

Callon, Michel

Article

Why virtualism paves the way to political impotence: A reply to Daniel Miller's critique of "The laws of the market"

Economic Sociology: European Electronic Newsletter

Provided in Cooperation with:

Max Planck Institute for the Study of Societies (MPIfG), Cologne

Suggested Citation: Callon, Michel (2005) : Why virtualism paves the way to political impotence: A reply to Daniel Miller's critique of "The laws of the market", Economic Sociology: European Electronic Newsletter, ISSN 1871-3351, Max Planck Institute for the Study of Societies (MPIfG), Cologne, Vol. 6, Iss. 2, pp. 3-20

This Version is available at:

<http://hdl.handle.net/10419/155843>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

WHY VIRTUALISM PAVES THE WAY TO POLITICAL IMPOTENCE
A REPLY TO DANIEL MILLER’S CRITIQUE OF *THE LAWS OF THE MARKETS*

Michel Callon

CSI- Ecole des mines de Paris

In 2002, Daniel Miller opened a controversy by contrasting the realism of his virtualist program with the unrealism of my program which defends the ‘performativity of economics’- thesis (Miller 2002 - see footnote for an abstract of Miller's article).¹ His critique raises a number of fundamental theoretical questions. To clarify the debate I have chosen to start with these questions and present what I see as the core assumptions in the program presented in *The Laws of the Markets* (hereafter referred to as LoM) (§1). I then show (§2) that on each of these core assumptions Miller’s positions differ from mine. Finally (§3), I explain why, unlike Miller, I see realism in my program and unrealism in his.

1. THE PERFORMATIVITY PROGRAM AND (SOME OF) ITS CORE ASSUMPTIONS

Talking of the performativity of economics means assuming that agency is distributed and that concrete markets constitute collective calculative devices with variable, adjustable configurations. It also means that the role of critique is limited to clarifying differences and local asymmetries in order to raise the open question of experimentation with new forms of organization.

Agency

In order to understand the theoretical implications of the controversy we need to start with studies of agency and especially those following the so-called “distributed action and cognition” approach (Hutchins 1995). These studies have contributed towards a complete change in our conceptions of relations between individuals and groups, as well as our views

¹ In *Turning Callon the right side up* Miller argues that, contrary to his own claims, Callon's work amounts to a defence of the economists' model of a framed and abstracted market against empirical evidence that contemporary exchange rarely if ever works according to the laws of the market. Miller starts with an example from an Indian village, which shows how other societies also try to frame particular genres of exchange to protect themselves from other varieties of exchange. But both there and within capitalism the frame is precisely a moral system of how exchange ought to be carried out. Miller then uses the example of car purchasing to suggest the highly entangled world of actual exchange within capitalism both between the exchange partners and also between consumers and commerce more generally. Indeed, the actual case studies in Callon's *The Laws of the Markets* seem to support this conclusion rather than the model put forward in his own introduction and conclusion. These studies, as others cited here, suggest the centrality of entanglements also for higher-level exchanges, such as stock markets and corporate take-overs, and not just for shoppers or other individual actors. As an alternative to Callon, Miller briefly summarizes an argument published elsewhere, called 'virtualism', in which Miller examines the increasing ability of economists and other agents of abstract models such as audit and consultancy to transform the world into closer approximations of their theories and models. Miller suggests this provides a more fruitful way of understanding the growth and power of abstraction in the contemporary economy.

of collectives and society. Since they can hardly be summed up in a few lines and are starting to be well known, a reminder of the main points will suffice.

Agency as a capacity to act and to give meaning to action can neither be contained in a human being nor localized in the institutions, norms, values, and discursive or symbolic systems assumed to produce effects on individuals. Action, including its reflexive dimension that produces meaning, takes place in hybrid collectives comprising human beings as well as material and technical devices, texts, etc. Different disciplines and approaches have used various concepts to describe those collectives, including socio-technical arrangements (Barry 2001), communities of practice or epistemic communities (Knorr-Cetina 1999; Lave and Wenger 1991; Amin and Cohendet 2004), hybrid collectives (Callon and Law 1995; Latour 2005), socio-technical diagrams (Deleuze and Guattari 1998) and situated actions embedded in their settings (Suchman 1987). Provided that it is extended to materialities— as its etymology suggests – the concept of habitus as developed by Bourdieu corresponds to this approach. The following points are relevant to the debate in question:

- a) Action is a collective property that naturally overflows. To be attributed to a particular agency, it has to be framed.
- b) The forms of agency are therefore multiple and diverse. Depending on the nature of the arrangements, of the framing and attribution devices, we can talk of agencies reduced to adaptive behaviours, reflexive agencies, calculative or non-calculative agencies, or disinterested or selfish ones, that may be either collective or individual.
- c) These agencies, like Hobbes' Leviathan, are made up of human bodies but also of prostheses, tools, equipment, technical devices, algorithms, etc. The notion of a cyborg aptly describes these *agencements*. Because agencies are made they can be (re)made, at least to some extent. (Re)configuring an agency means (re)configuring the socio-technical *agencements* constituting it, which requires material, textual and other investments.² We can and even have to conceive of the invention of new forms of arrangement (like the interactive diagram clearly described by Barry (2001) and Rose (1999), that they distinguish from the disciplinary diagram as described by Foucault). The exploration and description of these different forms of agency, as well as the analysis of their (possible) diffusion, constitute an immense project ahead of us. It is situated in the continuity of Max Weber's work and the different forms of rationality of action that he distinguished.
- d) Everything in these *agencements* that makes it possible to locate sources of action, establish origins, assign responsibilities, and account for profits and losses associated with a particular action, plays a strategic part in shaping agencies. In particular, I have in mind copyrights, property rights, human rights, etc.
- e) Asymmetries between agencies may be considerable. Certain agencies (and *agencements*) can be likened to macro-actors capable of strategies, of instrumentalization, while others are reduced to points, sometimes to bodies, condemned to repetition, to automatic behaviours. This is why the theme of handicaps and disabilities is becoming strategic (Moser 2003; Winance 2001). It provides an analytical framework to account for relations

² I use the french word *agencement*, instead of arrangement, to stress the fact that agencies and arrangements are not separate. *Agencements* designate socio-technical arrangements when they are considered from the point view of their capacity to act and to give meaning to action.

of domination-exclusion between agencies, and to interpret behaviours of resistance or recalcitrance (Callon 2003).

- f) In the same way that traditional sociology has highlighted the fact that an individual can go from one form of rational behaviour to another, or be torn between several roles or personalities, we can consider that different agencies mix or merge with others, as in the case of economic markets that we know combine both calculative and non-calculative agencies (see, for instance, analyses of the blood market: Steiner 2001).

This substitution of the socio-technical *agencement* for the individual-human-agent embedded in institutions, conventions, personal relationships or groups sharing identical values has important consequences, notably on our understanding of economic activities and especially markets. It helps, in particular, as suggested in *The Laws of the Markets*, to treat symmetrically calculative and non-calculative agencies. To put it bluntly: there is as much artificiality in the altruistic gift, in the interpersonal relationship (based on trust, for instance) as in the striving to maximize profits. Both forms of agency imply huge investments, especially material. Neither of the two is more human or anthropologically correct than the other (Callon and Law 2005).

By taking into account the diversity of *agencements*, this point of view has other implications, some of which have also been highlighted in *LoM*. Instead of assuming, for example, the existence of a spirit of capitalism or an overall logic of a mode of production, we can relate certain forms of economic activity to the more or less chaotic, regular and general upsurge of calculative agencies formatted and equipped to act on the basis of a logic of accumulation and maximization. Weber clearly anticipated this analysis by characterizing capitalism from the point of view of both the forms of subjectivity that it imposes and the accounting tools (and especially the double-entry bookkeeping) that it uses. The concept of socio-technical *agencement* extends this analysis by emphasizing the diversity of equipment and its capacity to evolve and to be transformed. Markets monitored by US pension funds that measure shareholder value trends do not function in the same way as markets in which banks are the main shareholders, interested only in industrial policies. The French school of regulation clearly grasped this variability in which it highlighted the diversity of types of capitalism (Boyer 2004). But instead of situating it, as it does, in institutional macro-arrangements, it seems preferable to try to locate it in socio-technical *agencements* themselves. The performativity program starts with an ethnography of socio-technical *agencements*.

Entanglements and disentanglements

Agencies are at the centre of markets and their variety has to be taken into consideration, but they are not the only component. The existence of a market implies the circulation of merchandise, that is, the existence of goods transformed into things that can be passed from hand to hand. This circulation is simultaneously a process of production and qualification that transforms products and in so doing qualifies them in such a way that they are attached to users by entering their world and becoming parts of it (Callon, Méadel et al. 2002). But market circulation also implies that this (more or less lasting) attachment induces a transaction after which the agencies involved are quits.

It is at this precise point that the theme of entanglement and disentanglement, as analysed by Thomas, comes into play (Thomas 1991).³ It has been studied in detail in the case of innovations. The design, production and commercialization of a new product or process mobilize a large number of actors and imply collective work in which end users, among others, are involved. That is why there is often co-design and co-production of the supply, the demand, and the goods around which they are shaped. Even in the case of incremental innovations that concern only so-called commercial aspects this collective mobilization exists. Users, among others, are always represented in one way or another. Studies on innovation show that the collective dimension is increasing and that consumers' commitment is becoming systematic. In general, we can say that there can be no innovation without representation, in one form or another, of all those who at some stage are directly concerned by the innovation in question. Another way of describing this evolution is by highlighting the growing importance of entanglement strategies and practices everywhere. The more competition implies innovation, i.e., the qualification and singularization of products, the more their fine-tuning, i.e., the profiling that attaches them to the consumer, involves explorations, investigations and relations that weave a web of entanglements between the agencies (Callon, Méadel et al. 2002). An increasing number of heterogeneous actors participate in the creation of this web, including marketers, packagers, advertisers, designers, merchandisers, sellers, etc. They are reducible neither to intermediaries nor to manipulators. We could call them professionals of entangling (or embedding).

Daniel Miller is right to highlight this trend. I also see it as one of the core components of the functioning of markets. Without these professionals goods could not be transformed into merchandize since they would lack what Marx called their use value or what I prefer to describe as their profiling (meaning these goods' entry into the socio-technical world of certain agencies, often requiring its transformation).

I can understand why economic sociology and anthropology tend to concentrate on these mechanisms. They are a godsend for scholars who feel that they are invested with the mission of rehabilitating social relations – values threatened by cold and inhuman economics. Yet that's only half the story. The proliferation of entanglements, through the qualification-singularization of goods, should not cause us to forget the necessary disentanglement of these goods. It ensures that the protagonists are quits. As entanglements multiply, disentanglements, without which no accumulation would be possible, become increasingly problematical and difficult to obtain. Yet since this is a matter of a market, it is necessary to have disentanglements and monetary compensations to free the agencies. When I was young one would have described this difficulty as a contradiction. Nowadays I prefer to talk of tensions or better of problems to solve. An anthropology of disentanglement would be fascinating. As the old Marx so clearly saw: there is no exchange value without a use value, and no use value in a market regime without the production of an exchange value. Reformulated after the anthropological turn: there can be no disentanglement without entanglement, and no entanglement that does not lead to disentanglement. The taking into consideration of property rights and, more generally, of law is seen to be at the centre of this anthropology, itself simply a sub-set of an anthropology of possession.

³ “Commodities are here understood as objects, persons, or elements of persons which are placed in a context in which they have exchange value and can be alienated. The alienation of a thing is its dissociation from producers, former users, or prior contexts” (Thomas 1991:39).

To illustrate this point, take Miller's example of Sophie and her car salesman (Miller 2002). As Miller rightly points out, the discussion at the end of which Sophie may take out her chequebook could not take place if the car market had not been strictly framed. Imagine the same scene if, in their interaction, Sophie and the salesman had to take into account its effects on traffic jams, climate change, exploitation of workers in countries of the South working for car manufacturers, the victims of road accidents, etc. My argument on framing and overflowing is all about that. For the transaction to take place we have to exclude from the market frame all these elements that are not to be taken into account, at least for the moment. This specific case shows us that there is nothing eternal about this framing and that it can be challenged at any time. Probably not by Sophie or her salesman who are absorbed by the future transaction and have other cats to kill, but by actors who feel concerned by these overflowings. This brings to mind Illich and his generalized calculation, who takes into account what Sophie and her salesman refuse to take into account and that leads to the following striking result: once all the externalities have been internalized, the speed of a car is slower than that of a cyclist (Dupuy and Robert 1976). This massive framing that is well known and controversial does not sort out problems of entanglement for once and for all. On the contrary! It produces a stage on which the process of entanglement-disentanglement can be managed by the agents engaged in the transaction. Once rid of global warming, traffic congestion, problems of urban tolls or road safety, our two heroes can focus on the qualification of the car that Sophie is (maybe) going to buy and on the process of that car's particular attachment to her world. This process of attachment, that I have called singularization, comprises the operations described by Miller. Once it has been achieved (assuming it is achieved) and Sophie has made up her mind, the market transaction can take place. As noted elsewhere, the object of the transaction may be a service, irrespective of how 'immaterial' it may seem. For example in Sophie's case the sale may include a leasing contract or after-sales services. But since all that is specified and qualified, salespersons and buyers are quits once the transaction has been completed. In other words— and this is where Thomas is so valuable— the disentanglement of the car from the seller's complicated and heterogeneous world is accomplished. And this is because the goods are detached and reattached that the two agencies become quits: the two processes are strongly intertwined. In other words it is quite impossible to separate the two issues of the embeddedness and of the alienation of (commercial) goods. It is common sense: the consumer buys only what he or she wants to buy but, as everyone knows, this will is not already there, it is co-constructed along with the good and with the salesperson and all the professionals of embedding.

To account for the market transaction between Sophie and her salesman we need to go further than Miller. We need to describe— as we have done in (Callon and Muniesa 2005) — not only the operations of framing that exclude and externalise overflowings, but also all the mechanisms (that we have called algorithmic mechanisms) that prepare and organize the encounter between individual agencies and the *capture-captation* (Cochoy 2004) of Sophie by a Renault salesman rather than by one from Rover. This encounter, that we have shown could be said to be calculated, allows the dual logic of entanglements and disentanglements to be deployed. All in all it becomes impossible, and unrealistic, to separate the two. What are called values and meanings, and that I prefer to call attachments and entanglements, are at the heart of the transaction and of the disentanglement through which it is concluded. This is what the general hypothesis presented in *The Laws of the Markets* means in concrete terms: to disentangle one has to entangle.

Economics

If we agree that, in order to exist and function, concrete markets require a set of investments and operations to shape calculative agencies, to qualify and singularize goods, and to organize and stabilize the encounters between goods and agencies, the question that arises is: How can this collective work be described and analysed, and who are the actors involved? The notion of an institution (or of a social network), at least in its traditional sense, is too restricted to describe the socio-technical arrangements that markets are. Institutions, as defined by the neo-institutionalists who emphasize property rights and their enforcement (Aoki 2001), but also by institutionalists like Commons (1934) or more recently by the new economic sociology, leave little room (if any) to material devices, technologies and, more generally, action and distributed cognition. The merit of the article by Marie-France Garcia, that I presented in detail in the introduction of *LoM*, is that it excludes none of these components.

The actors engaged in the construction and functioning of concrete markets are legion. All the usual suspects are there: firms, consumers and their organizations, researchers from private enterprises or government labs (natural or life sciences), technological engineers, lawyers, accountants, civil servants who draw up regulations, consultancies, patent offices, etc. – and economists. There is no reason to shorten or close this list, or even to confine ourselves, as is often the case, to the producers/consumers twosome. Concrete markets have the singularity of teeming with multifarious actors and entities and at the same time of constantly being framed, shaped, rarefied in a sense, to organize market transactions and ensure their aggregation (Neil Fligstein is right to emphasize the question of stability, but it should not cause us to forget the diversity of the agencies involved and their constant proliferation).⁴ It is therefore quite natural for the anthropology of the economy that I propose to grant a place to economics and thus to become an anthropology of (the) econom(y)ics. There is no reason *a priori* to deny economics the possibility of participating – with its not inconsiderable means and on its own terms – in the design and in the functioning of concrete markets.

The anthropology of (the) econom(y)ics implies that there is not on the one hand a reality (concrete markets) and, on the other, discourses, analyses that account for this objective reality in a way that is true, or scientific, to a greater or lesser degree. The economy is a world that includes economics as one of its components in its own right. The modalities of this inclusion and the forms of intervention and representation of economics vary, both in time and in space. The economy obviously existed before economics became a formal academic discipline, but this does not mean that we went from a state of non-reflexivity to one of intense reflexivity, monopolized by a small number of academic researchers. Any concrete economy is reflexive; the only change is in the social organization of reflexivity. The history of auctions is a good example. Their origins probably go back to the dawn of time. Their conception and the innovations constantly spawned by their organization, attest – if ever it were necessary – to the ability of the actors themselves to explain their practices and deliberately to alter them. But it is obvious that in recent years their capacity for reflection, representation and intervention has increased spectacularly (Muniesa 2003; Guala 2001). I think a few preliminary remarks will be useful to define the outline of a work

⁴ This is what Coriat and Weinstein highlighted in the following phrase: “A market is a lasting system governing relations between a changing set of actors”, Coriat, B. and O. Weinstein (2004). “Institutions, échanges et marchés.” *Revue d'Economie Industrielle*, (107): 37-62.

program designed to describe and analyse this increasing involvement of economics in the conception and experimentation of concrete markets:

* The term economics should not be considered in a limited sense. Disciplinary divisions are certainly essential, and it is important to respect the boundaries between specialities, not to mix accounting and econometrics, game theory and the analysis of general equilibrium. But it is even more important to plunge these disciplines, specialities and scientific and technical communities back into the networks in which markets are conceived of and transformed, that is at least into the markets themselves. The concept of a network, taken in a very general sense, is useful because it does justice to all kinds of flows linking actors and their competencies, but also because it is open to and compatible with all possible organizational architectures and with the iterations and collective dynamics required by this work of conception and implementation. Economists and marketing specialists who live in university departments *are stakeholders in the markets* they study, simply because they are in networks connecting them to the CEO, to the employees (sometimes!), to bankers, trade unions, social movements, etc. They are *stricto sensu* market actors. The fact that they do not play the same part as the others is obvious (and depends mainly on their place and role in these networks), and in itself constitutes an interesting subject of investigation.

We can agree to use the term *economics at large* to refer to all the activities, whether academic or not, engaged in these networks and aimed at understanding, analysing and equipping markets. This is why, somewhat provocatively, I spoke of the embeddedness of economies in economics. The expression was intended to highlight – strikingly I hoped – these entanglements, this web of relations and, above all:

- a) the idea that economics, in its academic version, should not be considered *a priori* as lying outside its supposed object (concrete markets)
- b) that economic agents, whoever they are, are generally reflexive and can be considered as economists in the wild (on the notion of researchers in the wild as engaged in cooperative work with confined researchers see: Callon 2003)
- c) that the modalities of cooperation between these different types of economists (academic researchers and researchers in the wild) constitute a subject of investigation. To study the relations between this economics at large and the market that it helps to analyse and on which it acts, the only strategy is to follow the web of links and relations and not to consider *a priori* that it lies outside its object.

Several chapters of *The Laws of the Markets* do depart from this methodological precept (they are there to document the processes of framing and overflowing, entanglement and disentanglement). In my opinion the articles of Hervé Dumez, Frank Cochoy and Peter Miller, among others, showed the fecundity of this point of view. Since then there has been a proliferation of contributions.

* The involvement of economics at large – we could talk of economists at large – is becoming highly visible. In other words, economic activities and markets, defined as technico-economic networks, include a growing number of actors concerned in some way by the analysis, equipment and shaping of markets. It seems that Miller agrees on this point – as the book that he edited with James Carrier attests (Carrier 1998). Evidence of the trend abounds: colonization of international organizations and regulatory bodies by economists from the academic world or close to it; development of academic specialties directly related to the emergence and conception of new forms of organization of markets (for instance studies devoted to the microstructure of financial markets); even work related to the

conception of auctions in increasingly diverse areas and, more generally, to the growing use of experiments oriented - as Francesco Guala shows - more towards the building of markets than towards the testing of theories (Guala forthcoming). Likewise, the formulation of rules of corporate governance and the conception of public policy tools (with agency and contract theory) are gradually being transformed into a field for the application and experimentation of economic theories (Laffont 1988). Entire economies, for instance those of Eastern European or South-East Asian countries, are explicitly considered to be laboratories. These sketchy observations are nevertheless superficial. They leave the question of the effects of this growing involvement of economics in the economy open. But if we take them seriously they prompt us to develop the analysis of webs of entanglement woven by the different actors participating in the performance of markets. Everything done in the sociology and economics of innovation, in Science and Technology Studies (STS) and, more generally, in the tradition established by Foucault, can be mobilized to understand the specific role of the social sciences in the conception of new arrangements and of the subjectivities that they impose, and to monitor the effects that they produce on the construction of economic markets.

* What is the role of neo-classical economics in this process of configuration-reconfiguration of concrete markets? The modalities and effects of its involvement vary, depending on the sector or the territorial space. If we characterize this current of thinking by the hypothesis that any collective can be considered to be composed of individual actors with their own preferences (or functions), capable of calculating (in the broad sense) their decisions and choices, it is not wrong to say that neo-classical economics occupies a key position. The anthropology characterizing this economics (and that I propose to call neo-classical anthropology to highlight the fact that any economics is an anthropologies), which sees any individual as an autonomous subject capable of intentions and a free will, responsible for his or her acts, is becoming pervasive. The question is no longer 'Is this anthropology true or false?', but 'Is this anthropology able (Where? How? For how long and in which spaces?) to perform, to enact, a reality corresponding to what it says?' This type of question, that may seem strange to a positivist mind, becomes meaningful when we accept the conception of agency presented above. The forms of agency are variable and, to some extent (but only to some extent), plastic and adjustable. Not everything is possible, but there is no universal rule to indicate *a priori* what is possible and what is not. What is possible is determined in the test of performance: anthropology, like any science, is theoretically open to these tests; it should even initiate them and strive for them. In other words, we need to ask what the cost is, in terms of practical operations, for this neo-classical economics to gather the instruments, prostheses and devices needed to constitute the *agencements* required in the emergence and survival of the very particular (and highly improbable) agencies that it promotes. To be complete the question has to be taken further by extending the inquiry to the forms of encounter between the agencies thus defined (algorithmic configurations), and to the strict separation between entities considered to be non-humans, that can be transformed into merchandise, and entities qualified as humans, who are allowed to produce and to trade that merchandise.

The work of Timothy Mitchell (2002), Janet Roitman (2005), or Julia Elyachar (2002) on countries and economies of the South and their entanglements with those of the North, admirably describes the investments required in the construction of individual agencies that fit the models of neoclassical anthropology. They also show up the role of this anthropology in the formatting of encounters and the framing of humans/non-humans that allows the 'liberation' of merchandise. This anthropologies' capacity for performance is variable or, in

Austinian terms, its felicity conditions are by no means always united – if only because there are other contenders, thank God! The principle of symmetry reminds us that we have to bear in mind that other projects of other agencies exist (whether they are developed by confined social scientists – academic economists, anthropologists, sociologists, etc. – or in the wild – by regulators, international bodies, ministries, consultancies, lawyers, etc.) and that they may be successful or try to be. If I were asked for a brief assessment, I would say that the scales were currently tipped in favour of neoclassical anthropology and the institutions and material devices that it requires. As the domination of this anthropology increases, it becomes more capable of gathering the resources to set up a world, that is, the *agencements* that make it possible and real. What worries me most – and this comment is intended to show my non-neutrality – is the growing combination of neoclassical anthropology and biosociality anchored in genomics. As social scientists like Deborah Heath and her colleagues (Heath, Rapp et al. 2004), or Paul Rabinow (1992) have clearly shown (and Vololona Rabeharisoa and I are trying to develop this approach: Callon and Rabeharisoa 2004), genomics and proteomics powerfully contribute towards the enactment of such agencies, that is, the performance of the individual Western agent with the particular forms of subjectivity that it implies. To put it bluntly, neoclassical economics and genomics have both the somatic and the extra-somatic resources that make the proliferation of the Western subject possible – and ineluctable?

* There is no reason for the anthropology of (the) econom(y)ics to limit itself to neoclassical economics. The latter has certainly acquired a privileged position, but in certain areas such as the economy of innovation and related issues (patent law, conception of public research policies, etc.), evolutionary economics *à la* Schumpeter, Freeman or Nelson-Winter is omnipresent and influential. Without wanting to go too far, I would add that certain heterodox or even radical currents could (and sometimes do) develop connections with alternative experiences, in the field of the solidarity or social economy. In any case, in order to describe the work of economics at large and the different forms of its participation in the organization of concrete markets, most of the investigative work remains to be done. We will probably find that alliances between social scientists (including economists) and agencies in the wild proliferate. I will simply cite a few examples that are starting to be amply documented. First, intellectual property rights which, nearly ten centuries ago, founded a *de facto* and *de jure* anthropology that the social sciences subsequently developed further. In the enactment of the neoclassical version of homo oeconomicus, this issue is crucial. We are currently witnessing the formation of practices and the construction of theoretical arguments that propose new modalities of attribution of rights. Examples include open sources, patents on drugs or genetic material, but also increasingly virulent criticism of practices such as micro-credit or micro-enterprises. Another example is provided by recent debate on the movement initiated by Hernando de Soto (Mitchell forthcoming). Hybrid forums on property rights are emerging, in which these opposing anthropological conceptions all strive to promote different *agencements*. This work is both practical and theoretical, abstract and concrete. The controversies are not between true or false conceptions of the reality of societies and human nature, but between different anthropological projects struggling to impose their conceptions and the implementation thereof. In these confrontations and their outcome, the capacity to test these conceptions, to enhance them and to transform them through experiments obviously plays a key part. The opening of these experiments and the easy access to them by groups in weak positions, relate back to the broader question of technical democracy.

Social critique

The objections raised by Miller concern another issue, that of critique. I would like to define my position in this respect, as it will enable me to clarify both the content and the implications of the disagreement. Luc Boltanski and Laurent Thévenot – in a book highly celebrated in France – suggested replacing a critical sociology with a sociology attentive to the critical competencies of the actors and especially to their capacity to justify their behaviours and their choices when these are criticized by other actors (Boltanski and Thévenot 1991). Boltanski and Thévenot note that these justifications are generally borrowed from social scientists or philosophical works that have become common knowledge. They thus highlight the interactions and collaboration that can and must take place between intellectuals, academic scholars and actors. I share this point of view. I consider that social scientists don't have special access to a truth that would be inaccessible to actors themselves. They have no particular legitimacy to say what the sense of history is, who the dominated and the dominant are, or which points of view are morally just.

The challenge for the social sciences is not to attain knowledge that provides a frame into which the actors fit and that indisputably imposes on them the definition of true and false and hence of good or bad. The challenge is to enable all the differences to be deployed, and to be attentive to the conditions allowing their comparison and evaluation. It is out of the question, for example, to say that neoclassical anthropology is false and consequently morally unjustifiable, or to consider that it is true and good. This applies to all other forms of theoretical and practical elaboration. The role of the anthropology of (the) econom(y)ics is, I believe, to make these anthropological struggles explainable in their theoretical and practical dimensions, by identifying and revealing the forces that, in a more or less articulated way, challenge the dominant models and their grip on real markets. This requires a certain form of agnosticism. For example, it is out of the question to consider that consumers, as such, have the key to future changes in capitalism, and consequently to propose a general construction that shows consumption as a force of negation. This “cup final” or “super bowl” between production and consumption does not correspond to the multiple power struggles erupting all over the place around the practical realization of different and sometimes contradictory anthropological models. It is because economics is an anthropology of the economy, engaged in the transformation of the world through a network of alliances, that it is a political anthropology.

My feeling is that our work is to contribute towards the process of revealing the reluctances, the multiple and changing fronts on which the different competing theoretical and practical anthropologies confront one another. I don't believe in a form of war in which the opposing forces manoeuvre like Roman legions and where the clashes between the clearly contradictory interests are head-on. It would be preferable to talk of guerrillas, infiltrations, changing coalitions and a multitude of shifting front lines. Through our attention to details and small differences, have we not become experts of these clashes and tensions, so often denied or ignored yet – at least for some – filled with possibilities and with differences that will end up counting? Anthropology in action, the one that advocates the anthropology of (the) econom(y)ics, is deployed in arenas that steer us far away from the world of social classes, new social movements and primary and secondary contradictions. It consequently highlights the importance of procedures and material devices needed for actors in positions of weakness to develop and experiment with their anthropology. An anthropology of (the) econom(y)ics that claims to be critical should study these devices intended for all Davids dreaming of ousting Goliaths. How can one ensure that the success of Linux and its anthropology of applied econom(y)ics, which is causing Microsoft so much concern and

forcing it to alter its strategy, does not remain a miraculous exception served by exceptional circumstances? Answer: by facilitating access for all anthropological programs (be they neoclassical, evolutionary, institutionalist, ANTist, pragmatist, theoretical or applied, proposed by academic researchers or researchers in the wild) to the experiments and evidence required for their implementation, evaluation and adaptation; in other words, by establishing a right to experimentation and to discussion of the results obtained. This implies that the agencies which do not have the required tactical competencies, nor the adequate material and discursive resources and social relations, obtain the compensation and aid needed to avoid a premature disappearance. We can now see why the agnosticism mentioned above cannot lead to theoretical and moral relativism.

2. VIRTUALISM SHARES NONE OF THE CORE ASSUMPTIONS UNDERPINNING THE PERFORMATIVITY HYPOTHESIS

Based on this admittedly schematic presentation of the core assumptions of the anthropology of (the) econom(y)ics, I will now show the distance separating Miller's hypotheses from mine.

Miller's position on agency

I have tried to show above how the understanding of the nature of the effects of economics on the economy depends on the agency theory opted for. It seems that Miller does not share this conviction. He does not consider the problem of the definition and characterization of agency as central, at least not in the papers that discuss my positions. The actors that he brings into play are those usually studied by the social sciences. We find individual actors and collective actors (e.g. social classes) framed by institutions, values, worldviews, interests, etc. Nothing is said or even suggested about the place of materiality, about socio-technical *agencements* and consequently about the possible shaping of agencies who must be seen as susceptible to be (re)configured and built up. This explains what in my opinion is one of the weaknesses of Miller's framework of analysis. For him, economics can impact on actors only by influencing their worldviews or values. In the program that I propose the idea that economics can have an influence on behaviours or worldviews is meaningless. I don't think that norms, values and conceptions of the world can be made autonomous in order to establish them as intermediary variables through which abstract economic theories could act upon real economic agents. My question concerns the production of agencies and the spaces in which they circulate and meet, and particularly the role of economics at large in that shaping.

Kapitalist markets as abstract machines

According to Miller, concrete markets can be analysed only with reference to **Kapitalism**⁵, a reality that is assumed to be homogeneous and in a sense monolithic, made of the same substance (Miller 1998). Apart from their observable diversity, they possess a unity derived from the logic of Kapital. This logic obeys the laws of dialectics; it is made of contradictions, the resolution of which explains the structural transformations of Kapitalism and the different phases through which it passes. Miller thinks that Kapitalism has entered a new phase. The main contradiction has shifted: it is no longer within the productive sphere between those who sell their labour and those who own the means of production, but

⁵ I call Kapitalism this old dialectical conception that unifies capitalisms.

between consumers and producers. The former, instead of being alienated by the cold and universal logic of Kapital, divert it by locally producing, as they consume, the significations and values enabling them to assert their identity (Miller shows how Trinidadians re-qualify Coca-Cola). For Miller one of the tasks that neoclassical economics has taken on (or that has been entrusted to it?) is to curb the threat that consumption is causing to weigh on the future of Kapitalism. In order to do so it produces virtual consumers, abstract beings supposedly capable of choosing, of being autonomous and rational; neoclassical economics uses its power to substitute virtual beings for real consumers. The latter are thus trapped in an illusion: they end up believing that they are the virtual consumers of economics textbooks and not the real consumers that were a threat to the Kapitalist machine. They find themselves helpless just when they were going to bring about a new world.

This illusion is dangerously effective because based on the recognition of a real fact of which it gives a false description. It affirms that consumption plays a key part in the dynamic of capitalism, but replaces real consumers, who represent a force of negation and subversion of capitalism, with virtual ones who make free choices for which they are responsible. The position of strength of consumption is thus affirmed, but it is simultaneously emasculated. Instead of being the force that is going to subvert cold and abstract capitalism, it is itself transformed into a cold and abstract force. Since consumers are free, they like what they consume. How derisive: consumers are crowned kings of a state that they were supposed to abolish. Neoclassical economics is thus instrumental in rescuing capitalism by helping to make it even more abstract and cold. For real capitalism it substitutes a virtual capitalism that disarms its opponents.

It is because neoclassical economists wield considerable power in institutions and especially international ones, that they are able to make people believe in this virtual capitalism, that is, a capitalism that resembles the real capitalism but that is not the real thing since it has been emptied of all the relations of domination and exclusion that allowed its functioning and reproduction. Carrier systematized this analysis by noting that this evolution towards more abstraction is at the heart of the history of Kapitalism (Carrier 1998). The capitalist machine continues its mad race and on its way destroys neighbourhood relations, empties family relations of all substance, and undermines the bonds and feelings binding people together. The latter infamy is no small matter. After transforming relations between people into relations between things, here Kapitalism is replacing real humans by virtual ones. And in this process of evisceration, neoclassical economics plays the part of the great anaesthetist. Neo-classical economics is consumers' opium. If they are drinking rum and Coca-Cola it's because they have rationally decided to drink rum and Coca-Cola. This capacity to beguile, to steer dominated economic agents into a world of illusions where they lose their souls corresponds to the resources and positions of power granted to economists to carry out their dirty work.

Underlying this analysis is the basic assumption that the human mind can be misled, that its conceptions and views of the world can be altered or reconfigured by other conceptions and other views that are, in a sense, projected into its mental sphere. The brain of the social human being – the consumer is simply a particular case – is like clay deformed by pressure. It can be reprogrammed at will, provided that enough resources are mobilized and that the new program is connected, at least superficially, to the experiences of the individual in question. A person can be alienated by anyone with enough skill and influence. The honest – meaning scientific – anthropologist or sociologist is there to restore the truth and save the consumer from alienation.

I would add that Miller is in good company in this denunciation. A similar approach is taken by Luc Boltanski and Eve Chiapello (1999). For them, Kapitalism is also a cold and abstract machine that lives by one law only: accumulation. To survive and find new legitimacy, it has to find a new spirit since the old one is worn out. They see the solution conceived of by Kapitalism as unstoppable: it consists in absorbing social critique, in diverting it to turn it into the principle of its own functioning. It is not academic economists but consultants and management advisers who do this dirty work of “recycling”. Like Miller, Boltanski and Chiapello consider that as Kapitalism develops it becomes ever more abstract and impersonal, in short, inhuman. Miller maintains that it is saved just before the final gong by neoclassical economists’ sleight of hand. Dressed in their magician’s cloaks, trained in good schools, they manage to make consumers believe that they have no soul and are happy for it. Boltanski & Chiapello choose a less acrobatic solution. They prefer to give a soul to Kapital (it would be as difficult for Kapitalism to live without a soul as for Peter Schlemihl to live without his shade!) but one that is openly stolen to social critique. In both cases a cold and abstract monster survives by trafficking in souls or minds.

Disagreements

Miller is right to say that we ask the same questions and that our answers are similar on a number of points. We both claim that, in order to understand the course of the economy, economics cannot be ignored or underestimated. We both posit that economics has a tangible impact on the economy. Yet he is right that, apart from a vague resemblance, our answers are incompatible and opposed. Now that our core assumptions have been presented and discussed, it is time to present a synthesis of these disagreements and of the perspectives opened by each of the two programs.

* I refuse the reduction of the economy to a tragic face-to-face between production and consumption. As said before, markets include a large number of actors and *agencements* that multiply the gaps, differences and disagreements. Unlike Miller and Boltanski & Chiapello, I don’t believe in *A* Kapitalism that could be reduced to *AN* impersonal logic. Go back to Fernand Braudel and the distinction that he makes between Type A and Type B markets. The markets that are the most ‘abstract’ – if we insist on this term – are, he tells us, pre-capitalist markets, whereas capitalist markets need rarefied personal relations.⁶ My reasoning is similar to Braudel’s, but also to certain analyses by Edward Chamberlin or François Perroux. The capitalist form of the economy assumes an organization of markets in which there are both calculative agencies (equipped and formatted to calculate profits, maximize shareholder value, reduce production or distribution costs, etc.) and the controlled rarefaction of relations and encounters between agencies, obtained primarily by singularizing goods and setting up systems of circulation of agencies and goods that in reality are *captation* devices (Cochoy 2004).⁷ Braudel thus notes the mistake we would be making if we were content to take up preformatted categories like ‘consumers’ or ‘producers’ which have the effect of rendering the functioning of real markets invisible. What makes concrete capitalist markets function is precisely the multiplication of intermediaries and mediators of all kinds; in short,

⁶ It is amusing to see that the famous strawberry market studied by Garcia is now controlled by a few large distribution groups that, as faithful disciples of Braudel, have established close personal relations with producers in order to control the commercialization of their production.

⁷ This is another way of saying what all informed analysts have repeated: monopoly is the modality of normal functioning of capitalist markets.

the proliferation of agencies (including economists at large). In an economic world in which the great divide between production and consumption reigned, consumers would be incapable of producing meaning and acquiring goods, and producers would be incapable of conceiving of and producing goods attached to consumers.⁸ The idea of A CONTRADICTION and of the dialectic that it is supposed to fuel consequently evaporates. It is replaced by a multiplication of differences, gaps, displacements and translations, that is, asymmetries and the relations of domination that they sustain. These, as I have shown, are produced by *agencements* and devices that produce as many attachments as detachments, as many entanglements as disentanglements. The Kapitalist machine blows hot and cold, for to function it needs both: the heat of consumers in Trinidad and the cold of neoclassical economists from the World Bank. The heat of values and the cold of calculations aren't distributed in different camps; as more and more studies confirm, they are in each asymmetry. They are the substance of relations between agencies that may spend their time calculating, but calculating values. It is into the calculations of values, as Fabian Muniesa and I have shown, that relations of domination creep in. Positivity and negativity – if we insist on these notions – are everywhere.

This type of description obviously produces a great deal of complexity, yet it seems more realistic and effective. The reversals of balances of power can come from anywhere and especially from sites on which the circumstances are favourable. They can then propagate via the transporting and transposition of solutions conceived of in one place. The case of intellectual property seems to provide a good illustration of these mechanisms: multiplicity of fronts, possibility of locally modifying balances of power, then extension and adaptation of the solutions conceived of. And then, inexorably: new differences, new asymmetries, etc. To accept this approach, one has to forget about Cold War politics and the dialectic of history. Or, to put it in Marxist-Leninist terms that have some echoes in Miller's writings: secondary contradictions cannot be related to any main contradiction because they are nothing but secondary contradictions or rather – for the word contradiction encourages intellectual and practical laziness – problems to solve. The Scandinavian compromise (Miller holds in high esteem the Swedish welfare state), like yesterday's Chinese radicalism, may have been considered as an attractive solution during the Cold War that offered only two options, but those times are passed.

* Economics and especially neoclassical economics cannot be considered to lie outside economic activities; it is a stakeholder in those activities and contributes, in ways to be studied, to their construction and their shaping. To account for the effects of economics on the economy, it is necessary to plunge it back not only into the economy but also into what I have called economics at large and all the mediations that it organizes. It is also necessary to substitute socio-technical agencies for the human agents whose brains are embedded in the worldviews or norms guiding them. This substitution is enough to make the notion of virtualism worthless. All that remains are the power struggles between agencies and the (possible) contribution of the social sciences, irrespective of their field, to the (partial) shaping of those struggles. This reversal of the perspective has the advantage of not *a priori* excluding the eventuality of a neoclassical economics (but this also applies to other economics) capable in certain places and for some time of producing (provided it has alliances) markets inhabited by individual, optimizing, selfish calculative agencies that impose their mode of calculation on other less well-equipped agencies. It is too easy to get rid of neoclassical anthropology by turning it into a new religion in which economists are the

⁸ The originality of Schumpeter in the history of economic thinking is that he placed intermediation at the centre of the analysis: *entre-prendre* means linking up to have a better grip.

priests (Miller 1998). No, economists are not builders of virtual empires, no more, I dare say, than are priests! I can't resist referring here to the remarkable article by Petter Holm (Holm submitted). This work is particularly relevant in that it allows a comparison between the two programs, since Carrier and Miller's book includes a chapter on the subject treated by Holm: the establishment of individual transferable quotas (Hekgason and Palsson 1998). Petter Holm shows that once all the scientific, material, technical and institutional investments have been made to transform the sea into an aquarium and the wild fish into a cyborg fish, the ground has been cleared for the conception and construction of a market in which fishermen can be transformed into selfish individual economic agencies. These agencies correspond so closely to the definition in first-year economics manuals that they don't hesitate, against the government's advice, to claim the tradability of their quotas! There's nothing mysterious about this anthropological metamorphosis. The world has been shaped by squads of scientists, engineers, jurists and international bodies to host this new human species. Thanks to the cyborg fish the fisherman-homo-oeconomicus can live and, in some cases although not all, live well. This example shows why we need to avoid the vocabulary of virtualism that contrasts a fantastic world with the real one. Neoclassical economics can have a grip on the economy and transform its content and practices: as Holm says, it makes differences. It is because Miller puts the material world into parentheses that he plunges into the virtualist hypothesis.

3. WHO IS REALIST?

One nagging question remains. Why does classical economics have this power, while Miller the sociologist (I presume) and Callon the sociologist (I'm sure) have so much trouble keeping together intervention and representation? On this point our answers also diverge. It is our conceptions of the critical role of the social sciences that are at issue.

For Miller, going from virtualism to performativity is a retreat. Virtualism seems to have the merit of putting big politics at the centre of the analysis and preoccupations. Reference is made to capitalism, dialectics, the meaning of history, the alienation of consumers. Rumours can already be heard about the struggle being prepared between the world of the exploited and the (small) world of those who exploit them. And, as Althusser said, this struggle is carrying on within the academic world. On the one hand we have the neoclassical economists who play the game of the big corporations and participate in the reproduction of capitalism; on the other, sociology and scientific anthropology that denounce domination by showing its effects and thus give arms to the weak. By pretending not to see that neoclassical economics beguiles consumers, by absolving it of its crimes, Callon has chosen his camp, that of the strong side, and sold his soul (one more) to the Kapitalists.

Faced with virtualism and its morality based on scientific truth, the performativity programme seems strangely weak. It shows the complexity of market devices, highlights the differences between markets, describes agencies and their asymmetries in detail, and studies the technicity of algorithmic configurations. By entering the black box – instead of studying broad trends – is it not likely to create a diversion, to by-pass the essential, to make the vast landscapes, the big asymmetries, everything that decides on the fate of each individual, invisible?

I don't think so. The construction of agencies, of spaces in which they meet and of the boundaries between things and people reveal the micro-differences that end up being more

important than the supposed macro-contradictions. The reason for this assertion can be found in the analysis of irreversibilities, path dependency phenomena or socio-technical lock-in. Irreversibility, especially in power struggles and asymmetries of resources, but also the kind that entails the hardening of identities and interests, is constructed from 'small events', little gaps, local innovations, limited reconfigurations. Elementary models can be used to represent these trends. But the notion of irreversibility can be misleading. It is better to talk of processes of coupling between lock-in and lock-out. Evolutionary economists and network analysts have shown how to get out of a situation of lock-in. They have also studied the conditions in which a diversity of configurations can be maintained. These analyses are worth generalizing. Force is acquired through weakness or, rather, by successive compositions of small weaknesses, reversed one by one and not in one fell swoop. Strength is the outcome of a long process of accumulation, weaving of alliances and relations, from micro-positions constructed first as little gaps or differences lodged in the interstices of existing configurations. The examination of these small differences is consequently theoretically important and practically strategic. It seems that because it gives access to the shaping of relations of weakness, the concept of performativity enables us to understand local shifts and reversals, the translations and reconfigurations that extend them and, more particularly, the possible and real role of economics at large. On the other hand, by ignoring the details, the materiality of agencies and their possible reconfigurations, the virtualist programme is condemned to be blind to path dependency and paths leading from local to global. The performativity hypothesis enables us to think the multiplicity of modalities of concrete engagement of the social sciences in the dynamics of power struggles, whereas the virtualist point of view gets rid of the question without further ado since it provides a ready-made answer: neoclassical economics has no function other than substituting a virtual world for the real one.

The performativity programme makes perplexity and ignorance a political and moral virtue. The virtualist programme claims to state true and false, and therefore good and bad: the strong are strong, that's the truth, and because they are strong it is necessary to denounce and weaken them, that's what is good. I'm sceptical about the realism of the virtualist programme because I don't think that one can make the strong weak to replace their world by a fair one based on a real vision of what human relations ought to be. Nor do I believe that consumers are in the proletariat's position, bearers of this new world that history must beget. I don't know if the consumer class exists, and I don't see why producers, distributors, consultants, social scientists and civil servants should stand back for them. The only thing that I do know is that it is necessary to produce the conditions in which new emerging forces are offered the possibility of becoming stronger, to limit the grip of established forces. Might the honour of the social sciences not, very modestly, be: a) to make visible and explicit the differences and asymmetries constantly being constructed; b) to militate for the establishment of procedures allowing the recognition of these differences, their expression and the realization and testing of the programmes that they defend. It is at this price that new forms of organization can emerge, be tested, evaluated and finally implemented.

I think that, fundamentally, what separates Miller and myself is not the idea that the social sciences can help to transform the world; it is the strategy with which to achieve that. Miller thinks – at least as I interpret him – that anthropology aims to tell the (almost whole) truth on man in society, and that by telling that truth it combats the illusions masking the strength of the powerful. I, on the other hand, think that anthropology can only participate, along with the actors, or rather with certain actors in a position to produce small differences, in showing that other worlds are possible and that humans in society (in markets) have multiple and

uncertain forms that emerge through trials. It is up to social scientists to recognize the moment when, still fragile and enigmatic, they appear.

References

- Amin, A. and P. Cohendet (2004). *Architectures of Knowledge. Firms, Capabilities and Communities*. Oxford, Oxford University Press.
- Aoki, M. (2001). *Information, Corporate Governance, and Institutional Analysis*. Oxford, New York, Oxford University Press.
- Barry, A. (2001). *Political Machines. Governing a Technological Society*. London, The Athlone Press.
- Boltanski, L. and E. Chiapello (1999). *Le nouvel esprit du capitalisme*. Paris, Gallimard.
- Boltanski, L. and L. Thévenot (1991). *De la justification. Les économies de la grandeur*. Paris, Gallimard.
- Boyer, R. (2004). *Pour une théorie générale du capitalisme*. Paris, Odile Jacob.
- Callon, M. (2003). The increasing involvement of concerned groups in R&D policies: what lessons for public powers? *Science and Innovation. Rethinking the Rationales for Funding and Governance*. A. S. a. W. E. S. A. Geuna. Cheltenham, UK., Edward Elgar: 30-68.
- Callon, M. (2003). Le renouveau de la question sociale: individus habilités et groupes concernés. *Nouvelle économie, nouvelles exclusions?* P. Moati, Editions de l'Aube: 207-243.
- Callon, M. and J. Law (1995). "Agency and the Hybrid *Collectif*." *The South Atlantic Quarterly* 94(2): 481-508.
- Callon, M. and J. Law (2005). "On Qualculation, Agency and Otherness." *Environment and Planning D: Society and Space* 23.
- Callon, M., C. Méadel, et al. (2002). "The economy of qualities." *Economy and Society* 31(2): 194-217.
- Callon, M. and F. Muniesa (2005). "Economic markets as calculative collective devices." *Organization Studies*.
- Callon, M. and V. Rabeharisoa (2004). "Gino's lesson on humanity. Genetics, mutual entanglements and the sociologist's role." *Economy and Society* 33(1): 1-27.
- Carrier, J. G. (1998). Abstraction in Western Economic Practice. *Virtualism. A New Political Economy*. J. G. Carrier and D. Miller. Oxford, Berg.
- Cochoy, F., Ed. (2004). *La captation des publics: C'est pour mieux te séduire mon client....* Toulouse, Presses Universitaires du Mirail.
- Commons, J. R. (1934). *Institutional Economics*. Madison, University of Wisconsin Press.
- Coriat, B. and O. Weinstein (2004). "Institutions, échanges et marchés." *Revue d'Economie Industrielle*(107): 37-62.
- Deleuze, G. and F. Guattari (1998). *A Thousand Plateaus: Capitalism and Schizophrenia*. London, Athlone.
- Dupuy, J.-P. and J. Robert (1976). *La trahison de l'opulence*. Paris, PUF.
- Elyachar, J. (2002). "Below the Tip of the Iceberg: Markets and Alternative Economic Identities in Cairo." *Working Paper*.
- Guala, F. (2001). "Building Economic Machines: the FCC Auctions." *Studies in History and Philosophy of Science* 32(3): 453-477.
- Guala, F. (forthcoming). How to do things with experiments. *The Performativities of Economics*. D. MacKenzie, F. Muniesa and L. Siu.

- Heath, D., R. Rapp, et al. (2004). Genetic Citizenship. *Companion to the Handbook of Political Anthropology*. D. Nugent and J. Vincent. London, Basil Blackwell Publishers.
- Hekgason, A. and G. Pálsson (1998). Cash for Quotas: Disputes over the Legitimacy of an Economic Model of Fishing in Iceland. *Virtualism. A New Political Economy*. J. G. Carrier and D. Miller. Oxford, Berg.
- Holm, P. (submitted). Which way is up on Callon? *Performativities of economics*. D. MacKenzie.
- Hutchins, E. (1995). *Cognition in the Wild*. Cambridge, The MIT Press.
- Knorr-Cetina, K. (1999). *Epistemic Cultures: How Scientists Make Sense*. Chicago, Indiana University Press.
- Laffont, J. J. (1988). *Fondements de l'économie publique*. Paris, Economica.
- Latour, B. (2005). *Reassembling the Social. An Introduction to Actor-Network-Theory*. Oxford, Oxford University Press.
- Lave, J. and E. Wenger (1991). *Situated Learning. Legitimate Peripheral Participation*. New York, Cambridge University Press.
- Miller, D. (1998). A Theory of Virtualism. *Virtualism. A New Political Economy*. J. G. Carrier and D. Miller. Oxford, Berg.
- Miller, D. (2002). "Turning Callon the Right Way Up." *Economy and Society* XXXI: 218-233.
- Mitchell, T. (2002). *Rule of Experts. Egypt, Techno-Politics, Modernity.*, University of California Press.
- Mitchell, T. (forthcoming). "The Properties of Markets. Informal Housing and Capitalism's Mystery." <http://www.lancs.ac.uk/ias/polecon/>
- Moser, I. B. (2003). Road Traffic Accidents: the Ordering of Subjects, Bodies and Disabilities. Oslo, Universitetet i Oslo: 341.
- Muniesa, F. (2003). Des marchés comme algorithmes : sociologie de la cotation électronique à la Bourse de Paris. *Centre de Sociologie de l'Innovation*. Paris, Ecole des mines de Paris: 453.
- Rabinow, P. (1992). Artificiality and Enlightenment: from Sociobiology to Biosociality. *Incorporations*. J. Crary and S. Kwinter. New York, Zone.
- Roitman, J. (2005). *Fiscal Disobedience. An Anthropology of Economic Regulation in Central Africa*. Princeton, Princeton University Press.
- Rose, N. (1999). *Powers of Freedom. Reframing Political Thoughts*. Cambridge, Cambridge University Press.
- Steiner, P. (2001). "Don de sang et don d'organes: le marché et les marchandises fictives." *Revue Française de Sociologie* 42(2): 357-374.
- Suchman, L. (1987). *Plans and Situated Actions. The Problem of Human Machine*. Cambridge, Cambridge University press.
- Thomas, N. (1991). *Entangled Objects: Exchange, Material Culture and Colonialism in the Pacific*. Cambridge, Harvard University Press.
- Winance, M. (2001). Thèse et prothèse. Le processus d'habilitation comme fabrication de la personne. *Centre de Sociologie de l'Innovation*. Paris, Ecole des mines de Paris.