York Times*, July 27.

Rochon, Louis-Philippe. 1999. *Credit, Money, and Production: An Alternative Post-Keynesian Approach*. Cheltenham: Elgar.

Scheff, Thomas. 1990. *Microsociology*. Chicago: University of Chicago Press.

Stone, Gregory P. and Harvey A. Farberman. 1981. *Social Psychology through Symbolic Interaction*. New York: Wiley and Sons.

Strauss, Anselm, Leonard Schatzman, Danuta Ehrlich, Rue Bucher, and Melvin Sabshin. 1963. "The Hospital and Its Negotiated Order." Pp. 147–69 in *The Hospital in Modern Society*, edited by E. Freidson. New York: Free Press.

Suchman, Lucy A. 1987. *Plans and Situated Actions: The Problem of Human-Machine Communication*. Cambridge: Cambridge University Press.

Ten Have, Paul and George Psathas. 1995. *Situated Order*. Washington, DC: University Press of America.

Turkle, Sherry. 1995. *Life on the Screen*. New York: Simon and Schuster.