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# Forms of Economic Discourse, the Crisis, and Financial Markets. Analysis and Research Perspectives From Actor Network Theory to Semiotics

(doi: 10.2383/72701)

Sociologica (ISSN 1971-8853)

Fascicolo 3, settembre-dicembre 2012

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# Forms of Economic Discourse, the Crisis, and Financial Markets

## Analysis and Research Perspectives From Actor Network Theory to Semiotics

by Federico Montanari

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### Markets, Sociological Views, Actor Network Theory, and Semiotics

The aim of this paper is to examine where recent sociological studies – particularly those represented by the *Actor Network Theory* (ANT) and the semiotic approach – interlace when facing phenomena related to the economy and markets, particularly financial markets.

The financial-economic universe encompasses such vast and complex phenomena that it may seem unrealistic to address it from a “macro” point of view. However, in recent decades there has been a great quantity of research in the social sciences (either from within the ANT paradigm, that itself also has origins in the study of markets as social phenomena [Callon 1989]; or from within anthropological, ethno-methodological or socio-cultural approaches) that has provoked a new “big wave” of social studies on markets, in the sociology of economy and finance.<sup>1</sup>

The intention of this paper is to indicate how methods located between ANT and semiotic studies could help to delineate a transversal direction: investigating the phenomenon in a manner that challenges the traditional micro/macro opposition. The idea, as we will discuss in greater detail later, is that semiotics represents a “mediation” between different sociological and anthropological areas of research.

<sup>1</sup> For a broad review see Arminen 2010; Smelser and Swedberg 1994; Adler and Adler 1984; Knorr-Cetina and Preda 2005. For some interesting connections between cultural-sociological studies, semiotics and ANT, particularly in relationship to analysis of advertising and marketing, see MacFall 2004.

In any case, it is important to remember that ANT developed in conjunction with semiotics, particularly through the influential research of Latour and his use of Greimas' theories and analysis [Akrich and Latour, 1992]. Our discussion begins by examining the role of semiotic analysis played in the emergence of ANT. According to certain scholars [e.g. Law 2009; Mattozzi 2006] the origin and development of the Actor Network Theory consisted in a convergence of various lines of research, together with a certain level of superposition. For Law [2009, 141], ANT is not quite a paradigm, but rather a complex mix "of material-semiotic tools, sensibilities, and methods of analysis that treat everything in the social and natural worlds as a continuously generated effect of the webs of relations within which they are located."

Concerning our interest in economic analysis, it is particularly relevant that the first line of research in which ANT was born concerns the history and social analysis of technologies and technical objects [e.g. Akrich 1992a; Woolgar 1991]. ANT's second research object regarded scientific and laboratory practices [Latour 1987] which sometimes diverged from and built on other research in sociology of laboratory, such as that of Lynch [e.g., Lynch, Woolgar 1990] and Collins, as well as those that used an ethnomethodological approach. ANT's third research object concerned the study of work situations (workplace studies) and their actors (Callon and Woolgar), which could also be extended to an analysis of organizations and institutions (Czarniawska).

Two basic concepts, or research objects, emerged through this interaction and superposition of methodologies and theories, which also included sociology of disputes (Boltanski, Thevenot), epistemology, and poststructural philosophy (Serres, Deleuze, Foucault) [Law 2009]. ANT's focus in studying the "making of the social," that is societies and social structures, at least according to Latour, is the "tracing" of the processes of formation. Latour states, there is "no group, only group formation" [Latour 2005, 2, 27]. It is important to maintain, therefore, both a) a "symmetric principle" between "human" and "non human" actors, social actors, as well as "subjects" and "objects," and technical objects, etc., that build up social networks while studying laboratories, ordinary life, or work places; and, b) a "relational" analysis, according to which actors are not only linked, in social situations and through articulated webs (networks), but their very identity is defined by such relationships, and those networks which are variable in length, extent and complexity. Those connections create (and are created by) continuous mediation and translation. We will soon return to this concept of "mediation," because it is also considered a basic concept in finance and markets studies.

In any case, it is particularly through this analysis of the construction of "actors," that Latour, and other researchers, such as Akrich [1992b], utilized instruments

from semiotic studies. Actors, according to structural and narrative semiotics, are composed entities: they are agglomerates constructed by different instances of action as *actants* [Greimas and Courtés 1979]. These stratified and multi-composed actors – a composite of “meaning-action-molecules” are defined as actants; actants, in their original definition from linguistics, are intrinsically relational – necessitate an analysis “in action,” during their performances and within their specific connections with other participants’ actant roles. Scenes, contexts, situations are not finished in the form they were acquired: they are reconstructed in relationship to the maps that are constituted by their actantial networks and scripts.

For this reason, the second semiotic aspect we find in ANT regards “enunciative” and discursive (although not only verbal) chainings. These heterogeneous agglomerates of actions are concatenated in long performative sequences. They beg to be studied at another, more concrete, level: the discursive one, in which these chainings appear and become effective [Akrich and Latour 1992; Law 2007].

### **Actors and Discursive Dimensions**

Based on these points regarding the development of ANT we would like to try, firstly, to indicate the importance and redefinition of the category of “actoriality” (actorial dimension), by referring to research that observes markets and economy (in particular those of Callon and other scholars who are the leaders and founders of ANT). Secondly, we would like to stress a point that has perhaps not been sufficiently emphasized in action and script analysis, at the core of ANT: these actorial definitions cannot be separated by “figurative” dimensions as is instead proposed by semiotic studies and by certain researches in sociology of economy and finance<sup>2</sup>.

For instance, when talking about financial policies, a lot of metaphors are utilized. Recent examples such as “a shield against the spread” invoke war metaphors, and “dark pools” metaphorically represent “places” where liquidity circulates with

<sup>2</sup> The figurative dimension [e.g., Bertrand 2000] is basically defined, in structural semiotics, as the part of discursive content in which there is a “correspondence” with the expression and perception of the ordinary world; so for this reason, concerning the inserting in discourse perception level, it is a very relevant part of discourse. It can be present either in visual or in verbal languages. Also in the sociology of markets the concept of “figuration” is used, which is not so far from that proposed by semiotics. It comes, as it is stressed by Preda [2005, 125-127], from Bourdieu and Elias, and it is useful to analyze, among others, the “figure” of the “investor” as a cultural figure of global capitalism (as well as others figures typical of different moments of capitalism): this kind of analysis is important for Preda, because “figuration [quoting Elias], is a process through which individual selves and macrosocial processes are tied each other: it ensures that social facts are created concomitantly on the collective and on the individual level”.

information that is unavailable to the public, and for this reasons are considered “dangerous” and “risky” objects, that are also full of “interesting” possibilities for investments. All of these metaphors are composed by “figures” (that is to say, meaning organizations based on perceptual elements). These figures are implicated in “public” common knowledge, as well as in “everyday” and media generated discourses about finance and financial market. Therefore, apparently, they could be disregarded as not important or not relevant (part of a “rhetoric” of public discourse and journalistic communication of economy). In any case, it is instead evident that these figures contribute to constituting and maintaining this “financial universe of discourse.” They construct this discourse through continuous re-shaping activity. In addition, they “translate” it (so, for this reason, they also “mediate” it) into other kinds of practices and discourses [e.g., Preda 2005].

Given these aspects, the figurative dimension must to be investigated as an integrated part of a broader interplay that composes economic affairs. According to our hypothesis, this dimension could help us trace a possible analytical path that “crosses” these phenomena, instead of just “explaining” the economic-financial phenomena. These analytical tools could assist in identifying some of their basic components and structural organizations, particularly through an analysis of the construction of actors.

More generally, we believe such an approach could help us to redefine what “Discourse” means, particularly regarding “economic discourse,” or “financial discourse.” The reformulation, re-actualization and extension of the concept of discourse, as an array of enunciative practices, may be useful for social sciences; for theoretical reasons, but also concerning the analysis of concrete degrees of perception of “economic concerns” at a shared cultural and social level. This concept could be particularly useful for the current situation of persistent economic crisis, perceived as increasingly dramatic. Discourses, that circulate in cultures and are situated inside them, participate in redefining the horizons of these same cultures. They redefine their boundaries, provoking further reshaping of social events and even temporality. We would like to stress this point, because it addresses broad and important questions, including political and politico-cultural issues, and which are relevant for a broader definition of what values are for societies and cultures.

But first, what can we say about “economy” and “finance,” using ANT (accompanied by semiotics) analysis?

Should economic questions be “re-culturalized” (or “re-socialized”), as emphasized by some scholars [e.g. Gibson-Graham 2006]? Should they also be addressed by considering phenomena such as “counter-narratives” (critical social-movements)?

Should these economic affairs instead be addressed from a socio-cultural constructionist position [Callon and Muniesa 2003; Poon 2009]?

According to MacKenzie [2009, 42], in recent years there has been a “rebellion” against the boundaries perceived between social and economic phenomena:<sup>3</sup> “a range of authors – amongst them White, Granovetter, Fligstein, Podolny and Callon – have proposed a variety of ways of conceptualizing social processes not as ‘surrounding’ economic life but as being at its core.” The contribution of ANT in this direction is substantial and fairly radical [Callon 1998]. MacKenzie affirms ANT and Callon’s thesis in his analysis of emerging figure of “arbitrage” (a relatively new practice and transaction in finance based on profiting from prices differential using mathematical models), according to which, “economics creates the phenomena it describes, rather than describing an already existing economy.”

### **Sociological Tradition, Economy, and Passions**

The social sciences have always dealt with economic phenomena, but perhaps they have not stressed the construction of sense and cultural meaning in relation to economic practices enough, with some very important exceptions. There certainly has been much anticipation of this direction, from classics like Weber, Marx, Schumpeter, and Simmel, to Veblen. As in anthropological studies, we can see hints in the works of Polanyi, Marshall Sahlins, Hirschman, and again, in sociological theory, from Mary Douglas to Luhmann. Inside this long intellectual tradition we find a line of thought that stresses the idea that economic facts should not be seen as “natural”; or only under a “utilitarian vision” (such as an individualistic idea, and the presence of a unique and compact “homo oeconomicus”) but as defined by articulated meanings, semantic and semiotic constraints. Utility is a part of a universe of symbols, of significance; and this is real and true either in “Western civilized” cultures or in traditional cultures. And economic reasons are submitted to structural-cultural links [Sahlins 1976].

More specifically, markets are historical and socially variant emerging phenomena (neither “natural” nor obligatory). Their relevance is not static and fixed, but

<sup>3</sup> For MacKenzie [2009, 46]: “Of all the contested boundaries that define the discipline of sociology, none is more crucial than the divide between sociology and economics. Despite his synthesizing ambitions, Talcott Parsons played a critical role in reinforcing this divide. The economy, argued Parsons and Smelser [...] is a ‘differentiated subsystem of a more inclusive social system.’ Conventional neoclassical economics could, Parsons believed, quite appropriately be applied to that subsystem. The technical core, so to speak, of the workings of market economies was the business of economists, not of sociologists. In more recent years a revived economic sociology has rebelled against this intellectual division of labor, which Stark [...] calls ‘Parsons pact’”.

needs to be understood as stratified and connected to other shifting levels of cultures – such as material and everyday life concerns, rituals and ceremonies, spatial and temporal structures, etc. Their meanings are layered in different forms in different cultural moments. It is important to remember here the junction between this cultural approach and historical research such as that of Braudel, Wallerstein, regarding the emergence of a “world-economy,” and the sequences of capitalism as it emerged in its different phases [e.g. Arrighi 1994].

This principle of the “relativity” of markets brings to mind Hirschman’s classic work [1976] concerning his discussion of Weber and Marx and the continuity of emerging capitalism in relation to a re-organization of western cultural systems with respect to passions and sentiments (using the ideas of Spinoza, Montesquieu, Vico, Steuart and Adam Smith). In rethinking passions, and the idea of their analysis and control, a culture also transforms its modalities of action. New possibilities for chainings of action are constructed. In addition, unexpectedly, new forms of behavior and life emerge. New social structures are composed, while old institutions are captured in these new chainings and networks.

As stressed by Sen, in his appreciative introduction to second edition of Hirschman’s book, contemporary economics has particularly studied the “behavioral” dimension of economy (rationality, choices) that is connected to the “evaluation of information.” However, this has occurred specifically regarding incentives and the “efficient allocation of resources.” The “dark side,” the other face of action that we refer to as passions, has not been examined. Certainly economics has looked at “emotions” in recent years, but, again, they are seen as “incentives.” Affirming interests, according to Hirschman, during the development of capitalistic mentality, is controlling “harmful passions”: for instance, and more generally, it deals with indirect creation of unforeseen effects. Passions (as stressed also by semiotic theory) become “modulators” of actions, transforming them from the inside: rearticulating, providing new meaning. For instance, as also stressed by Sen, passions “eulogize interests” against the “folly of despotism,” building links through reciprocity of passions (such as power, “making money,” which are considered in the early stages of capitalism as a “calm passion”). Risk, in this sense, is a sort of a modulating passion within the semiotic approach to capitalism,. We must remember here the important works of Luhmann and Douglas that contribute in different manners to a consideration of late modern capitalist societies as “risk societies.” Risk modulations are accompanied, as well as created, by new socio-technological activities and devices. Financial markets are the most triumphant example of this.

Finally, according to Luhmann [1984, 383], “the semantic of competition” at the basis of market-oriented economy “is convincing only if there are occasions to confirm it. For social structures, this requires an adequate differentiation of competitive situations, which can be obtained only if competition can be adequately differentiated from exchange and cooperation.” In other words, competition (which is also a passion) requires a progressive complexification and differentiation of structures (including technological ones) and occasions to communicate (through discursive devices).

The theoretical route described here does not represent an homogeneous path - weaving through the disciplines of sociology, anthropological, history, history of ideas, theory of social systems towards ANT and semiotic proposals – yet it provides evidence for an approach that believes economy should be conceived as part of a wider network of socio-cultural linked practices, This approach may seem apparently obvious today in some ways, but in many examples, such as the common parlance of newspapers (traditional and on-line), or in processes of public opinion construction, this cannot be taken for granted.

### **Financial Discourse and its Figures**

For this reason, we need to return to our question of what is financial discourse today. Finance discourse has become somewhat autonomous in a paradoxical way. It has acquired an authoritative and prevalent voice, even in relationship to other discourses (such as the political one, etc.). This has also happened in other kinds of “technical” discourses, for example, “war discourses,” in political and international affairs. These share, significantly, many metaphors with the economic-financial discourse, such as “defense,” “under attack,” or the reference to financial instruments, such as derivatives, as “weapons,” and “shields,” etc. These kinds of discursive devices are in reality not homogeneous, they are “blended” and “blurred” discourses. Or better yet, “blurring” discourses: they join concepts, sharing – through *translation* activities, as said before – different kinds of meaning (“isotopies” in semiotics<sup>4</sup>). They develop metaphors, themes and narratives (such as “attack,” “war,” and “markets attack Europe”), as well as more or less stereotyped figures, which are in turn produced and translated by other kinds of discourses, from science, to fiction literature and movies (like “perfect storm,” “shock,” “contagion”).

<sup>4</sup> For a definition of “Isotopy,” from semiotic theory, as homogeneous semantic lines of coherence, inside a text or a discourse, or through different texts, see, Greimas and Courtés 1979. For an analysis of political discourse, specifically about “discourse of war,” see, Chilton 2004.



If we take a quick look at some of the main international magazines and newspapers' headlines starting from the autumn 2008, during the explosion of the "subprime crisis" (with the Lehman Brothers collapse, and the financial fallout) we find at least two main diverging tendencies. These tendencies organize thematic and issues through a coordination of narrative and figurative devices. The first tendency is a sort of eschatological narration, from *the Economist*' cover, October '08, "World on the edge"; or "Capitalism at Bay, to variations such as "The New Hard Times" (*Time*, October 13, 2008), with a photo of the Great Depression but accompanied by "no, isn't depression 2.0"). The second evokes a "self-critical" narration, with newspaper articles like that of Paul Krugman, that insist on critical analysis ("How did economists get it so Wrong?")<sup>5</sup> of the profession of economists and their "blindness" in their beliefs about idealistic and perfect "free-market economies." In Krugman's words:

As I see it, the economics profession went astray because economists, as a group, mistook beauty, clad in impressive-looking mathematics, for truth. Until the Great Depression, most economists clung to a vision of capitalism as a perfect or nearly perfect system. That vision wasn't sustainable in the face of mass unemployment, but as memories of the Depression faded, economists fell back in love with the old, idealized vision of an economy in which rational individuals interact in perfect markets, this time gussied up with fancy equations.

This critical point is interesting because it refers to a "vision" (disillusion, disbelief as also stressed by other "non academic" commentators, such as journalists). The narrative is oscillating between complaint and disenchantment, concerning faith in the "idealized" world of equations; and "blindness." The narrative, the theme and the figure refer to the narrative of "coming back to harsh reality." Krugman's denunciation continues by attacking this "blindness":

But while sabbaticals at the Hoover Institution and job opportunities on Wall Street are nothing to sneeze at, the central cause of the profession's failure was the desire for an all-encompassing, intellectually elegant approach that also gave economists a chance to show off their mathematical prowess. Unfortunately, this romanticized and sanitized vision of the economy led most economists to ignore all the things that can go wrong.

This critique is interesting because it deals with what we have been addressing through the construction of analytical methods: the idea that discourses (public discourses, made of not just of themes and issues, but also "figures," and figurative-

<sup>5</sup> *The New York Times*, September 9, 2009.

metaphorical schemas<sup>6</sup>) propose the frame, or, in this case, frame transformation, through which facts and actions are reconstructed and reoriented.

In their important book on the “new spirit of capitalism,” Boltanski and Chiapello [1999, 113] work on a deep analysis of an extended corpus of the “foundation texts” of this new capitalism (such as guidelines for managers, textbooks etc.). We find a new brand of capitalistic individual figures. In the 1990s capitalist figures are depicted as a new race of managers with the capacity of “being a radar” that can “locate a source of information,” but, at the same time, are “plunderers of ideas” with “intuition” and “talent.” This image contrasts with other older and classical figures such as the “captain of industry,” “conquistador,” or even Walras’ idea of buyers and sellers that engage in a reciprocal “*tâtonnement*.” The figure of the “investor,” or someone on the stock exchange, represents for Simmel [e.g. Preda 2005, 131] a “‘continuous excitement,’ ‘in an extreme increase in the rhythm of life,’ and the ‘point of the greatest excitement of economic life.’”

One could say that such figures and discourses are presented in this way by the media. But our idea is that this form of presentation, this form of “self-representation”<sup>7</sup> of economic phenomena (and for this reason cultural) is closely related to mechanisms of socio-cultural construction: they are productive. Here we touch again on the important and broader question: the relevance of the definition of discourse.

### Discursive Devices as Enunciative Chaining

Discursive activity is not just a “representational” activity, but, as stressed by a long tradition of linguistic, socio-linguistic and semiotic research, discourse is a way of a) producing, b) mediating, and c) simulating and showing something (action, inter-subjective, power and authority, relationships, etc.). From Benveniste [1966, 1974] to

<sup>6</sup> The idea of a “figurative reasoning” (see also, for a sociology of markets, Preda 2005) as proposed by semiotics is quite similar to some categories and concepts (such as metaphorical “schemas,” as proposed by the “experiential” and “embodiment” tendency of cognitive studies, particularly by Lakoff and Johnson [see Lakoff and Johnson, 1999]; and also in discourse analysis [see Chilton 2004], about political discourse, for instance, in his analysis of the framing of newspaper description of war, in an examples concerning the footage of events of the Kosovo war). Schemas, particularly spatial schemas, based on figurative-metaphoric organizations, emerging from our concrete embodied experience of the world, and provide orientations, filters, and coherence for the managing of events and the constructing of situations.

<sup>7</sup> According to the semiotician of culture Lotman, self-representation is one of the most important activities and devices in constituting and maintaining a “semiosphere,” a cultural universe: it concerns the way in which a culture describes itself, through different means (verbal and non verbal texts, discourses, etc.). For this reason it is important to understand here, in specific, the way in which a culture (or a part of it) “represents” its modes of perceiving “economic affairs.”

semiotics [Greimas and Courtés 1982; Fontanille 1999] and contemporary discourse analysis [e.g. Chilton 2004], discursive devices are seen as ways of building up scenes and frames (spatial, temporal, concerning items and issues, providing coherence to narratives) in which actions and situations take place. It is well known that this long trend in defining discourse as basically a cultural activity (with its capacity of locating actions and situations) has partially impacted the social sciences. This occurred in connection with the broader, and now canonized, “linguistic – and, later semiotic – turn.” The debate addresses the textual dimension: the constructive capacity of discourses to build up or, at least, reshape the objects of their attention; focusing on the same preconditions of action; or, finally, of self-observing scientific activity).<sup>8</sup>

Concerning these questions, and specifically the problem of the “naturalization” of objects in economy (and economics), Muniesa [2010, 15] states:

The economist produces a theoretical fiction, develops a model or an experimental setting that describes the functioning of that fiction, deploys a number of implications and consequences of this functioning and, little by little, this deployment starts to navigate into the world “out there,” to circulate within regulatory bodies, consultancy firms, banks, government departments, and to flow in what we curiously call the “real economy,” as opposed to the presumably “unreal economy” of economics.”

This process of naturalization is particularly relevant in Economics. Muniesa, as an ANT sociologist who focuses on markets, stresses this point:

Is this another example of modernistic forked tongue? Do economists tell they unveil economic laws but then actually institute them? Even in the hardest *laissez-faire* traditions of contemporary neoliberal economics, there is a realist sense of the fact that markets are constructed and that economists may need to work as constructors if they want to achieve their policy project, as pointed out by Michel Foucault in the case of neoliberal economics [*ibidem*].

<sup>8</sup> As it is well known, this debate is very ample and long-standing; these issues touch on many important questions that cannot be developed here: from Rorty’s opening of the debate during the 1970s, to the questions posed by Paul Ricoeur about the importance of textuality (and its renewal in relation to historical studies as well as in geopolitics and international studies) touching partially the positions posed by poststructuralism, i.e., with Foucault and Deleuze; and finally the socio-systemic constructivism of Luhmann 1984. Regarding ANT and Latour, the position seems to be a little different: Latour shares an immanentistic idea of social sciences that are constructed coming from “inside” societies and cultures, and shares the idea of a “semiotic turn” inside science studies: we find textual devices, also in “hard” and natural sciences. But, basically, for entities which are constructed it is important to study the strategies through which they have been “objectified.” Finally, this long debate touches, clearly, on the question of “naturalism”: either as the possibility for sciences to thinking about the “naturalization” of phenomena (let us think, for instance, about neuro-cognitive studies), or to “naturalize” objects in terms of perceiving them as “natural” ones, without necessity of discussing their own statute. For an interesting examination and debate about this question, concerning economics and economy studies, from the ANT and socio-anthropological point of view, see Muniesa 2010.

Quoting Foucault, Muniesa makes a reference to another fundamental turn point in the contemporary theory of discourse. The practice of power concerns the possibility, the performative capacity, of chaining different discursive devices. As is well known, Foucault, starting from his work on “discursive formations,” to his analysis of governmental practices, stresses this point. Discourse is no more (in semiotics, but also in this development of Foucault’s thought) just a question of “verbal language,” of “words,” but deals more and more with these *chainings* of heterogeneous formations (actions, figures, commands, strategies). Philosophers such as Deleuze [1986; see also, Deleuze and Guattari 1980], in his re-reading of Foucault, attests this point. Discursive devices concern the organization of meaning, strategies: they are “curves,” diagrams, trajectories that invest and form existences and situations (linked, or subjected, to power capacities).

Obviously, much depends upon the actors participating this interplay. For this reason, “neoliberal economics” is a discursive device (a “macro frame”<sup>9</sup>) that forges and states other discourses. The ANT paradigm allows us to insist on another important point. Muniesa [2010] states:

Perhaps the key to this [thought] experiment does not lie in the choice between reality and fiction (several compromises are possible in this respect) but in the position of the narrator as an author – of fictions or of realities. The economist can claim authorship of her axiomatic models without much trouble. But she would probably prefer to fade out in favor of markets themselves as authors of economic realities.

If ANT insists on links and interconnections between actors, semiotics also puts the accent on enunciation and discursive devices.

There seems to be a strong link between internal discursive organization and its capacity to connect and produce. The discursive capacity concerns three characteristics: production, mediation, and internal representation or simulation. The last characteristic regards the idea of “*mise en scène*”: the capacity of a discourse (also a “material enunciation”) to represent actors, stage situations, or demonstrate links between actors and space-time organizations. According to the first scholars who studied discursive mechanisms (such as Benveniste, although for verbal language), this kind of activity is important for displacing inter-subjective relationships and for providing the social models of those relations. This can work either in the case of verbal language, through pronominal systems with deictic organizations such as “me/you,” relationships of authority/power, or spatio-temporal categories such as “here/

<sup>9</sup> For an analysis in terms of different frames (from “ideological” macro-frames, such as “monetarism,” to the building up through narratives of policy making, to “framing moves” in abandoning old interpretive frames or “calibrating the shock”) in economy, particularly concerning politics and announcements of Federal Reserve, see Abolafia 2005.

there,” “now/before/after.” Enunciative activity can also refer to the connecting of spaces and different situations through chains of heterogeneous technological devices such as in the case of finance markets. Production refers to the invention of new scenes, setting scenarios for actors, but, at the same time, deals with the recombination of different kinds of practices and discursive (as well as practical and technological) activities. So, finally, we arrive at the question of mediation, as anticipated. Mediation is the category and concept that ANT has most significantly shared with semiotic analysis, and is perhaps the most important concept for ANT research [Mattozzi 2006; Law 2007].

### **Mediating, Producing, Mirroring, and Evaluating: Spaces for Finance**

Mediation is intrinsically connected to productive activity. If we take some examples of concrete analysis from sociology of financial markets such as those presented in Knorr-Cetina and Preda’s book [Preda 2005] (that do not directly utilize ANT yet have a strong relationship and active discussion with it), we can begin to understand in which way financial markets are based on network technologies, describing a world based on flows, but this world is very internally articulated (composed of different kinds of specialized communities). Technologies contribute to multiple realities, like the construction of specific economic “places” such as the “trading floors” that one finds in the most important global cities where stock exchanges are located. In parallel situations specific technologies create the possibility for dispersed “high-frequency traders” to conduct their activities in ultra-fast velocity. These places serve as “mediators” and “bridgehead centers of the flow architecture of financial markets” [Knorr-Cetina 2005, 41]. These are places in which screens provide an activity of “reflexive mirroring” of activities (and “reflexive instantaneously transmitted”): where information and contents inside this information are treated, extracted, and redistributed. There is a “world” of professionals and “corporate specialists” providing contents which are “not finished products” [*ibidem*, 42], such as information provided by corporations like Reuters, Bloomberg, Telerate; and a co-participating world, “sharing the screens,” through competence and practices, composed by traders. So “the market composes itself in these produced-and-analyzed displays in which traders are attached” [*ibidem*, 44]. And also technologies present different, articulated and combined functions. Screens, show, at the center, streams of dealing prices “displayed on the ‘electronic broker’” and automated dealing service showing “best bids and offers”; and the great information agents (Reuters, Bloomberg) offer their integrated network for providing instant data. This integration is not only matter

of technologies or of mathematics, but of a wider knowledge connected to a “culture” – and, again, figures and metaphors such as “haircuts”<sup>10</sup> or the same name of “Swaps” contracts, or “streams” and “volatility” are relevant in defining and delimiting those cultures. Indeed, a lack in this capacity to understand cultural knowledge can contribute also to a crisis, due to “misperception” and from here of “mispricings”; as well as forms of “imitation” in behaviors, as stressed by MacKenzie [*ibidem*, 48] in his work (quoted before), conducted with interviews to traders, and concerning “arbitrage” strategies, as proposed by LTCM (Long Term Capital Management) fund, and its crisis of september 1998. Concerning imitation, MacKenzie stresses this important socio-cultural process: “Firms do not choose courses of action in isolation; they monitor each other, and make inferences about the uncertain situation they face by nothing the success or failure of others’ strategies” [*ibidem*, 62]. And effects of imitation “run deep”: they could “affect the statistical distributions of price changes” with possibility of an augmentation of “extreme events.”

More generally, an ethnography [Beunza and Stark 2005] of these “mirroring working places,” such as a Wall street “trading room,” shows that all these forms of mediation between traders and sophisticated technologies (full of mathematical algorithms and softwares) require also a very articulated interplay, inside that workplace, between persons the people occupying different specialized desks who utilize specific “evaluative principles.” In this interactions machines and humans work together to pattern recognitions, using “distributed” and shared (not hierarchical) knowledge. In addition, and perhaps more importantly, these “collectives” share, transform and produce (as in laboratories studied by Latour and science studies) not only new knowledge, but through elaborating the information they also produce value. For instance, by analyzing, de-composing, and “separating” into parts specific information concerning a company or a financial interaction, these parts are reassembled into new content. New value is invented through this activity, which will be mediated and translated (also through technologies, screens devices) into prices, sales, buys, and mergers.

These financial systems are at the same time, reflexive and informative, place- and local-based, and connected to global networks, while they work on projecting, aggregating, and transcending data. They are also constructed by very strong and expensive “physical” infrastructures (“pipes,” as stressed by Podolny) while they produce forms of qualitative and social coordination. And, finally, they use cultural meta-

<sup>10</sup> Haircut is “when money is borrowed to buy securities such as bonds, and these are pledged as collateral for the loan, the haircut is the difference between the amount of money lent and the market price of the securities” [MacKenzie 2009, 63].

phors and figures (not only “mediatic”) such as those relating the “fluidity” (flows can be “solid and liquid”; markets are “sometimes thin and sometimes deep”).

### **ANT, Ethnographies of Finance, and the Semiotics of Calculations**

These examples seem to confirm and provide concrete coherence for some of the basic hypotheses proposed by ANT about economy, markets, and financial affairs:

*a)* economy is performative (Callon, Muniesa), not only in terms of “making something,” but in the sense of “inventing,” “making something real,” and “inventing itself” (such as new kinds of markets, financial products such as the “infamous” CDS, or Hedge Funds, etc., or strategies like the “arbitrage”);

*b)* economy and finance are “calculative” (Callon). They produce “objects” by transforming informational content into calculation and computation. This is not a truism, it is at the core, the central part of cognitive and pragmatic activity (i.e. semiotic) of economy: translating informative enunciations into calculable actions. For Callon, this represents the central issue for an anthropological analysis of markets;

*c)* value is invented. Obviously economy and finance work with “value,” but they also construct it;

*d)* the invented objects become not only new products, but also instruments and tools: “Derivatives such as swaps, options, and other financial instruments play an important role in the process of separating the desired qualities from the purchased security. Traders use them to slice and dice their exposure, wielding them in effect like a surgeon’s tools – scissors and scalpels to give the patient (the trader’s exposure) the desired contours” [Beunza and Stark 2005, 71-72].

This is a very important, as well as very complex, issue and characteristic of finance. It is not only “self-reflexive” and “meta-systemic” (such as meta-linguistic or meta-semiotic, in the sense that it describes itself by inventing another level of language and sense). Finance re-produces itself through these activities, but also by “disentangling” [Callon 2007]: “Selecting out of the trade those qualities to which trader [or “arbitrageur”] is not committed and involved.” This last process is intrinsically “semiotic,” in the sense that it is quite similar to mechanism discovered in enunciative activities. Discourses, or enunciations, are produced by heterogeneous chainings and, at the same time, by the continuous activity of “shifting-out” and “shifting-in,” or “engaging” and “disengaging,” in semiotic terms, “*débrayages*” and “*embrayages*” [e.g. Greimas and Courtés 1979; Fontanille 1999]. At the same time, discourses are involved in the practices of transformation of financial material (through “cuts and

paste,” recombinations, selections and retreatments), through which new individualizations<sup>11</sup> emerge.

### **Conclusions: Between Calculative Devices and Material Semiotics**

In conclusion, there are some main points that seems useful to stress here. If, according to Callon [1989; Callon and Muniesa 2003; Callon, Millo, and Muniesa 2007], markets are “collective calculative dispositifs,” an ANT and “material semiotics” oriented anthropology of markets [Law 2009] needs to “open” these “Pandora boxes” (paradoxically, according to Callon, neglected by economic sciences, considered only in an abstract way concerning finance markets). In this direction, it is important to remember that Callon [1989] insists from the beginning on the fact that these “collectives” are, first, made by calculative agencies, that, second, require organizations and in which, third, conflicts (between, at least, a seller and a buyer, opposing these agencies) are important because of the fact that markets are entities that originate in treating conflicts (although inside specific times and spaces configurations). They deal with conflict either at a micro-level (between operative agents, such as buyers but also between traders) as well as at macro-levels in a more explicit way (let us think about when finance discourse is incorporated into political discourse and there are statements such as “the declaration of the German finance minister sounds like a real declaration of war”). These conflictual aspects also assist the continuous invention of new kinds of markets, which are interlaced, superposed and layered between them.

There is a critical point here, and a possible disagreement (even if there are also many points of convergence), between ANT and the ethnography of financial places, as we have seen before:

Ethnographers tend to present actors who only rarely devote themselves to arithmetic operations in the strict sense, but who interpret information and take decisions on the basis of heterogeneous, not necessarily well-defined criteria. In the final analysis, nobody calculates (the logical outcome of considering calculation in its limited sense) [Callon and Muniesa 2003, 5].

Perhaps this critique and different points of view are over estimated or perhaps overcome in recent research [e.g. Law, 2007]. In any case, the idea of calculation as

<sup>11</sup> According to Callon and Muniesa [2003, 11], and resuming Latour, “the process of individualization or singularization consists in a gradual definition of the properties of the product, shaped in such a way that it can enter into the consumer’s world and become attached to it.” This could be maintained also for financial products.



proposed by Callon remains at the center of ANT approach to financial markets. We must remember that this idea goes, evidently, beyond ordinary idea of “calculation.” It concerns the origin of the concept of “calculation” and its meaning. By quoting Benveniste’s research on the roots of the Indo-European language vocabulary, Callon and Muniesa indicate that the meaning of the word “calculation” also originates in cutting and spatial separations, and that there is a common root “between calculating and estimating.” Secondly, calculation refers to “picking up” something (such as information, numbers, quantities, but also evaluation and content value) and connecting it, combining it with, and within, other varieties. For Callon and Muniesa [2003], “calculation starts by establishing distinctions between things or states of the world, and by imagining and estimating courses of action associated with things or with those states as well as their consequences. By starting with this type of definition (wide, but usual) of the notion of calculation, we try to avoid the distinction (also conventional, but too sharp) between judgement and calculation.” This definition is also the starting point for other ANT researchers who analyze finance and the events that provoked the recent financial crisis [see Poon 2008], such as the fallout of subprime mortgages in the 2007-2008 financial market. Poon insists again on the “making” and “remaking” of objects, such as derivatives, mergers, transformations, transferring to other financial groups. Poon indicates that these operations concern calculative capacities as well as evaluation and recombination of such objects.

The main issue here is the extension and generalization of calculation. The question today in analyzing finance markets, according to Poon, is the “score”: how to score? That is to say, how to calculate prediction, how to adopt standard procedures for evaluating the qualities of products (in the sense of financial products), how to automatize these procedures, translating them in hybrid instruments (made of mathematics algorithms, softwares, sources of information and displays), as places where other agents can have access and share treated scoring information. In recent decades, as stressed by previous research, a lot of instruments have been created for these tasks, such as those proposed by the same financial agencies (for instance, the notorious GSE Freddie Mac, the Government Sponsored Company of financial services which offers credit scoring services; similar integrated services provided by the company FICO, which is one of Poon’s research objects).

Instead, one could see the problem as the “augmentation of complexity” due to the superposition of these different financial objects (from mortgage funds, to securities, or bonds, which become, at the same time, agents), their markets, their scores, and evaluations (connected with purchasing and buying activities, etc.), and the consequent forms of translation, recombination, merging between them. Sometimes the scoring is produced by “black boxed in pre-packaged analytical products.” More

generally, activities (also markets and capital activities) are embedded in technologies and their networks. This complexification<sup>12</sup> can also provoke unexpected processes and effects. Therefore, according to Poon [2009, 5]:

If the overarching problem is to organize heterogeneous actors to agree upon the qualities of goods then there is strong reason to suspect that the recent explosion of secondary subprime financial activity is the result of a process thorough which a novel chain of mortgage valuation has been put into place. Rather than assuming that calculation is a monolithic means to market organization, however, this research takes for granted that calculative activities are by nature disorderly – that is, that at the outset, there are as many potential solutions to a problem of valuation as there are participating agents. From this position, stories about paradigmatic shifts towards quantification, models, or risk management are inadequate explanations, for even if such movements could spontaneously occur, it is unlikely that agents working on a calculative problem independently, from different fields, would spontaneously come to the same evaluative results.

If we take the ANT and the “material semiotic” points of view into consideration, as proposed in this paper (also based on Law’s proposal), we need to study calculative practices (that are more or less delegated to technologies, and more or less embedded in them), together with mediation and observation (expressed by the same calculating agents, and accompanied by discursive configurations). Discourses contribute to the construction of coherence, frames and identities of agents, in the situations in which they live and work. We must conclude here with several questions. There are two issues that could profit from further consideration, but necessarily remain open here: the first regards the problem of value, the creation of a new definition of value with respect to practices relating to the construction (and destruction) of value, taking into account the definitions proposed by semiotic studies. The second issue is related to the effects that extend outside the universe of financial markets, as in the recent global crisis. Is there a place for a critical economic analysis, that also utilizes ANT, in perhaps a new, and not “naturalistic” or ingenuous way?

<sup>12</sup> As Poon continues [2009, 7]: “In the case of mortgages, making debts fungible involves numerous transactions crosscutting what might be considered four distinct markets arenas: First, there is market for real estate where home buyers and sellers meet to exchange property. Next, there is the market for loans, where homebuyers receive credit from financial institutions. Third, there is the point of exchange between mortgage brokers and wholesalers who pool loans.”

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## **Forms of Economic Discourse, the Crisis, and Financial Markets**

### Analysis and Research Perspectives From Actor Network Theory to Semiotics

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Abstract: In recent decades there has been a new wave of studies in sociology and anthropology of economy and markets. The Actor Network Theory (ANT) is one of the primary new approaches. The intention of this paper is to review some of the main aspects of this line of research. In addition we wish to highlight links between ANT and semiotics, stressing the role played by semiotics in the development of ANT, as well as indicating new developments. We will examine these developments particularly in relation to economy and markets studies regarding financial markets.

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*Keywords: ANT, Anthropology of Markets, Semiotics, Sociology of Finance, (STS) Science and Technology Studies.*

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