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FINANCIAL KNOWLEDGE, DOCUMENTS, AND THE STRUCTURES OF FINANCIAL ACTIVITIES

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Starting from participant observation and interviews conducted in several European banks, the article examines how financial knowledge is constituted in the process of producing documents like research reports, analyses, and newsletters. The core argument is that documents act as organizational devices, with the help of which relationships are created, maintained, and managed across various contexts. In this perspective, the production of financial reports, analyses, and newsletters creates (1) knowledge-based networks of social relationships in which financial action is embedded and (2) stable temporal structures, thus ensuring the continuity of financial activities. On these grounds, the author argues here that knowledge-generating processes should be taken into account as an essential dimension of the structural embeddedness of financial action.

In recent years, the ubiquity of electronic information-processing systems and the key role of document production (both electronic and paper supported) in modern economic life have led to an increased academic interest in how economic knowledge is produced and circulated via documents (e.g., Wakayama et al. 1998; Bud-Frierman 1994; Yates 1989). These are seen as central with respect to business efficiency and smooth communication flows: some authors have argued that efficient communication means not only information sharing but also sharing of meanings and interpretation (Wakayama et al. 1998, 2). Others (Unni and Bhamidipati 1998, 19-20) have maintained that documents should be designed for optimal effectiveness in conveying information, for maximizing communication flows, and for improving productivity and organizational learning.

The role of documents in economic organizations has been recently ethnographically[1] examined by Richard Harper (1998), who has argued that documents have to be seen in their relationship to users; in this respect, they represent paths of organizational action and are grounded in tacit skills and knowledge (p. 43). On these grounds, Harper (pp. 281-82) considered that electronic documents (hypertexts) will not replace paper documents since the latter generate temporal and interpretive

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structures in which organizational action is embedded. In their turn, Tolmie et al. (1999) have argued that in financial settings, documents do not function as simple stores of information. Rather, what counts as "relevant" information implies a complex interweaving of computer-supported material, paper documents, and verbal interactions. There is always a background of tacit skills and knowledge playing a decisive role with respect to the constitution of relevant knowledge.

Many authors have singled out accounts and account ledgers as a special class of economic documents: not only do they register and document business transactions but also organize economic realities, reduce uncertainties about the outer world, and create routines—that is, stable paths of economic action (e.g., Carruthers 1995, 315-17; Carruthers and Espeland 1991; Covaleski and Dirsmith 1988).

Another relevant class is given by studies and analyses shaping the economic world: this, "accordingly, is the world as it is thought of and spoken about using economic concepts" (Meikle 2000, 247). Documents like country or sector analyses, investment recommendations, or company analyses are meant to provide actors with the relevant knowledge for decision making. They are perceived as playing an important role in their respective fields; businesses like banks and financial organizations maintain relatively large research staffs that produce such studies on a systematic basis. Their sociological relevance resides in that they provide background knowledge, required in decision making as well as in everyday financial activities. This is not to say that this knowledge determines financial decisions exclusively. But it is a necessary requirement in both day-to-day activities and economic decisions. For example, banks that plan to invest, make loans, or open subsidiaries overseas need to know about the world relevant to their plans. This is why country studies are conducted by specialized research staff on a regular basis.

However, research on documents in economic and financial settings has until now emphasized their role as information carriers and as formal organizational instruments. The question of how this production itself acts as an organizational device has not been examined in detail. More specifically, how does economic and financial knowledge structure economic action? To what extent does its production shape relationships between economic actors? How is action-relevant information constituted, and what does this mean? In other words, can we distinguish here specific forms of document production, organization,

and management that are intrinsic to the practical logic of economic action? These are questions that cannot be completely and satisfyingly answered with the argument that texts and economic documents simply mediate and organize external information about economic phenomena.

Recent empirical fieldwork has argued that local resources and rules play an important role in the production of economic knowledge (Knorr Cetina and Preda 2001). Thus, it cannot be maintained that the latter is the same everywhere, as a consequence of standardized information. Since producing texts and documents occupies such a prominent place in economic institutions, it is important to know how it shapes economic action. Extensive empirical evidence coming from the sociology of knowledge and science but also from workplace studies shows that documents play a complex and differentiated role.

THE SITES OF ECONOMIC KNOWLEDGE

I examine here, from an ethnographic perspective, the production of economic knowledge (in relationship to documents) as an organizing device in financial institutions. While the findings of this study may not apply beyond the sphere of such institutions, they show how concrete knowledge-production processes provide a framework for economic action and shape the specific forms of sociality in which it becomes embedded. The documents discussed are studies, analyses, and reports produced by the research staff for decision-making purposes but also with the aim of informing a special readership (like institutional customers) about the "state of the world" and about economic affairs relevant to their activities. Starting from a conceptual framework developed in the sociology of knowledge and science, I discuss the following aspects: (1) personalization and objectification as two key complementary features of economic knowledge; (2) how economic documents are used as networking instruments; (3) how the resources at hand are used in the production of objectified knowledge, leading to accountable, stable actions; and (4) how the temporal structures emerging in the production of economic knowledge stabilize economic action.

The data presented and discussed here have been obtained through participant observation (supplemented with interviews) conducted since 1995 in several financial institutions. These are (1) a German

bank, (2) a European banking federation, and (3) a French bank. Both the German and the French banks operated on a worldwide scale. The departments in which participant observation was conducted were (a) the Eastern European Department of the German bank, called Development Eastern Europe (henceforth Department A); (b) the Economics Department of the banking federation (henceforth Department B); (c) the Department for Economic and Financial Studies of the French bank (henceforth Department C). I spent several months in Department A and Department B as a trainee, with the full knowledge of the management about ethnographic research being conducted. This offered the opportunity of having direct contact with and participating in the departments' projects. Several interviews were conducted in Department C.[2]

Department A was part of a bank providing institutional customers with investment and commercial banking services. It had a complex spectrum of information-gathering activities on Eastern Europe and the countries of the former Soviet Union (CIS). The aim was to devise strategic studies for investment purposes. In addition, Department A edited a monthly internal newsletter on Eastern Europe and the CIS, supplied the management with whatever documents were needed, coordinated the flow of information on Eastern Europe between various departments of the bank, acted as a center of information and competence, and acted as a conflict manager between departments for any kind of problem related to investments in Eastern European countries. Writing languages were German and English; while research papers were written almost exclusively in English, day-to-day documents (letters, memos) were written in German or English. At the time of the research, the staff comprised the department head, two analysts, a trainee, and a secretary; efforts were made to get a third full-time analyst.

Department B was located in the headquarters of a European banking federation. The federation's members were national banking associations[3] from countries of the European Union. Located in a major European city, it acted as a combination of research center, lobby group, information provider, and human resources manager for its member banks. Among other activities, it procured financial, economic, and legal information about developments in the European Union and about the European Commission's decisions. At the time of the fieldwork, this information primarily concerned the exchange rates of national currencies to the Euro. The department was commissioned to do a study

on the topic and present it at a monetary policy committee meeting, which had to come up with a recommendation for the European Commission. Department B also did studies on other Euro-related problems for various federation committees, which, in their turn, had to make recommendations. It obtained and distributed information about new European legislation to its members, monitored the debates in the commission and kept contacts with commissioners and staff, presented to the commission the federation's standpoint on various economic policy matters, edited and distributed a newsletter on economic policy to the members of the federation, and maintained the federation's Web site. Because of a multinational staff, the writing language was always English, with English and French as speaking languages. It was a rather large department, comprising several lawyers (the majority), as well as economists, public relations managers, trainees, and secretaries.

Department C was called the "Department for Economic and Financial Studies" and was part of a worldwide trader in bonds and derivatives. It explicitly took pride in its internationally oriented culture and activities. Specializing in investment, as well as in financing production and trade activities, the bank dealt exclusively with institutional clients. The department had an extensive staff and several state-of-the-art databases. At the time of the research, it did not subscribe to the services of financial information providers such as Reuters or Bloomberg, although these were used in other departments of the bank. A subdepartment was the documentation service, in which seventeen people produced and managed computerized databases on firms, economic branches, and countries from all continents. Several types of country studies were produced for internal use, together with internal monthly or weekly newsletters and newsletters targeting the bank's institutional customers. Documents were written in French and English. At the time of the research, the archives of the department were being digitized. The economists had direct on-screen access to databases and documents; for all other departments, access was limited, only on request, and subject to an internal pay system.

All three departments produced and distributed research reports. In the case of the Department A, the readership was the board of directors; hence, it was a fairly restricted one. Department B produced its research reports for the various committees of the banking federation. Some of Department C's reports were distributed to higher management and others to departments and branches throughout the bank; some were

distributed only to certain departments, while others were distributed to corporate customers. Nevertheless, all reports (in all departments studied) bore not only the authors' names but also their phone and fax numbers. The newsletters targeting institutional customers were printed on glossy paper and had a cover design, while Department A's and B's were printed on plain white paper. Thus, research reports and analyses were presented not as the result of an anonymous effort but as authored papers; "author" meant here, as in the case of the newsletter, not only printing the name but also the phone number of the person(s) assuming responsibility. Thus, the reader was provided with a concrete possibility of personal contact.

PERSONALIZATION AND OBJECTIFICATION

Newer research in economic sociology has stressed the structural embeddedness of economic processes (e.g., Granovetter 1985; Di Maggio and Zukin 1990), that is, the fact that economic action is anchored in a network of interpersonal relationships and depends on a whole range of interactional features like trust and reliability. At the same time, other authors (e.g., Knorr Cetina and Bruegger 2000, 2001) have argued that structural embeddedness is accompanied by an epistemic one; that is, economic action is dependent on the procedures through which relevant knowledge about the world and about other economic actors is produced. Structural embeddedness, it has been argued, performs a key role with respect to economic action since it reduces uncertainty and eliminates ambiguities (e.g., Leifer 1985, 443; Granovetter 1994, 463; Podolny 1994, 458; Prus 1989, 118); that is, economic actors position themselves in and orient their actions toward the networks of personal relationships they are part of. This pattern of behavior reduces uncertainties, as well as ambiguities, about the outside world.

At the same time, knowledge production (such as is characteristic in scientific settings) creates stable networks and allows participants to "calculate" (Callon 1998b, 10), that is, to minimize, uncertainties and objectify private knowledge (Porter 1994, 219). In this perspective, (scientific) networks are not built up solely of human actors but of human actors and knowledge objects (e.g., Latour 1988). Bruno Latour

(1987, 1999) and Madeleine Akrich (1992), among others, have argued that artifacts, as well as textual and visual devices, act as "immutable mobiles." That is, while being tied to a material basis (which cannot be taken apart without modifying or destroying the object), they (1) transfer skills and knowledge across various contexts, (2) make action at a distance possible, and (3) bring human actors together into a cognitive network.

In their turn, economists have recently argued that firms depend on "habitual patterns of behavior embodying knowledge that is often tacit and skill-like"; these patterns are "the most elemental form of a business institution" (Arena 1999, 17). Routines and skills reduce uncertainty and stabilize economic exchanges.

The above arguments present us with the following problem: routines, tacit knowledge, and skills are highly personalized. If they are an elementary feature of business life, how can an objective economic knowledge be achieved? How can routines be integrated in a social network to become a basis for economic transactions? If networks of personal relationships eliminate ambiguities and reduce uncertainty, and if knowledge production does the same, which is the relationship between networks and knowledge? How can personal knowledge be objectified in such networks? How is the leap from private to collectively shared knowledge achieved?

In the context studied here, the production of financial documents (like research papers and reports) was anchored in highly personalized routines and skills. Analysts and researchers were sought after because of this high degree of personalization. At the same time, the production of knowledge objectified particular, personal skills and knowledge, making them transferable across various contexts.

One of the first field observations was that economic knowledge was understood by the participants as a mix of knowledge about procedures, data, and persons. It was seen as depending, to a large extent, on specific procedures. This concerned daily work (e.g., delivering adequate research papers) as well as methods for identifying and keeping track of relevant, human and nonhuman sources of knowledge. They enabled field participants to identify and present themselves as experts in carefully delineated domains. When asked for details, analysts saw the legitimacy of their expertise as being tied to procedural knowledge. In Department A, they often defined and presented themselves as experts in and responsible for a certain country or group of countries. Their

domain was jealously guarded; at the same time, they were careful not to transgress their other colleague's domains.

A credit counselor[4] from bank C saw some of his colleagues as embodying a specific knowledge. They were "the leasing men" and "the airplane men." In Department A, analysts emphasized on several occasions that the success or failure of a new subsidiary could depend on finding a currency trader with good procedural skills and good networking abilities. The high personalization of knowledge made the banks entirely dependent, at least for certain kinds of businesses, on a handful of people. This arrangement allowed them not only to gain expertise on, say, economic branches but also to establish and maintain business relationships: "the bank consists of structures and of people, of people's know-how" (credit counselor, Department C). This counselor defined himself as embodying a kind of specialized knowledge that was key for establishing and maintaining business relationships:

> I see myself too as—that's what the words say, customer service person, I'm not selling credit, because credit as such doesn't even pay to sell. . . . My task is to know the client very well, to analyze the risk, and because I give him the credit, I have an excuse to meet him every six months or every three months. *I'm just one of his banks*. And when I meet him, we talk about how much money he needs, but also a lot about what banking services he needs. And the task is very clear and what I'm interested in is not only to sell the credit, but to use it as a leverage for offering the whole spectrum of banking services. (emphasis added)

Personalized knowledge meant not simply amassing information but knowing how to build it up and process it. As the credit counselor (Department C) put it, "The whole art is not to know something, but to apply all that knowledge, all those ideas, and all those rules to the (client's) special problem." Department A differentiated very clearly between two kinds of skills and abilities: (1) getting data and (2) processing them into an institutionally adequate "product" (research report, memo, newsletter, letter, financial estimate). At the time of the fieldwork, the department was working on a research report on an Eastern European country so that management could decide about upgrading the representative office to a branch. The analysts were confronted with two different but related tasks: (1) getting relevant documents in situ (like obtaining copies of the trade laws, incorporation laws,

regulations of currency possession and trade, information on the foreign exchange market, competition, products, and much more) and (2) processing this information, together with other data, into an institutionally adequate research report. Some of the "raw" data consisted in documents obtained from ministries, firms, and organizations in situ. Some others were memos of (formal or informal) conversations.

As it came out, the department did not expect from the bank's representative just raw data but rather already processed modules to be fitted into the research report. During the weekly briefings, the department's head expressed her dissatisfaction with the representative, who was apparently unable to supply the required modules. She repeatedly complained that he lacked "overview," that the bank needed a "thinker" over there if it was to upgrade to a branch. When the bank finally decided to outsource a study to a major Western consulting firm operating in that country, the comment was,

> Right now, we are late with the [country name] project, we must get the information from this consulting firm. . . . This is more like a cover-up for us, we want to show that we are on the safe side, that all information comes from external sources. . . . If this study will be too expensive, it won't pay, but, well, when we'll get their offer we can bargain.

The department's head personally supervised the processing of information into research reports: she insisted in reading any drafts produced by the department's analysts and quite often reformulated parts thereof.

Thus, what field members perceived as really important were their procedural knowledge and knowledge-producing skills: they were not perceived as equally distributed or equally accessible. Rather than that, such skills were nontradable, part of the personal and professional identity, and essential in asserting leadership. Since economic knowledge existed as embodied knowledge, it was only logical that a key aspect was knowledge of other people. Knowing the skills an analyst did not possess meant knowing who possessed them and building ties with that person. The economists in Department B also regarded their knowledge as a personal and institutional asset and not as openly accessible. When rumors went on that the management might fire an older economist (who at the time was doing mostly historical research), a younger one complained to the ethnographer that they cannot do that because "he knows all these people"—by whom she meant officials in the European Commission, but also managers in the federation's member banks.

Personal connections were regarded as highly valuable, hard-to-replace, personalized economic knowledge. [5]

In Department A, one of the most valuable things (and a jealously guarded secret, at the same time) was a wooden box belonging to the department's head. It contained a large collection of business cards of professionals, businesspeople, and politicians from the countries monitored by the department. It was basically a noncomputerized database placed on the desk of the department's head and accessed only by her; at the same time, it worked as a managerial memory (see also Campbell-Kelly 1996)—that is, a record of the manager's past contacts, visits, and actions. The other members of the department also kept smaller noncomputerized databases of their respective countries. When the department relocated to larger offices, this wooden box was temporarily lost in the process—a fact that made the department's head send everyone searching for it and suspending any other activity until it was found.

At the time of the fieldwork, one of Department B's main tasks was the production of a computerized database of "connections"—that is, businesspeople, managers, civil servants, and politicians known by the department's members. To this end, each member was supposed to write a memo after each business trip detailing the new acquaintances and their profession, workplace, and position. At the same time, the department organized self-promotional sessions in the form of expert meetings. Experts from the European Commissions on monetary policy and on competition were invited to learn about the expertise and work of each department member. In their turn, the commissions' experts were expected to present the projects they were working on and to assert their competencies. Such sessions, which could take up to half a working day, were explicitly devised for networking purposes. Thus, economic expertise included knowledge about persons and places as an intrinsic feature. Conversely, establishing networks of relationships required the continuous production and maintenance of knowledge. It did not suffice that economists and analysts make contacts as individuals; they were expected to enter the network as experts.

The mix of knowledge about procedures, data, and people supported economic activities in that it connected the banks with their customers; it also helped attenuate uncertainties about competition and markets. To a certain extent, it even leveled the distribution of information under conditions of heterogeneity. Contrary to the general perception and to

the received economic view about the benefits of competition, financial workers perceived it as dysfunctional: competition minimized the amount of available knowledge and increased insecurity. From their point of view, it was counterproductive. In the search for information, to avoid uncertainties (Martin 1995, 88)—with negative outcomes for everybody—workers had to cooperate. Cooperation enlarged the amount of available knowledge and made it more secure because it created a pool of common expectations. Thus, the chief documentarist[6] in Department C explained that knowing what the competition knows was a very important aspect of their activity; that is, they should be able to assess and compare the sources of information used by competitors and especially the way they handled their databases. Since these latter were custom tailored, it was not a particularly easy job. She explained,

> We have the French banking association, it's a bit like a professional organization of the French banks, and ten years ago they organized a group of documentarists working together. We meet once a month, we know each other very well, we have common activities. That is, we know each other so well that we exchange [knowledge]. But, I would say, that is in the profession, it's not between the banks, because they are in competition. Normally, you don't have exchanges with your competitor. Between documentarists, I think, it's like a body, a profession, we exchange information, we help each other.

While the personalized production of economic knowledge implied outside cooperation, it also meant certain internal prohibitions: as mentioned above, Department C had an internal pay system for documents. Moreover, tacit rules prohibited revealing the names of persons who had requested the same documents or information on the same topic, even if this meant an additional work of duplicating or triplicating documents or of doing the same research all over again. Since archives were fully digitized, documents and information packages were not kept on paper but in custom-made computer files. In this case, the prohibition put on proper names meant redoing documents and packages each time a bank member requested them:

> Q: You don't keep copies of the files [you've made]?
> A: No.
> Q: That means, if a question arrives, which has to do with a previous file, you have to redo that file?

A: Yes, it's true. It can happen that several departments ask the same question.
Q: Can it happen?
A: Yes, it can, because they are working on the same topic, on the same market, on the same country. We don't have . . . We answer, that's all. If two persons from the same department ask the same question, then . . . They work together, they don't know that each of them has asked that. It happened yesterday. I said, listen, there is someone in your department who asked that question. Yes, it's true then. . . . If they are from different departments, we have to answer their questions without comments. This is professional ethics. For example, I will never tell anybody that somebody else asked the same question, never. It happens that someone asks for a document somebody else has. He asks me, where is it? [I say] I cannot tell you.
Q: Why?
A: Maybe because we are an investment bank. All banks are a bit like that. Somebody asks a question and does not want people to know he works on that topic.
Q: Then your work is kind of secret.
A: A big word, it's a big word. You have a professional ethics, and secret is a big word, exaggerated. Let's say it's because people can trust us.

This situation is reminiscent of the Nambikwara's prohibition of revealing proper names, described by Claude Lévi-Strauss in *Tristes Tropiques* (1961) and redeployed by Jacques Derrida (1974, 108-9) in his analysis of classificatory practices. Claude Lévi-Strauss argued that the Nambikwara prohibition was grounded in the fact that each proper name (and therefore identity) works in a classificatory system encompassing the whole of the tribe. Revealing names would mean breaking up this system and, therefore, the identity of the whole tribe. Analogously, the prohibition on revealing who has asked for what file (or document) has less to do with keeping documents secret. After all, everybody was free to request a file, as long as they did *not* know who else had requested it and who else was working on the same topic. Moreover, it looked like a waste of resources (and therefore noneconomical) not to disclose the names and to redo files each time somebody required them. But the prohibition makes sense if one thinks that professional identities are object related and that knowledge is personified. What I am is what I am working on and what I am working with. Disclosing names would mean shattering this system of classification, which, very much in Nambikwara fashion, assigns identities by relating them to objects.

In this respect, the trust put on the documentarists was key with respect to the rules of social interaction in the bank. The system of distributable knowledge (documents, files) was paralleled by one of nondistributable, unspoken knowledge.

Previous studies (e.g., Windolf 1998) have stressed that economic networks are not free of internal competition, which can put a strain on the management of resources as well as on the network's stability over time. Some authors (e.g., Manns and March 1978) have argued that internal competition becomes stronger in times of organizational hardship and that it can be conducive to managerial innovations. The above observations show that, in practice, financial workers were much more ready to cooperate with their competitors to make their own knowledge more stable and reliable. At the same time, the social logic of professional identities did not necessarily favor internal cooperation but rather secrecy. As David Stark (1996, 1015) has noticed, economic institutions do not merely reduce ambiguity in a continuous fashion. Rather, they produce internal ambiguities as well, as a means of ensuring institutional flexibility. In this light, the prohibition put on proper names stabilized—among others—professional identities by maintaining such ambiguities. Transgressions (with a potential for internal conflict) could be blamed in this case on ambiguities and uncertainty.

In an apparently paradoxical way, the double status of economic knowledge (embodied by concrete persons and objectified by documents) integrated economic activities in larger, knowledge-centered networks. Participants acknowledged a mutually shared basis of skills and tacit knowledge (which went beyond the skills of a single person). The fact that knowledge about data and persons was not kept separated allowed actors to maintain networks by circulating knowledge. Since analysts perceived their professional identities as document related, they had to put at least a part of their knowledge into an objectified, circulable form, which could be acknowledged as such by their partners. How, then, did documents work as concrete networking instruments?

THE PRODUCTION OF DOCUMENTS AS NETWORKING INSTRUMENTS

In many respects, the ways in which economic reports and analyses were handled by the departments' members resembled very much the

artifacts and inscriptions of scientific laboratories. Some of the most striking elements were that (1) networks (as well as hierarchies) of persons were managed through texts, (2) the economists identified themselves with respect to the texts they had written, and (3) the distinctions between analysts and texts were relativized in many speech situations. In the sociology of science, the actor-network theory (Latour 1999; Callon 1998a; Law and Hassard, 1999) has argued that textual and visual representations of natural phenomena work as connecting devices: they allow for the transfer of knowledge across various contexts and bind scientists together in cognitive networks. Thus, it is not necessary anymore to work in the same lab to share the same skills and knowledge; it suffices to be part of a network or circuit of texts and artifacts (like instruments and laboratory probes). In the financial settings studied here, a similar phenomenon was noticed: some texts were not produced only for their informational content but for their networking capabilities as well.

For a whole series of documents (produced on a regular basis), the informational content did not even count as new, confidential, or relevant for immediate financial action. Rather, documents were produced as a means of networking and keeping track of people. One of the analysts' tasks in Department A was to edit an internal monthly newsletter (in English) that was distributed throughout all the bank's departments, subsidiaries, branches, and offices. The contents, organized as entries for each Eastern European and CIS country, were rather heterogeneous: business deals stood next to cabinet reshufflings and statistical indicators. The entries were very short, mostly two- or three-liners, compiled from other newsletters, as well as from major newspapers, two German and one British. All such entries were followed by the name of the respective analyst and her bank-internal phone number[7] so that each could be contacted for details, additional information, or any other kind of information on the respective country.

In practice, the newsletter worked as a permanently reiterated phone directory of knowledge and competencies. What mattered was less the content (compiled from various sources and mostly a month old); rather, the networking of persons (who did not know each other) via a document was more effective than a simple phone directory. In contrast to a directory, a newsletter showed if the analyst in question was still working in the bank and what she had done recently. During the fieldwork, it happened several times that managers from other departments

or from the London subsidiary would call directly the country analyst and request information on various topics. One such case happened when I (responsible, as a trainee, for a couple of countries) was called directly from the London subsidiary by an analyst I had never heard of and who explicitly mentioned the newsletter. The subsidiary wanted to get involved in privatization bids in one of the countries and needed tailored information about the privatization process. For a couple of days, I and the London analyst worked together over phone and fax and put up a file containing the required data.

In Department B, networking was performed by meetings' minutes. Committee meetings, involving department staff and representatives from the member countries, had a large share of the department's schedule of activities. While in Department A minutes of meetings were kept to a minimum and had a restricted circulation, Department B allotted a lot of time to them. The economist who prepared the documentation for each committee meeting also took care of the minutes. Her notes, together with those made by her trainees (and sometimes audio recordings), served as the raw material for writing the minutes. They were drafted and then crosschecked against different handwritten notes. Afterward, a working version was edited and sent out to participants, who proposed changes. It was not simply a matter of accuracy: since meetings (without exception) were tape-recorded, there would have been no problem in getting very accurate transcripts. Still, economists and trainees (as well as the other people involved) preferred to work out acceptable minutes via negotiations, starting from imprecise, handwritten notes. This allowed a reciprocal adjustment that would have been hard to reach starting from accurate transcripts.

During the fieldwork, two events revealed the importance of flexible, open, and not very precise minutes for negotiating a common standpoint beyond the formal frame of negotiation. Two key committees had been debating (1) the introduction of new accounting standards in the wake of the Euro and (2) the Euro's exchange rate formula, respectively. These matters were central with respect to economic and monetary policy: the introduction of new accounting standards throughout the European Union (more like the North American ones) would have meant changing the basis for the valuation of firms and businesses. On its part, setting the Euro's exchange rate formula against its member currencies was central with respect to the value of the new currency. Several methods were envisaged, with considerably different results.

In both cases, the respective committees were called to discuss these topics and adopt a position that would be afterward officially endorsed by the banking federation. Since it enjoyed considerable financial and political clout, the federation's viewpoint certainly mattered. A common standpoint had to be reached before the official decision deadline. What happened was that, in each of the two committees, there was disagreement between an important member and the rest of the committee. On the monetary policy committee, the member in question (representing a key country of the union) was advocating a radically different formula for the exchange rate; overrunning him was as unthinkable as endorsing two contradictory formulas. The divergences were smoothened not in the committee meetings (where positions remained strong) but in the process of writing and approving the minutes. Networking through the meeting's minutes was thus the last stage in reaching common standpoints on economic and financial policy. In this case, it was not perceived as a document that accurately reflected a past discussion but as a process that, starting from a past discussion, allowed the discussants to reciprocally adjust their positions. In this respect, they provided participants with a time horizon that was broader than that of a committee meeting, giving more room for flexibility.

The chief documentarist of Department C expressed very clearly the importance of networking via documents: in her view, economic knowledge depended on a network of persons and texts. The department subscribed to about 2,500 journal titles in five languages, but that was by no means the only way relevant information was obtained:

Q: It could happen that Mr. [chief economist] calls you and says, for example, I need information on the footwear industry in China. What would you do in this situation?

A: Well, we'll begin by taking a look at our database, because he [chief economist] pays us and it's our job. After that, if we don't find anything or if we find only few things, we'll go to other places, well we have the classic instruments of documentation, external databases, heh, we can go look if there are any market studies on that, we have the CD-ROMs, which firms are on that market, well, these are the classical instruments for building up a file on that. And we can contact other organizations. We can go to the French Center for Foreign Trade, which studies such industries for certain countries, for allowing exporters to hold foot there.

Q: Then you're in a network.

A: Yes. Documentarists are all in a network, that's why we can exchange information, we can work all at the same time on the same problem.

In the case presented here, the recourse to professional associations pointed to a network of relationships that cut across institutional competition. They stabilized knowledge and helped reduce uncertainties about unknown fields of action. External cooperation was valued as *the* means of producing complex economic knowledge. The situation is to a certain extent reminiscent of scientific communities involved in large cooperation projects (e.g., Knorr Cetina 1999). The case also shows that the production of knowledge was not just another activity along networking but an important means through which networks of relationships were generated, stabilized, and maintained over longer periods. Producing knowledge meant producing social solidarity as a core feature of a moral economy (Granovetter 1994, 467) characterized by mutual standards and obligations.

THE PRODUCTION OF ECONOMIC DOCUMENTS AS TINKERING

Since the production of financial knowledge was a key component of professional identities, it was seen as a means of differentiation and of building up distinct professional identities. As a consequence, literary and aestheticizing devices were given constant attention. One stock analyst put it as follows:

> [The analyst] is by no means an accountant. An accountant is too boring for the job. But he isn't a journalist either, that's too aggressive. He must write in an *entertaining* way in any case. People don't read guys who cannot write entertainingly. He must have fantasy, therefore he must invent. He must invent new indicators, create new diagrams, which nobody did before him. He must be inventive. Fantasy. I think fantasy is the most important thing. One is read because of his fantasy. Why shouldn't one open an analysis with a quote from Cicero? [8]

Professional identity, competence, and expertise were thus related not only to accuracy criteria, to a specific methodology, or to analytical techniques, but also to a certain literary style. In some cases, institutional identity was also related to the style of studies and reports

presented to the outer world. Complaining that in his area of expertise the studies done by various banks tended to look the same, an investment banker in bank C saw optical features of reports as a means of achieving a distinct identity in a world increasingly dominated by standardized analyses:

> The models we are all copying are American or English models. The presentations, you know, it's awful to see how the presentations of [bank name], of [bank name], and now unfortunately those of [bank name] or [bank name] are perfectly identical! Standardizations! (. . .) Me, my presentations . . . you know, five years ago, . . . I did presentations in English at [bank name] Capital Markets, initial public offering, you know, the Americans. . . . Before, we did presentations, we did it like that. . . . Now, you have flow charts, all kind of tricks. . . . Yes, go to [bank name], it's everywhere the same, the same models. Even in the presentation, there is no originality anymore. We still try to have originality in the thinking, but there are models, there are canvasses imposing themselves. (. . .) And take a look at the French financial research from ten years ago. There were no pictures, tricks like that. Now, we are compelled to imitate the Americans, doing tricks, nice covers, etc. But it's not because this is the French style, no. The French style is austere, we'd like to show to the client that we aren't making a profit, we cannot, we don't have the means, etc. And I saw the Americans arriving with beautiful covers, beautiful photos, golden letters, etc. And of course we have to do the same. In my opinion, there is a great uniformization throughout the world.

With economic knowledge being embodied and personalized to such a high degree, maintaining a distinct identity with respect to the others in the field was essential. The problem was that knowledge had to be somehow objectified and put in a communicable form if the outer world (customers, coworkers, the competition) was to acknowledge it. At the same time, it had to be kept distinct. Achieving and maintaining a distinct knowledge-related identity is possible only through an objectification that should fit the professional standards of economic analysis while leaving at the same time room for the manifestation of particularities, idiosyncrasies, and the like.

We find here an emphasis on social technologies similar to those of "taste" and "style" analyzed by Pierre Bourdieu (1979). Techniques pertaining to the field of literary devices, of "style," and of the "aesthetics" of presentation were justified by the participants either with respect

to economic factors (the competition and the pressure of other banks) or through a redefinition of the profession as a creative one. If (1) economic knowledge is differentiated by the actors (and differentiates them) through such devices (either literary or visual) and (2) this differentiation is necessary with respect to economic action, it follows that at this point an additional aspect of the embeddedness of economic action suggests itself.

In the departments discussed here, considerable amounts of time were devoted to the writing of analyses and research reports, which went through several variants and drafts. While Department A wrote country analyses on a regular basis, Department B was more concerned about "the problem of the day," like the methods for determining the exchange rate of the Euro. Country analyses had a fixed formal structure in that the chapters they had to contain, as well as their order, were given. Since countries could be compared according to a series of standardized features and indicators, this was supposed to serve the decision-making process. The most important aspects were the legal frame of the banking system, the interbank market, the markets for financial securities, financial products, their prices, as well as other banks selling financial products. In the process of writing, the high degree of standardization made previous analyses function like a palimpsest: considerable portions of them were revised, taken over, and adapted to the needs of the new study. This had important consequences: (1) it created a temporal bind between modes of representation of countries that were not necessarily (or were only superficially) similar, and (2) it meant that the temporal order inherent in the process of writing was legitimated post hoc as an objective, outer order. The fact that, say, the report on country Y was a partial rewriting of the report on country X was rationalized post hoc as due to economic similarities between the two countries.

Such similarities were by no means evident in the beginning; they were not a given fact, independent of the writing of research reports. In one instance, when the department was starting a new study on a CIS country, the particularities of the project were discussed in a meeting. After setting the project schedule and reviewing the available information, the department head said that the "[country Y] scheme" should be applied. Country Y was an Eastern European but not a CIS country. As it became clear later, this meant taking a previous study on country Y and rewriting or revising its parts, making it a new one. It was not simply

using the study's formal structure as a template: in some cases, whole paragraphs were copied into the new study, sometimes with insignificant changes. In another meeting, when discussing the interbank market in that country (a key aspect of each study, as it came out later), the department head said the team should retrieve the respective chapter from a third study because the country in question was "more developed, but similar in principle." Needless to say, such similarities were not immediately visible to the participants. The central point of the discussion was to pin down how the new report should be written according to what had been done previously and to studies already available in the department.

Similarities and differences between the three countries appeared as similarities and differences between what the department had written until then. A couple of weeks later, when the study was relatively advanced, the department head expressed again in a meeting her views on the differences between three countries: "[country Z] has an enormous potential, and [country Y] too, but [country X], this is a small country, this is not very clear, it's in-between. . . . Even if the [country X] would develop, this would go through [country Z], most of it." According to standard geographical and demographic data, country X was considerably larger than country Y.

Analogous to cases reported in laboratory studies, participants used previous studies or parts thereof to establish how the new ones should be done and, more important, how key phenomena (like the interbank market) should be represented. For example, the obligatory feature ending each study was the statement of projected profits and losses. It was meant as an estimate of the capital to be invested and of the time interval until the new operation could become profitable. In real life, differences between similar operations (i.e., new branches) in various countries could be considerable. The practice of the department was, however, to reproduce one and the same estimate in all reports, with minimal adjustments. One of the reasons was—as it later came out—that unforeseen costs could (and in practice did) make such statements meaningless.

Analysts tinkered with the available resources and rationalized their activities post hoc. Such tinkering made the writing of the new report possible: team members decided which parts from which previous reports had to be taken over, rewritten, stitched together, and, more important, how the entities they were writing about were to be ordered. It was a procedure that allowed the department's head to represent the

three countries as comparable and to reorder them for the bank's purposes, transforming considerable differences in size, geography, and population into comparable items.

Another effect of epistemic tinkering and palimpsest writing of reports was that over the years it had produced a standardization in economic research on Eastern European countries and had established key epistemic components with respect to investment decisions. This was especially relevant if one thinks that at the time of the field observations the department was only six years old and that previously no such studies have been done on the countries of Eastern Europe and the former Soviet Union. With respect to investment decisions, it was essential to provide key standardized components in each study, which should allow for comparing and evaluating the bank's programs and strategies.

These components were the chapters on the interbank market, competition, and prices. The first basically meant finding out whether the bank could borrow money in situ from other banks, if it decided to open a branch or a subsidiary; the competition and product prices meant getting information about which banks were already present in the country being studied, with which products, and at what prices. As the department head put it, the interbank market was

> decisive for us. Because we won't like to have the full [country X] risk on our books. We have to process the risk on that market. We already had this problem with the interbank market in [country name] and [country name] and (refinancing) still runs via our headquarters. If we cannot refinance in the market, then we'll give up.

This contradicts the broadly received view that engagement of Western banks in Eastern Europe comes first, and the emergence and development of financial markets come afterward; at least in this case, the bank expected to find an already developed interbank market if it were to become active. Consequently, the department worked a lot on gathering data about the interbank market and on writing the respective chapter of the study. However, this proved to be more complicated than one would expect. Although the department regularly got reports from the representative office, these constituted no adequate information by themselves. In the first place, the interbank market as seen from the capital of the country in question was not the interbank market as seen from the department. Reports coming into the department (and supposed to contain firsthand knowledge) described three kinds of interbank

markets: black, gray, and white, with equal amounts of attention devoted to each. The following excerpt illustrates this meaning of "market":

> Grey Market. (. . .) The scheme is simple. A [country X] company pays to the account of its partner (it can be either a real trading partner or a fake firm kept by the bank involved in this kind of operations). The partner abroad gives the bank an instruction to buy whatever currency against [currency name], which is now fully legal again. (. . .) Black Market. The procedure is the same as in the case of the "gray" market. But the [country name] company selling [currency name] or [currency name] ceases to exist after the deal is done. This market is used to export capital from [country name].

While such a description could be seen by outsiders as very informative with respect to what was going on, internally it was judged as inadequate. In fact, it is because of such reports that the head of the representative office was seen as lacking perspective and "thinking." The problem was that the interbank market had to be given a meaning with respect to the department's previous studies and with respect to the procedures of investment decisions: that is, this new meaning (to be worked out) should have allowed a comparison between various interbank markets *and* been adequate to the given procedures of investment decisions. It was not simply a matter of "cultural" differences, that is, of different understandings of the notion of "market," or of different economic customs. [9] Rather, it was a question of adapting and processing raw data according to the (tacit) rules and procedures of writing reports adopted by the department.

This meant that incoming reports had to be rewritten for the final study according to criteria of internal compatibility, that is, in such a way that market descriptions that did not fit these criteria disappeared and that other descriptions were reshuffled. It was a major task for the department members, taking considerable amounts of time and several drafts. In the first ones, the description of the "black" and "gray" interbank markets was maintained. Subsequent drafts did not contain them anymore. They also standardized the description with respect to the vocabulary employed, the rhetorical procedures of representation, and the ordering of the representation's key elements.

Statistical figures were treated in a similar manner. In the report on the interbank markets, for example, the percentage shares of the three

markets ("white," "gray," and "black") added up to 140 percent. When asked about this seemingly absurd figure, one of the analysts replied, "We cannot do anything, we have no better figures. We have to take them. They have no value, but . . . We can write below 'gross estimate.' " As a consequence, they appeared in the final report. Considerable ambiguities left by reports were decided internally, according to the logic of representation: thus, a key ambiguity about the existence of one or two parallel "white" markets was decided by the members of the department alone, after several attempts to gain more information from the representative office had failed. Because one name was used twice in previous paragraphs, they decided to adopt it as standing for the one and only interbank market. The other name never appeared in reports afterward. Thus, the bank's ability to "calculate"—that is, to project further paths of action and to establish ties to the relevant persons (in this case, to currency traders)—depended on the outcomes of this tinkering process in which the department's members were involved.

Other central matters, like competition, products, and prices, were treated in a similar way. When the department got a list with the financial products of the Western competition,[10] a big problem was to ensure compatibility between the product list of the bank and that of the competition. It looked like there was very little to be compared and that the financial products of other Western banks were conceived, structured, and priced very differently. Moreover, the bank itself had several prices for the same products: nationwide, Europe-wide, and overseas prices. Some products of the bank were not offered by the competition and vice versa. Some were offered for free by the bank, while the competition charged prices. This, however, was perceived much more like a problem than an advantage. Therefore, a major task was rewriting and adapting the product list of the competition, making these products compatible with the bank's own. In this process, the products' characteristics and prices were adjusted for compatibility. In some cases, this meant modifying some descriptions and names in the original list so that they fit the bank's own. What came out could not be called anymore the product list of a "given" competition but rather the outcome of a process through which the bank represented the competition according to its own image.

While this confirms Harrison White's (1981) argument that firms orient themselves to each other, it also shows that this process implies complex procedures of representation and adjustment. As Robert Prus

(1989, 147) has noticed with respect to the ways in which managers set retailing prices, these have a reactive quality and reflect one's own knowledge. At the same time, these observations run counter to the standard neoclassical assumption that prices contain all the necessary information required by market actors (e.g., Stigler [1961] 1986). In the present case, prices (for the own products and for those of the competition) were seen by participants not as relevant information but as a problem that had to be solved through complex interpretative work and several adjustments.

Thus, the production of financial and economic documents had several important features: (1) it was less conceived as the mirroring of given, external economic facts and more like a process of tinkering, in which resources at hand were used to produce an institutionally acceptable document; (2) in this process, previous studies provided the decisive frame, in which each new report had to fit; (3) one effect of this tinkering was that it led to cognitive standardization: complex and very different countries and economic processes were reduced to a couple of economically intelligible elements, like the (legal) interbank market, competition, and prices; (4) the need for professional distinction led to an emphasis on aesthetic (i.e., literary and visual) devices in the production of financial documents; (5) this production generated networks of persons and objects that, in their turn, structured the paths for further economic action. In this perspective, information does not appear as circulating freely or as given; rather than that, what counts as relevant information is determined by certain collective representational practices.

THE TEMPORAL STRUCTURES OF FINANCIAL KNOWLEDGE

Another important aspect of these practices was that they generated stable, common temporal structures. This was a key problem: because economic knowledge was personalized to a high degree, it was also characterized by individual rhythms as well as by fluctuations due to individual interests, career paths, and the like. Under these circumstances, mechanisms had to be found through which common, stable time structures would be ensured; otherwise, economic action would not be possible. In this respect, practices of document production

operated a transfer of skills and procedures from human actors to artifacts (e.g., Latour 1988); documents like country reports could now work across different contexts and situations, consolidating the basis on which the future production of knowledge became possible. This ensured collectively accessible temporal structures and the (relative) stability of economic knowledge.

In Department A, country studies had been continuously done since 1992, but the bank did not invest in all the countries that have been studied. Nonetheless, studies were not thrown away but carefully kept and reused. They were filed together with all the adjacent documentation (reports, letters, memos, statistical sheets). The department's activities were made possible by continuously reprocessing this objectified knowledge basis. As described above, new studies were begun as continuations, modifications, or hybridizations of older ones: when the bank decided to do the country study discussed here, it generated it by using epistemic resources from two previous studies. Four years before, the department had done a study on another country, with thoroughly negative conclusions. However, the old study had not been buried in the archives or thrown away: it was carefully kept, and parts of it were reactivated and rewritten for a new one. A firm that had been previously presented as a bad investment was represented in the new study as a possible business partner and used to reactivate in situ connections. In another instance, the bank's CEO went on a "fact-finding trip" to an Eastern European country and needed information about it. An older study was hastily reactivated in the department; parts of it were retrieved and actualized, being reassembled afterward in a special "facts file" for the trip.

In this case, it was interesting to notice how the file contained the resources necessary for its own actualization. For example, the economic indicators had to be updated; since the sheet with the old indicators gave the name and phone number of the economist in charge, new economic indicators were obtained very quickly. Another section in need of actualization concerned the bank's direct and indirect investments in that country. Some were done from the headquarters, some from branches and subsidiaries across Europe. The old document contained the names and phone numbers of the respective loan officers; it too could be actualized very quickly. In this perspective, the country studies appeared rather as unfinished and as being subjected to continuous reshuffling; they also expanded in time, containing numerous

drafts, additions, and extensions. This is also an instance where studies worked as an organizing device, used to reactivate dormant contacts and to bring together people with different skills.

A somewhat similar situation was that in Department B, where postmeeting minutes were (re)written with outmost care, binding participants together long after the meeting was finished. They could be regarded as done once and for all only over longer periods of time; even then, older minutes and minutes-related correspondence were used in writing new ones. On that basis, the team could learn which participants were more sensitive and which turns of phrase should be employed. In fact, members of the department used to crosscheck minutes for people sitting on several committees to learn about sensitivities, as well as about their positions on economic policy.

In both cases, practices of producing objectified economic knowledge generated temporal structures in a network of relationships, on which economic actions relied. In the case of committee minutes, they acted like boundary objects (Star 1989), that is, as devices able to bring together geographically separate people with different interests and skills. They prolonged interactions beyond meeting rooms and allowed participants with different time horizons to coordinate their actions. This gave policy topics a stable temporal dimension, as something whose validity surpassed the momentariness of meeting discussions, and allowed a continued focus on these topics. In fact, the preconditions for consensus building and for following a consistent line of economic policy were that (1) the topic in question remained valid and stable beyond momentary interactions, and (2) it could be made into an object of further interactions. Both aspects were achieved through minutes as knowledge-bound activities.

The temporization inherent to the production of economic analyses[11] ensured a continuous activity of monitoring and mapping an unknown territory. With respect to the investment activities proper, the temporization of country studies was not an impediment but rather a well-suited factor to these processes. Opening branches and subsidiaries in Eastern Europe was a long and strenuous process, which often took several years. It could be slowed down or even temporarily halted by events like the loss of the main currency trader, obtaining a banking license, or just building adequate business premises. In this perspective, country studies provided temporal continuity and flexibility: they were adaptable to multiple purposes, could be redone in a new form, led to new studies,

and standardized key elements of knowledge (like that on interbank markets), which allowed for investment activities to gain a coherent orientation.

The analysts discussed here were not responsible for investment or policy decisions. In Department A, only the department head had a consulting role in investment decisions. Hence, the question arises about the direct affect of studies, reports, and analyses on economic action. As I have argued here, studies and reports made the economic world intelligible with respect to economic decisions; they defined paths of further action and supported the social networks in which action took place. In addition, Herbert Kalthoff (2000) has recently examined how risk analyses, for example, directly shape the bank's loan decisions. He shows how analyses and studies are instrumentalized in internal conflicts between departments interested in different outcomes of the decision and how they legitimize the management's decisions as consistent with past cases and with internal procedures. The ethnographic evidence presented by Kalthoff suggested that studies and reports are not inconsequential with respect to managerial decisions, although their consequences are neither simple nor mechanic.

CONCLUSION

The relevance of the above arguments is manifold:

1. While many managerial studies concerned with economic documents have focused on the optimization of flows and document circulation, they did not inquire into document production and its relevance for economic action. The observations discussed here show that the production of financial and economic knowledge (in the form of reports, studies, analyses, minutes) forms an essential background for economic action. Not only does it structure a relevant frame of action but it also helps coordinate people and artifacts involved in financial transactions (see Figure 1).
2. While the newer economic sociology has argued for the embeddedness of economic action, it has not focused on the knowledge-sociological aspects of embeddedness. At the same time, the micro-social processes through which economic action emerges out of interactions have not been sufficiently examined. The production of financial and economic knowledge appears to be an essential dimension of this structural embed-

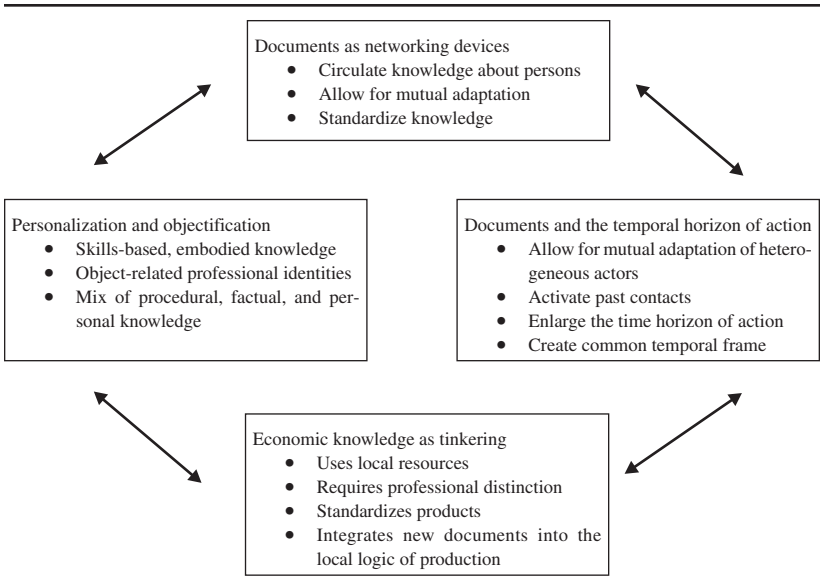

FIGURE 1: Economic Knowledge and Action

dedness. In all the cases studied here, it was a key means of networking people. In many cases, the networking qualities of documents counted at least as much as their informational content. Moreover, this production was a key means for organizing cooperation. Financial documents act as organizational, network-building devices. They connect people, bring together geographically separate persons, and ensure the temporal stability of such networks. Seen in this perspective, the production of economic knowledge is an essential feature of structural embeddedness. Building contacts and generating trust are, to a large extent, closely related to these processes.

3. The ethnographic data discussed here suggest that economic knowledge is the outcome of a complex process in which the actors involved use the resources at hand (together with context-bound rules) to produce a world relevant for further economic action. This world is neither given nor does it overlap with the real, geographical world. In one of the above cases, geographically very different countries were reshuffled so as to be made comparable and to fit the past studies of the bank, as well as the patterns for its future actions. Moreover, while standard economic theory maintains that prices provide (all the) relevant information about the market and market actors, actual participants in the field perceived prices as requiring additional work to be made intelligible. In this sense, the outcome (the prices) was dependent on the interpretive work of the actors involved.

This shows that financial (and, more generally, economic) knowledge cannot be reduced to informational content. Knowledge was understood by field participants as an activity; as such, it both structured the hierarchies of the workplace and created a network of relationships in which economic action unfolded. It also created a "financial world" as a meaningful background against which various financial activities (like investments or credit) unfolded. Seen in this perspective, knowledge as activity appears to be an essential feature of the societal frame in which financial action is embedded.

NOTES

1. In a broader perspective, the sociology of knowledge and science has provided extensive analyses of the role played by documents in the production and management of scientific knowledge (e.g., Woolgar 1988; Akrich 1992; Latour 1992; Berg 1998; Timmermans, Bowker, and Star 1998); the sociology of culture has examined documents as cultural products (DeVault 1992), while workplace studies (Orr 1996; Henderson 1995) have emphasized the role played by schemes, blueprints, and designs in the organization of industrial activities.

2. The interviews were conducted together with Herbert Kalthoff.

3. Due to historical developments and the particularities of European banking systems, each country of the European Union has several banking associations. Accordingly, there are several federations at the European level. They held considerable financial and political clout in their respective countries and, in some cases, also fulfilled the functions of universal banks.

4. In German and French banks, a credit counselor is the person responsible for arranging and supervising corporate loans, acting as a middleman between the borrowing corporation and the credit risk analyst.

5. Personalized knowledge is not reduced to relationships and the ability of networking. Very often, the research instruments are highly personalized so that we do not see two identical instruments, although they might bear the same name. Thus, a stock analyst remarked in an interview with respect to the spreadsheet, his key research instrument, "I never saw very good spreadsheets. . . . So, I never saw spreadsheets having exactly what I have in mine. Something was always missing" (see also Mars 1998, 280-81).

6. In some rare cases, the documentarists had an economics background and a degree in library science. This, as the chief documentarist acknowledged, would be the ideal profile; most of the team members had a degree in library sciences and on-the-job training in economics.

7. The bank operated its own telecommunications network.

8. I owe this example to Frank Mars.

9. For example, the bank was very interested in having in situ currency traders who understood very well and had extensive knowledge of all the kinds of interbank markets described here.

10. Western banks were actually perceived as the sole competition. Therefore, their activities were followed in more detail, while indigenous banks were listed only very summarily.

11. This temporization contrasts sharply with the temporal structures of financial exchanges as described and analyzed by Karin Knorr Cetina, Urs Bruegger, and myself (Knorr Cetina and Bruegger forthcoming; Preda 2001). On financial markets, the time horizon of transactions shrinks dramatically, and even slight temporizations are sanctioned by participants.

REFERENCES

Akrich, M. 1992. The de-scription of technical objects. In *Shaping technology/building society: Studies in sociotechnical change*, edited by W. E. Bijker and J. Law, 205-24. Cambridge, MA: MIT Press.

Arena, R. 1999. Austrians and Marshallians on markets: Historical origins and compatible views. In *Economic organization and economic knowledge*, edited by S. C. Dow and P. E. Earl, 14-35. Cheltenham, UK: Edward Elgar.

Berg, M. 1998. Order(s) and disorder(s): Of protocols and medical practices. In *Differences in medicine: Unraveling practices, techniques, and bodies*, edited by M. Berg and A. Mol, 226-46. Durham, NC: Duke University Press.

Bourdieu, P. 1979. *La distinction: Critique social du jugement* (Distinction: A social critique of taste). Paris: Minuit.

Bud-Frierman, L., ed. 1994. *Information acumen: The understanding and use of knowledge in modern business*. London: Routledge.

Callon, M. 1998a. Actor-network theory—The market test. In *Actor network theory and after*, edited by J. Law and J. Hassard, 181-95. Oxford, UK: Blackwell.

———. 1998b. Introduction: The embeddedness of economic markets in economics. In *The laws of the markets*, edited by M. Callon, 1-55. Oxford, UK: Blackwell.

Campbell-Kelly, M. 1996. Information technology and organizational change in the British census, 1801-1911. *Information Systems Research* 1 (7): 22-36.

Carruthers, B. 1995. Accounting, ambiguity, and the new institutionalism. *Accounting, Organizations and Society* 20 (4): 313-28.

Carruthers, B., and W. Espeland. 1991. Accounting for rationality: Double-entry bookkeeping and the rhetoric of economic rationality. *American Journal of Sociology* 97 (1): 31-69.

Covaleski, M., and M. Dirsmith. 1988. An institutional perspective on the rise, social transformation, and fall of a university budget category. *Administration Science Quarterly* 33 (4): 562-687.

Derrida, J. 1974. *Of grammatology*. Baltimore: Johns Hopkins University Press.

DeVault, M. 1992. Novels, novelists, and readers: Toward a phenomenological sociology of literature. *American Journal of Sociology* 97 (5): 1515-16.

Di Maggio, P., and S. Zukin. 1990. Introduction. In *Structures of capital*, edited by P. DiMaggio and S. Zukin, 1-36. Cambridge: Cambridge University Press.

Granovetter, M. 1985. Economic action, social structure, and embeddedness. *American Journal of Sociology* 91 (3): 481-510.

———. 1994. Business groups. In *Handbook of economic sociology*, edited by N. Smelser and R. Swedberg, 453-75. Princeton, NJ: Princeton University Press.

Harper, R. 1998. *Inside the IMF: An ethnography of documents, technology and organizational action*. London: Academic Press.

Henderson, K. 1995. The visual culture of engineers. In *The cultures of computing*, edited by S. L. Star, 196-218. Oxford, UK: Blackwell.

Kalthoff, H. 2000. Die Herstellung von Evidenz: Firmendkredite und Risikoanalyse in Mitteleuropa (The production of evidence: Corporate loans and risk analysis in Eastern Europe). *Soziale Welt* 51 (4): 417-42.

Knorr Cetina, K. 1999. *Epistemic cultures: How scientists make sense*. Cambridge, MA: Harvard University Press.

Knorr Cetina, K., and U. Bruegger. 2000. The market as an object of attachment: Exploring postsocial relations in financial markets. *Canadian Journal of Sociology* 25 (2): 141-68.

———. 2001. Transparency regimes and management by content in global organizations: The case of institutional currency trading. *Journal of Knowledge Management* 5 (2): 180-94.

———. Forthcoming. Global microstructures: The virtual societies of financial markets. *American Journal of Sociology.*

Knorr Cetina, K., and A. Preda. 2001. The creation and incorporation of knowledge in economic activities. *Current Sociology* 49 (4): 27-44.

Latour, Bruno. 1987. *Science in action: How to follow scientists and engineers through society.* Cambridge, MA: Harvard University Press.

———. 1988. *The pasteurization of France*. Cambridge, MA: Harvard University Press.

———. 1992. Where are the missing masses? The sociology of a few mundane artifacts. In *Shaping technology/building society: Studies in sociotechnical change*, edited by W. E. Bijker and J. Law, 225-58. Cambridge, MA: MIT Press.

———. 1999. *Pandora's hope: Essays on the reality of science studies*. Cambridge, MA: Harvard University Press.

Law, J., and J. Hassard, eds. 1999. *Actor network theory and after.* Oxford, UK: Blackwell.

Leifer, E. M. 1985. Markets as mechanisms: Using a role structure. *Social Forces* 64 (2): 442-72.

Lévi-Strauss, C. 1961. *Tristes tropiques*. New York: Free Press.

Manns, C. L., and J. G. March. 1978. Financial adversity, internal competition, and curriculum change in a university. *Administration Science Quarterly* 23 (4): 541-52.

Mars, F. 1998. Wir sind alle Seher: Die Praxis der Aktienanalyse (We are all clairvoyants: The practice of stock analysis). Unpublished dissertation, University of Bielefeld, Germany.

Martin, W. J. 1995. *Global information society.* Aldershot, UK: Aslib Gower.

Meikle, S. 2000. Quality and quantity in economics: The metaphysical construction of the economic realm. *New Literary History* 31 (2): 247-68.

Orr, J. 1996. *Talking about machines: An ethnography of a modern job.* Ithaca, NY: Cornell University Press.

Podolny, J. 1994. Market uncertainty and the social character of economic exchange. *Administration Science Quarterly* 39 (3): 458-83.

Porter, Th. M. 1994. Information, power, and the view from nowhere. In *Information acumen: The understanding and use of knowledge in modern business*, edited by Lisa Bud-Frierman, 217-31. London: Routledge.

Preda, A. 2001. In the enchanted grove: Financial conversations and the marketplace in England and France in the 18th century. *Journal of Historical Sociology* 14 (3): 276-307.

Prus, R. C. 1989. *Pursuing customers: An ethnography of marketing activities*. Newbury Park, CA: Sage.

Star, S. L. 1989. The structure of ill-structured solutions: Boundary objects and heterogeneous distributed problem solving. In *Distributed artificial intelligence*. Vol. 2, edited by L. Gasser and M. N. Huhns, 37-54. London: Pitman.

Stark, D. 1996. Recombinant properties in Eastern European capitalism. *American Journal of Sociology* 101 (4): 993-1027.

Stigler, George. [1961] 1986. The economics of information. In *The essence of Stigler*, edited by K. R. Leube and Th. G. Moore, 46-66. Stanford, CA: Stanford University Press.

Timmermans, S., G. Bowker, and S. L. Star. 1998. The architecture of difference: Visibility, control, and comparability in building a nursing interventions classification. In *Differences in medicine: Unraveling practices, techniques, and bodies*, edited by M. Berg and A. Mol, 202-25. Durham, NC: Duke University Press.

Tolmie, P., J. Hughes, J. O'Brien, and M. Rouncefield. 1999. The importance of being earnest: Everyday managerial work in financial services. Draft published by the Department of Sociology, University of Lancaster, at http://www.comlancs.ac.uk/sociology/TEPapers/ImpEarn.html.

Unni, A., and R. Bhamidipati. 1998. Documents and business processes: Understanding the links. In *Information and process integration in enterprises*, edited by T. Wakayama et al., 15-29. Boston: Kluwer.

Wakayama, T., K. Kannapan, C. M. Khoong, S. Navathe, and J. Yates, eds. 1998. *Information and process interaction in enterprises: Rethinking documents*. Boston: Kluwer.

White, H. C. 1981. Where do markets come from? *American Journal of Sociology* 87 (3): 514-47.

Windolf, P. 1998. Elite networks in Germany and Britain. *Sociology* 32 (2): 321-51.

Woolgar, S. 1988. Time and documents in research interaction: Some ways of making out what is happening in experimental science. *Human Studies* 11 (2-3): 171-200.

Yates, J. A. 1989. *Control through communication: The rise of system in American management*. Baltimore: Johns Hopkins University Press.