

## *Chapter 1*

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### Introduction

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#### Monetary Theory at Thirteen Thousand Feet

La Paz, January 1986. The young Harvard economist who arrives at the airport has visited twice before, so he knows what to expect: the thin air of Bolivia's capital, three and a half kilometers above sea level, which will leave him short of breath throughout his visit; the extreme poverty; the beauty of the mountains; the hyperinflation that is beginning. He goes from the airport directly to the Banco Central de Bolivia, where he discovers that the money supply had sharply increased in December.

The economist, Jeffrey Sachs, goes on to deliver his advice to Bolivia's planning minister and then its president. The advice may seem dangerous—Sachs was to be summoned by the International Monetary Fund to explain himself—but for Sachs it was a straightforward implication of what his discipline teaches about the theory of money. If inflation is to be brought under control, the pesos that are flooding the economy must be taken out of circulation, even at the cost of spending Bolivia's precious, limited reserves of foreign currency to buy them up.

Later, Sachs was to muse on his meager understanding of the country to whose leaders he gave his crucial advice. It was only in a conversation a couple of years after his 1986 visit that he realized that Bolivia's physical geography was a fundamental feature of its economic situation, not merely an incidental fact. "Of course I knew that Bolivia was landlocked and mountainous. . . . Yet I had not reflected on how these conditions were key geographical factors, perhaps the overriding factors, in Bolivia's chronic poverty. . . . Almost all the international commentary and academic economic writing about Bolivia neglected this very basic point. It bothered me greatly that the most basic and central features of economic reality could be overlooked by academic economists spinning their theories from thousands of miles away" (Sachs 2005, p. 105).

Nevertheless, commented Sachs, a meager knowledge of the context had not stopped his advice on monetary policy being successful. Bolivia's hyperinflation did come to an end. "Monetary theory, thank goodness, still worked at thirteen thousand feet" (Sachs 2005, p. 105).

## The Question of Performativity

Sachs's advice to the government of Bolivia is unusual in that it marked the beginning of an exceptional degree of individual influence. Sachs and his former student David Lipton went on to draw up what became the plan of first Solidarity and then the Polish government to shape the economic structure of postcommunist Poland; they attempted, much less successfully, to repeat the exercise in Yeltsin's Russia; Sachs now advises the United Nations and world leaders on how to end poverty in Africa. In other respects, however, Sachs's Bolivian trips were simply one manifestation of a far more general phenomenon: the move of economics from the journals, textbooks, and lecture theaters into "the real economy." In Chile, for example, the "Chicago boys"—Chilean economists trained at the University of Chicago—were reshaping Chile in the 1970s and 1980s in a fashion more fundamental than Sachs's influence on Bolivia (Valdés 1995). The phenomenon is not restricted to Latin America, to the former Soviet bloc, or to matters of government policy: economics is built into the modern world far more pervasively than that.

The shaping of economies by economics can be viewed as a triumph for the truths discovered by the discipline, or it can be condemned as the damaging imposition of an abstract and unrealistic worldview; such matters remain fiercely controversial. At a minimum, however, what is made clear by the cases of Bolivia, Poland, Russia, and Chile, as well as by those discussed in the chapters that follow, is that economics is at work within economies in a way that is at odds with the widespread conception of science as an activity whose sole purpose is to observe and study, that is to "know" the world.

The issue that needs to be tackled in relation to economies and economics is not just about "knowing" the world, accurately or not. It is also about producing it. It is not (only) about economics being "right" or "wrong" but (also, and perhaps more important) about it being "able" or "unable" to transform the world. Economics swings between representation and action, between science and policy, between academic inquiry and political intervention, both as a discipline and in the careers of many individual economists; Sachs is far from alone in this respect. Economics often seems abstract (to some of its proponents, as well as to its critics), yet it also articulates with, influences, is deployed in, and restructures concrete economies in all their messy materiality and their complex sociality. How can we confront such a cumbersome object? In this volume, we discuss the potential of the notion of *performativity*.

For the philosopher J. L. Austin, a performative utterance was a specific kind of statement or expression that establishes its referent through

the very act of uttering (Austin 1962). In saying, for instance, “I apologize,” I am not reporting on an already existing state of affairs. I am bringing that state of affairs into being; to say “I apologize” is to make an apology. “I apologize” is, thus, a performative utterance.

Although (as far as we are aware) it was Austin who coined the term “performative,” the notion partakes of a long pragmatist tradition (nourished by the work of authors such as Charles S. Peirce, William James, John Dewey, Charles W. Morris, and more recently John R. Searle)<sup>1</sup> for which a central issue is the way in which actions, entities, and representations are intertwined. Performativity is not achieved by words alone. Even in the case of a simple utterance such as “I apologize,” the speaker can undermine the performative effect by adopting a sarcastic tone of voice or sneering facial expression. Then the words no longer constitute an apology: they do not bring into being that of which they apparently speak. More generally, the “conditions of felicity” that make an utterance successfully performative are social as well as linguistic and bodily, as the sociologist Pierre Bourdieu pointed out (Bourdieu 1991). In the Middle Ages, a monarch could make someone an “outlaw” by declaring that person to be such, but only if his right to do so was accepted sufficiently widely.

Although the origins of the notion of performativity lie in philosophy, the concept has been taken up in the social sciences and humanities more widely. Judith Butler, for example, has taken it into the mainstream of feminist theory (1990, 1997). The diverse fields that have adopted Robert K. Merton’s (1949) notion of the “self-fulfilling prophecy”—in which the release and social circulation of a description or prediction enhances its validity—can be seen as investigating a version of performativity.

One area in which the notion has been particularly widely drawn upon is science studies. Historians, sociologists, philosophers, and anthropologists of science have used performativity or similar intuitions to understand the nature of scientific claims and practices. For instance, Ian Hacking (1983) showed how the sciences’ representations of the world can be understood only in their close entanglement with intervention in that world. Andrew Pickering (1995) suggested that a “performative idiom,” more attentive to activity than to knowledge alone, could surpass the limitations of the “representational idiom” that is common in the scholarly appraisal of science. Barry Barnes (1983) pointed to the performative nature of the feedback loops between certain terms—which he calls “social kind” terms—and their referents. These approaches connect to larger considerations of the reflexive nature of modernization and of the complex interactions between science and society (see, for example, Beck et al. 1994).

Michel Callon, whose work is grounded in the field of science studies, proposed elucidating explicitly the performative character of

economics; that is, he proposes considering economics not as a form of knowledge that depicts an already existing state of affairs but as a set of instruments and practices that contribute to the construction of economic settings, actors, and institutions (1998a). In Callon's words, "economics . . . performs, shapes and formats the economy, rather than observing how it functions" (1998b, p. 2). As Callon makes explicit in his chapter in this book, in formulations such as this "economics" refers to the full range of disciplines, specialties, technologies, and forms of knowledge with which economic actors and their markets are equipped. He nevertheless includes in particular the academic discipline of economics, seeing its role as performative rather than descriptive. Callon's proposal has generated intense debate. It has been perceived as a compelling tool for analyzing the social impact of economics (e.g., MacKenzie 2003; MacKenzie and Millo 2003) but also as a dangerous threat to the sociological critique of economics (e.g., Fine 2003; Miller 2002). This collection of essays is an attempt at pursuing the debate and at fleshing out with empirical evidence and theoretical considerations this inquiry into the performativity of economics.

What does it mean to say that economics is performative? This whole volume is an attempted answer to that question, and many authors not directly represented here (including economists as well as sociologists and philosophers) have contributed much to the discussion.<sup>2</sup> Nevertheless, let us give a relatively simple example to introduce the notion of "the performativity of economics" for those encountering it for the first time. Consider the efficient-market hypothesis: the proposition that prices in financial markets "always 'fully reflect' available information" (Fama 1970, p. 383). The hypothesis, given definitive form by University of Chicago economist Eugene Fama, became the centerpiece of modern financial economics: "I believe there is no other proposition in economics which has more solid empirical evidence supporting it than the Efficient Market Hypothesis," wrote Michael Jensen (1978, p. 95).

The efficient-market hypothesis is not simply an analysis of financial markets as "external" things but has become woven into market practices. Most important, it helped inspire the establishment of index-tracking funds.<sup>3</sup> Instead of seeking to "beat the market" (a goal that the hypothesis suggests is unlikely to be achieved except by chance), such funds invest in broad baskets of stocks and attempt to replicate the performance of market indexes such as the S&P 500. Such funds have become major investment vehicles, and their effects on prices can be detected when stocks are added to or removed from indexes (see MacKenzie 2006, pp. 104–105, and the literature cited there).

Consider, too, the many empirical tests of the efficient-market hypothesis, which generally have taken the form of the analysis of databases of

securities prices (and of ancillary events such as corporate earnings announcements) to discover whether an investment strategy can be found that systematically offers excess risk-adjusted returns; the existence of such a strategy would seem to indicate that some price-relevant information is *not* being incorporated into prices. It has in fact been fairly common for tests to seem to reveal such a strategy. When this happens, one possible conclusion that could be drawn is that the “anomalies” (as they are called) indicate that the efficient-market hypothesis is false; it might even be concluded that “orthodox” financial economics should be replaced by “behavioral finance” (which suggests that investors’ psychological biases give rise to anomalies).

It will, however, surprise no one with a background in science studies that a variety of other responses to an apparently failed test of the efficient-market hypothesis are possible.<sup>4</sup> From the viewpoint of performativity, the most interesting response has been for researchers themselves (or market participants who are close to such researchers) to move from simulating the results of investment strategies to employing those strategies in practice in order to profit from the anomalies their tests have revealed. The typical effect of such exploitation, when it becomes at all widespread, is to reduce or eliminate anomalies (MacKenzie 2006, pp. 98–105; Schwert 2002).

Thus financial economics in the form of the efficient-market hypothesis has not simply been “applied” (for example, in the form of index funds): “failed” tests of the hypothesis have given rise to practical action that generally has had the consequence of tending to restore the hypothesis’s empirical validity. It is this kind of interweaving of “words” and “actions”—of representations and interventions—that the concept of “performativity” is designed to capture.

Note that to emphasize the performativity of economics is not necessarily to be committed to a causal role of “ideas” (in the sense, for example, of Weber 1930; see, e.g., Blyth 2002). Certainly, ideas from economics are often drawn upon to argue for one policy rather than another, or to defend or criticize an institution. When such efforts seem successful, we must, however, always ask whether it was the appeal to economics, rather than any other factor, that led to the outcome. Furthermore, to view economics as a body of ideas is far too narrow, for economics also consists of people, skills, datasets, techniques, procedures, tools, and so on.

An emphasis on performativity does not imply an evaluation, positive or negative, of the “effects” of the aspect of economics in question. The chapters that follow sometimes show economics “working” in the sense that the market participants involved see themselves as applying economics, view their uses of economics as having effects, and evaluate those effects as desirable. But unanimity on all these points may well be

the exception, and the chapters also describe cases where such matters are the subject of sharp disagreement.

### Multiple Performativities

The notion of “performativity” is, therefore, a complex one and needs to be unfolded in its many varieties. To speak at a high level of generality about the “effects” of economics on economies is a dangerous shortcut. Are these effects direct? Of what kind are they? Economics (both in the broad sense of the wide variety of specialties and technical forms of knowledge deployed in markets and also in the narrower sense of the academic discipline) can relate to and act upon its objects in many ways: by observing them, by measuring them, by predicting them, by providing theories to explain them or instruments to regulate them, by spreading some functional technique about them (or just some suggestive vocabulary to deal with them), by designing them in a laboratory, by inventing them, and so on. And, symmetrically, the “object” of economics (the many economic entities that are taken into account by economics) can react to this science in many ways: by mimicking it, by using it for profit, by believing it (and possibly by funding it!), by inadvertently operating it, but also by fighting it, by undermining its validity, and so on. Such interactions can change how resources are produced, organized, exchanged, and consumed, as illustrated by the Bolivian example.

When dealing with the performativity of economics, it is thus important to bear in mind the multiple ways in which economics may “perform.” Plainly, markets can function perfectly well (and historically have done so) without drawing on economics in the academic sense; the technical and conceptual equipment of market participants is very varied. Furthermore, economics, even in just the academic sense, can have many forms. Economic theory is only one form among others, and it may cohabit with empirical knowledge and operational tools of many sorts. In some cases, the intervention of economics may translate into the intervention of economists themselves, as in the case of academic economists who are employed by or appointed as consultants to a particular firm, marketplace, government, or regulatory body. In other cases, economists may not circulate, but they may produce tools and instruments (such as pricing formulas or macroeconomic models) that market actors or policy makers can embrace and put to use. The influence of a particular economic doctrine or procedure can be understood as a matter of persuasion, beliefs, and states of mind. But it can also correspond to a matter of institutional and technological setting in which economics has no direct psychological impact. For example, traders—human beings and

even capuchin monkeys (Chen et al. 2006)—may behave in a “neoclassical” manner when put in the proper environment, without being schooled in or believers in neoclassical economics. Finally, economics can be put into practice—and its proposals enforced—through specific political decisions and policies (from regulatory bodies to audit agencies), but it can also spread through use and possibly enter into—more or less accidentally and spontaneously—processes of path dependence and irreversibility (Arthur 1994, David 1985).

To identify the varieties of performativity is difficult. The purpose of this book is not—and could not be—to propose a systematic typology. The performativity of economics is still under construction. The aim of this collection of essays is rather to put the notion of “the performativity of economics” to the test of bringing it to bear on various aspects of economic life and economic science. For that purpose, we brought together a series of contributions that discuss the problem of the performativity of economics from backgrounds ranging from the history and the philosophy of science to economic sociology and political science. The contributors to this book are not all of one mind—some embrace the notion of performativity; others sharply oppose it—but all believe that the notion needs to be taken seriously.

### Outline of Chapters

Chapter 2 is Marie-France Garcia-Parpet’s study of the introduction of a computerized market for table strawberries at Fontaines-en-Sologne, a village around ten miles southeast of the river Loire in the Loir-et-Cher region of France. Apparently a modest case study of a development of only local significance, Garcia-Parpet’s chapter (which is the first English translation of a 1986 article that was an important inspiration of Callon’s work) raises an issue central to this book: how economic sociology and anthropology should analyze markets.

One traditional sociological and anthropological approach to markets involves investigating ways in which concrete, specific marketplaces such as that at Fontaines-en-Sologne differ from economists’ “abstract” models of markets. Such differences certainly existed prior to the introduction of the computerized strawberry market, and some differences persisted, but the new market was a reasonable approximation to economists’ views to a “perfect market,” with relatively homogeneous commodities, low barriers to entry, and competitive buyers and sellers all with fairly complete knowledge of the quantities and prices on offer.

Instead of invoking social factors to explain the remaining differences between the “ideal” market and the concrete marketplace, Garcia-Parpet

focuses on how at Fontaines-en-Sologne the new marketplace was consciously shaped to approximate to the ideal. The process was not the “spontaneous appearance of a mechanism for liberating economic energies,” writes Garcia-Parpet. It was a deliberate, planned creation, among the designers of which was an adviser well-versed in economics, and it was also a material artifact. The desire for a market in which supply and demand would find a competitive equilibrium was inscribed into the computerized auction system and even into the very architecture of the building constructed to house the market, which had separate rooms of buyer and sellers, both visible to the auctioneer but not to each other. However, Garcia-Parpet’s study should not be interpreted either as an account of the discovery of the most efficient way to trade strawberries or as the permanent victory of a particular market model. In later field-work, summarized in a postscript written specially for this volume, she found further evolution of the strawberry market, one aspect of which was that the relationships between producers and shippers had become characterized by what she calls “a more solidarity-oriented attitude.” As Callon notes in his chapter, the economists’ “ideal market,” the construction of which Garcia-Parpet had documented, seemed to be becoming more like the markets posited by economic sociology.

Garcia-Parpet’s chapter is paradigmatic in its suggestion that economic sociology and anthropology should focus on how markets are constructed and maintained (and on the role of economic theory, material devices, procedures, physical architectures, linguistic codes, and so on, in the construction and functioning of markets), rather than focusing simply on demonstrating ways in which concrete marketplaces differ from economists’ “abstract” markets. Chapters 3 and 4 take up this argument for financial models and financial markets, especially the markets for financial derivatives. A “derivative” is a contract or security whose value depends on the price of an underlying asset, or on the level of an index or interest or exchange rate. As recently as 1970, trading in financial derivatives was sparse, and to trade many modern derivatives would have been illegal. By June 2005, derivative contracts totaling \$329 trillion were outstanding worldwide—a figure that corresponds to roughly \$51,000 for every human being on earth.

In chapter 3, Donald MacKenzie focuses on the theory of options, which are derivatives contracts that give their holder the right, but not the obligation, to buy (or, in an alternative form of option, to sell) an underlying asset such as a block of stock at a set price on, or up to, a given future date. Option theory is high-status, Nobel Prize-winning economics, but it is more than that, argues MacKenzie: it is built into the infrastructure of options markets. It helped make those markets seem legitimate; it provided a guide to the pricing of options and to hedging



the risk they entail; and it has become incorporated into the way market participants talk and think about options.

MacKenzie is specially interested in two subsets of the performativity of economics. The first he calls “Barnesian performativity” (the reference is to the sociologist of science Barry Barnes). In this, the use of economics—for example, in the form of material artifacts incorporating economic models—alters economic processes and/or their outcomes to make them more like their depiction by economics. In the other subset examined by MacKenzie (“counterperformativity”), the effect is opposite in direction: the use of economics undermines its claims to empirical accuracy. Both Barnesian performativity and counterperformativity are to be found in the history of option pricing, argues MacKenzie.

In chapter 4, Vincent-Antonin Lépinay discusses today’s complex financial derivative products, which are in a sense the descendants of the options discussed by MacKenzie in chapter 3. Lépinay focuses on the “languages” or “codes” used to articulate the properties of these products. These products are hard to grasp, conceptually and materially, and this chapter describes the difficulties faced by actors trying to understand them in a stable and profitable manner. Sometimes, these products’ properties are expressed using mathematics, especially—but not exclusively—the mathematics of partial differential equations such as the Black-Scholes equation discussed by MacKenzie. However, mathematics is not sufficient: the traders at the bank that was Lépinay’s fieldwork site also need to express the properties of a derivative in terms of a set of existing, specific products that will hedge it, and this requires financial intuition and fine-grained market experience. Furthermore, a bank that sells derivatives needs to develop a software-implemented “pricer” for them (the calculations involved go beyond what can reasonably be done by hand), and this requires the translation of mathematics into detailed algorithms in specific computer languages. Finally, a derivative is also a legally binding contract with very specific economic features, and Lépinay describes the efforts to develop both an in-house language for expressing those features and an industrywide markup language to specify the properties of derivatives in a standard, easily portable way.

A conventional approach in the sociology of language would be to analyze the diversity of languages by identifying interest groups deploying their preferred linguistic codes: former physicists scornful of the overly formalistic approach of “quants” with backgrounds in pure mathematics; computer programmers impatient with the inability of those in mathematical finance to specify their models with sufficient exactitude that they can be translated into algorithms; and so on. However, while Lépinay’s analysis hints at features of this kind, he seeks to go beyond it, defending a realist view of market languages against sociological reductionism. It is not

the case that “anything goes” in the articulation of the properties of financial products: the languages of finance have to function effectively as “grips for action and levers of understanding.” What we need, concludes Lépinay, is a “poetics of codes” that understands that the “technologies of language have their own qualities.” No language is simply a mirror of what it sets out to articulate, but neither should languages be reduced to the social interests of those deploying them.

Chapters 5, 6, and 7 move to different areas of economics, focusing in particular on modern experimental economics and its uses in the design of markets. In chapter 5, Francesco Guala argues that experimental economics offers more than a way of checking whether economic theories are empirically correct. Alongside that “theory-testing” approach runs another strand of experimental economics that Guala calls the “institution-building” approach.

From a theory-testing viewpoint, performativity can seem to be a problem. A common worry about the validity of economic experiments is, for instance, that the experimental subjects playing in “laboratory” markets are often students of economics, who may be influenced by what they have learned about “correct” behavior. From an institution-building viewpoint, however, performativity is a resource. “Economic rationality,” writes Guala, “is not like Newton’s laws, which are supposed to be at work everywhere in the universe. It is a fragile property that must be carefully preserved by creating a hospitable environment.” What the institution-building approach seeks to do is to design markets so that they constitute an environment precisely of that kind, one in which, in Guala’s words, “rational choice models can work.” This is not simply an academic enterprise. Market designs informed by economics are now of considerable commercial and public-policy importance, most famously in the auctions of the communications spectrum that in the late 1990s and early 2000s earned tens of billions of dollars for the governments of the United States, United Kingdom, and other countries from the mobile telephone industry.

However, the use of economics to inform market design does not constitute fully fledged performativity, argues Guala. It is akin to a phenomenon that philosophers and sociologists of science such as Nancy Cartwright, Ian Hacking, and Bruno Latour have argued is widespread in the natural sciences: the deliberate creation of a laboratory setup or other “niche” for which theory is an adequate empirical description. Genuine performativity occurs, Guala claims, only when economics directly affects individual behavior, instead of (or as well as) shaping that behavior by influencing the design of the environment in which it takes place. Although both forms of performativity are likely to play a role in market design, Guala argues that for various practical and

theoretical reasons it may be difficult to disentangle them in concrete instances.

In chapter 6, Fabian Muniesa and Michel Callon note that any experimenter “performs” in the sense of bringing things into being “by assembling them in a particular manner (in a particular site, through particular trials, and for a particular audience).” What is observed in the experimental setting is indeed provoked or produced through it. Of special interest to Muniesa and Callon is a classic topic of the “Actor-Network Theory” tradition founded by Callon and his colleague Bruno Latour. That topic is the relationship between the paradigmatic experimental site—the laboratory—and what is “outside” it: in the case of science, nature “in the wild,” or in the case of economic experiments, the “real economy.”

Laboratories achieve their results—for example, “niches” within which theories work—by tightly controlling both material entities and human beings (in Actor-Network Theory, the term “actor” normally encompasses both). How then can laboratory results be translated from these niches to the outside? The classic Actor-Network Theory answer is: by transforming the world outside the laboratory so that it better resembles the laboratory (e.g., Latour 1983). In their chapter, Muniesa and Callon continue this sort of analysis by focusing on what they call “economic experiments” at large. This encompasses laboratory economics, but also other kinds of experiments, performed in real-scale markets as well as in laboratories. All instances of economic experiments can be characterized by features such as their localized setting, the manipulative techniques used to generate information, and the extent to which experiments provide public proof on which to base further action. But these features will evolve differently in an experimental auction performed in an academic classroom, in a consumer test performed by a consumerist association, and in an experimental economic measure implemented in a national economy.

In particular, Muniesa and Callon consider experimental sites in which the distinction between inside and outside is less strict than in the classic laboratory setting. Some of the economic experiments they discuss are performed *in vivo*: not in a laboratory but in real markets. Other cases—“platforms” is what Muniesa and Callon call them—are intermediate: more open than laboratories; more closed than *in vivo* experiments. They hint at an inherent trade-off between the manipulative thoroughness of these experimental settings and the kind of public proof they produce. A closed setting facilitates the “purification” and manipulation of experimental entities but creates problems in moving a result into the wild. An open setting weakens experimental control but facilitates processes of translation, as it blurs the divide between the inside and the outside of the experimental setting.

In chapter 7, Philip Mirowski and Edward Nik-Khah offer a skeptical analysis of an apparently prime case of the performativity of economics, the use of game theory and of experimental economics in the U.S. communications spectrum auctions, and they deploy this analysis to attack existing understandings of performativity. What previous analyses have missed above all, they argue, is the role played by key political and corporate actors: the Federal Communications Commission (which, as they note, had to decide what game theory “implied”) and especially the large telecommunications companies. Orthodox modern “neoclassical” economics is so flawed, argue Mirowski and Nik-Khah, “that it cannot be made to ‘work,’” other than very temporarily, even via the mechanisms of performativity. Overattention to performativity misses the way in which outcomes are shaped by big socioeconomic and political interests.

Indeed, Mirowski and Nik-Khah see the flaws that they diagnose in analyses of performativity as symptoms of a deeper fault in the intellectual tradition from which many of those analyses (especially Callon’s) spring: Actor-Network Theory. That tradition rejects the explanation of scientific developments in terms of social factors, preferring to analyze those developments as the simultaneous construction of both “nature” and “society.” Social structures are, however, more durable and more potent than this, argue Mirowski and Nik-Khah. Those who ignore their durability and their potency are naive.

Chapter 8, however, offers a defense of Callon and of a broadly Actor-Network perspective. In it, Petter Holm discusses an analysis of the relationship of “economics” to the “economy” that is often counterposed to Callon’s: Daniel Miller’s theory of “virtualism” (Carrier and Miller 1998), also discussed more briefly by Didier in chapter 10.<sup>5</sup> Like many of the contributors to this book, Miller believes that “economists and other agents of abstract models such as audit and consultancy” have “the increased ability . . . to transform the world into closer approximations of their theories and models.” Unlike most of this book’s contributors, however, Miller regards this transformation as in a sense superficial and “ideological” (hence his label: “virtualism”). “Actual disembedded markets” as posited by economists have not come into being, he argues. In Miller’s view, the thesis of performativity as advanced by Callon mistakes the “culture of representation” in economics and other abstract modeling for “ordinary economic . . . practice.” Instead, argues Miller, “we have . . . to radically separate out the market as a ritual and ideological system constructed by economists and the actual practice of economics” (Miller 2002, pp. 218, 224, 230).

Models are not abstractions, insists Holm; they are “constituent parts of market practices.” The case he discusses is the construction of a market by the introduction of individual transferable quotas (ITQs) in

fisheries. ITQs turn fisherpeople into “owners and investors,” and fish, once “regarded as a common heritage of the coastal people” become in effect private property. It is a story that can be told along virtualist lines (Helgason and Pálsson 1998), but Holm draws instead on Actor-Network Theory, delving into how the foundations of ITQs were laid by the use of science and technology to transform a fish from an elusive wild creature into a “fish-as-fit-for-management . . . a true cyborg; part nature, part text, part computer, part symbol, part human, part political machine.”

The focus of chapter 9, by Timothy Mitchell, is a different set of efforts at market construction, those inspired by the work of Hernando de Soto, founder of the Institute for Liberty and Democracy in Peru. De Soto offers a diagnosis of, and proposed solution to, the problem of underdevelopment that has been endorsed by leading economists, such as Ronald Coase and Milton Friedman, and that has influenced law and policy in many developing countries. Throughout the Third World, de Soto argues, most of the possessors of land and houses lack formal legal title to them, and so cannot sell them or use them as collateral for loans. If systems were set up to register and enforce rights of ownership, much wealth that is currently “outside” the market economy could be brought within it, greatly enhancing the prospects for economic development.

Mitchell points out the lack of evidence that de Soto’s project has been or is likely to be successful, either in its original Peru or in Egypt (which is Mitchell’s empirical focus). Assets are held without formal property relations for good reasons, such as a desire to avoid the threat of dispossession. Experience of previous efforts in Egypt to extend formal property arrangements suggests that such extension will probably promote speculation in property and in land, rather than productive investment, and thus is likely to benefit privileged members of this generation at the expense of the poor of this and future generations.

Mitchell argues that behind the blindness of de Soto and those influenced by him to the likely drawbacks of the extension of formal property arrangements lies a set of errors. One is a worldview in which a clear boundary between markets and what lies outside them is assumed. Markets do not have boundaries, suggests Mitchell; at most, they have contested frontier regions, which are always disputed, morally and politically as well as “economically.” Another error is to see projects such as de Soto’s as ways of representing, in the form of property, wealth that lacks adequate representation. “What economics does,” argues Mitchell, “is not to represent what was previously unrepresented, but to try and reorganize the circulation and control of representations.” De Soto misrepresents the nonmarket world as deficient, Mitchell concludes, but he also warns de Soto’s critics not to stop at exposing this misrepresentation: misleading as de Soto’s ideas might be, they are part of a

potentially powerful apparatus for redistributing access to, and control over, assets.

In chapter 10, Emmanuel Didier takes up the topic of economic statistics, a prime intermediary between “economics” and the “economy,” drawing on his historical research on the agricultural statistics produced in the United States in the early twentieth century. Didier shows that those statistics were designed to have an effect on the economy: by generating and circulating “objective” data on production and market prices, the statistical division of the U.S. Department of Agriculture hoped to protect farmers from the deliberately false reports disseminated by speculators.

Didier argues, however, that to have effects on the world (as statistics did and does) is not the same as to be performative. He argues that some proponents of the notion of performativity (notably MacKenzie and Millo 2003) seem to be asserting that facts are created “out of thin air” by a direct effect of theory: by an Austinian, linguistic, performative act, akin to the priest’s utterance “I baptize you.” This is quite implausible, suggests Didier. The notion of performativity is an unsatisfactory stopgap.

Instead of performativity, Didier prefers—at least in the context of economic statistics—the notion of “expressing,” which he draws from the work of Deleuze (1968). “Expressing” is not to be read as “representing” or “portraying”: the sense in which it is used by Deleuze and by Didier is more that of “pressing out.” Pressing out is a material process: Didier nicely illustrates the material aspects of the production of statistics. However, what is pressed out is not what was there all along. As Didier puts it: “Expressing takes place when various elements (at least two) are gathered in a particular way, and this particular relation evidences a new feature of the whole composed by that coming together.” He suggests the analogy of the encounter with soil of a particular kind permitting the making of wine in which characteristics potentially present in vinestocks are expressed. Didier believes that the subtle notion of expressing captures well the way in which economic statistics alters the entities enumerated and affects the economy, without being a simple creation “out of nothing.”

In chapter 11, Michel Callon, whose edited collection *The Laws of the Markets* (Callon 1998a) initiated the current discussion of the performativity of economics, reflects on the notion, on the debates around it, the alternatives to it, and on the contributions made by the previous chapters. He locates performativity within the broad tradition of pragmatism. Instead of regarding statements as true or false, pragmatism conceptualizes them as successful or failed. Actor-Network Theory adds to the pragmatist tradition a distinctive focus on the *agencements* that generate success and failure. (*Agencements* are the assemblages or

arrangements—which are simultaneously human and nonhuman, social and technical, textual and material—from which action springs.)

The study of innovation in science and technology indicates what to expect with respect to the performative role of economics, suggests Callon. Many elements have to be added to laboratory science to make it successful “at large” or “in the wild,” and much needs added to “confined economics” (the economics of the laboratory for experimental economics, the seminar room, the academic journal, and the textbook) for it to perform economies. The heterogeneous elements, struggles, and rivalries found in the chapters by Holm (elements from biology and engineering) or by Mirowski and Nik-Khah (politics and struggles for industrial dominance) are just as anticipated, as is MacKenzie’s counterperformativity.

Callon argues for going beyond an Austinian emphasis on “doing things with words,” and in his chapter he often prefers the term “performation” to “performativity.” The latter can too easily be read in Austinian fashion as a property of statements, and Callon’s chapter suggests that that is too narrow a view, even when “statements” are understood broadly as including formulas, methods, tools, and instruments as well as verbal formulations. “Performation,” in contrast, is an action: it is performativity as an activity or a material operation. This activity is collective (that is, heterogeneous and multifaceted): economics in the academic sense is at most only one of the elements at play. The norm is not the smooth performance of economics but conflicts, upsets, crises, and competition between different “programs,” including programs seeking to perform a human being different from *Homo economicus*, the calculative egoist often posited by economics. Performativity is therefore best thought of, Callon suggests, as “co-performation”: that formulation highlights both this collective aspect and the fact that performativity is an activity, not just a property of statements.

Attention to performativity as co-performation (in this sense) leads Callon to consideration of economic experiments, understood in a broad way that includes, for example, experiments in cooperative production such as that at Mondragón. The choice posited by Marx between interpreting the world and changing it need not constrain us, concludes Callon: the task of the analyst is, in alliance with economic actors, to multiply possible worlds.

That, it seems to us, is entirely the correct conclusion. Consider, for example, the emerging markets for carbon dioxide emissions permits. The proposals for markets in pollution permits emerged from economics, but economists have not been unanimous in advocating them as the best means of slowing global warming—there has, for example, been persuasive advocacy of carbon taxes—and many factors beyond academic economics are involved in the shape the new markets are taking.

These factors range from the exigencies of metrology (there are complex problems to be solved in producing credible baselines against which to measure reductions or increases in emissions, and in measuring the extent of emissions and of carbon sequestration by forests, etc.) to international and domestic politics, industry lobbying, and much else. Whether a world market in carbon will emerge is still unclear, and if it does, its ecological and other consequences will depend on its design: outcomes could range from powerful incentives to reduce emissions to a fig leaf allowing “business as usual.” Nothing is settled, and there is much need for intervention of the kind Callon advocates.

To expect that Callon’s reformulation of the notion of the “performativity of economics” will settle controversy about it would be quite unrealistic (indeed, in their chapter Mirowski and Nik-Khah already signal their dissent). Nor would we wish for such an outcome, for we see this volume not as ending a debate but as encouraging it. Empirical work on the performativity of economics is in many ways still sparse, as is indicated, for example, by the absence of any work so far on carbon markets informed by the notion, with the exception of Lohmann (2005). Such empirical work must surely go hand in hand with further theoretical development. We do not pretend to know where this will lead, but of two things we are sure: that economics (in the academic sense as well as in the wider senses indicated by Callon) is built into the societies of high modernity, and that analysis of this is still in its infancy.

## Notes

1. See, e.g., James (1907/1975); Morris (1971); Searle (1969).

2. Sociologists, economists, and historians of economics have started to elucidate the reflexive nature of economic knowledge (Steiner 2001), to scrutinize the interaction between economic models and policy making (Evans 1999; Morgan and Den Butter 2000), to analyze the connection between economics and computing (Mirowski 2002), to explore the “mediating” capabilities of models (Boumans 2005; Morgan and Morrison 1999), and to study how economic and statistical knowledge can turn into a technology of governance (Desrosières 1998; Miller 2001; Power 1996). Economists themselves (including prominent authors such as John Maynard Keynes, William Baumol, Alan Blinder, Robert C. Merton, and William Sharpe) have also sketched various ways in which economics can be considered an integral part of the economy; see, e.g., Blinder (2000); Faulhaber and Baumol (1988); Keynes (1936/1964, pp. 383–384); Merton and Bodie (2005); Sharpe (1990). A recent essay tried to systematize the idea (Ferraro et al. 2005).

3. There is a sense in which the idea that “ought” to have inspired index funds was the Capital Asset Pricing Model (which postulates that the optimal portfolio



of risky assets is the market as a whole), but in practice it was simpler efficient-market intuitions that were the inspiration. See Bernstein (1992) and MacKenzie (2006).

4. For example, an apparent anomaly might be a statistical artifact, or (since testing for excess risk-adjusted returns requires an asset-pricing model), it could be that a “failed” test indicates a deficiency in the asset-pricing model rather than the presence of a market inefficiency.

5. Readers interested in how Miller might respond to criticisms such as Holm’s should turn to his reflections on his debate with Callon (Miller 2005).

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