Chapter 2. Introduction to the work of Alain Desrosières: the history and sociology of quantification

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Abstract In this paper we are describing our partnership in research on history of statistics with Alain Desrosières who pass away in 2013. Then we are tracing his intellectual itinerary : training at *Ecole Polytechnique* and *National School of Statistics*, meeting with Pierre Bourdieu, first studies on History in Statistics in 1976 and on ocupational and social categrization with Thevenot in the 1980's, and publication of his major book of 1993 – *la politique des grands nombres,* with the new resource he found besaide *sciences studies* school and Bielefeld works on the probabilistic Revolution. We are then debating of some problems he assessed like the gap between statistics as tool of proof and as mean of government, between realist or constructivist approaches of statistics, or again the differences between measurement in natural and social sciences, with the prominent part of conventions. After 2000 he launched an ambitious program of Sociology of quantification which concerned not only statistics but also comptability.

Alain Desrosières passed away on 15 February 2013 at the age of 72. He was my friend, my colleague and my remarkable partner in a research project that I would like to describe here because, above and beyond his human qualities and the history of statistics, to which he was the first person in France to dedicate a specific book (Desrosières 1993), he developed an original approach to analysing the relationship between a society and its instruments of quantification (including statistics and national accounts) that liberated us from the painful oscillations of the 1970s between outright sycophancy and admiration for their formal power to illuminate and guide social progress and the most radical critiques that denounced, not unjustifiably, the power they held over our lives.

My companionship with Alain, which dates from the beginning of the 1980s, was born out of our shared experience of training as engineers. This training was a channel through which were conveyed the benefits of modernity, as well as its snares and delusions, that is the mystique of progress through science, which was strengthened significantly by the double success of structuralism in mathematics and the social sciences. Our re-evaluation of this mystique was aided considerably by a certain reflexive distance inherited from Marxism, the anti-colonial struggles, the events of May 1968 and critical sociology. The result was a certain uneasiness with the day-to-day experience of our training and then of our respective institutional situations, in which part of our social identity contradicted our personal identities. Alain was a graduate of the Ecole Polytechnique and I had studied at the Ecole Nationale Supérieure des Arts et Métiers and this imposed on both of us a certain obligation to acquiesce in our institutions' practices and values, which included 'ragging' of new students, traditions, militarism, machismo, elitism, *esprit de corps*, a technocratic ideology and

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I. Bruno et al. (eds.), *The Social Sciences of Quantification*, Logic, Argumentation & Reasoning 13, DOI 10.1007/978-3-319-44000-2_2

paternalism, none of which we found congenial. The cooperation with Algeria in Alain's case and with Tunisia in mine was also difficult to stomach. The injunctions to cooperate after the wars or processes of independence were shot through with ambiguities. How was it possible to assist without dominating? Who should be assisted, the people or the elites in power? In order to escape this uneasiness and reconcile our professional lives with our critical position towards society, we both took the same route via the 'humanities', a combination of history and sociology that enabled us to merge the best aspects of our training (the ability to reason and formalise) with research agendas that enabled us to tackle the societal issues that concerned us so much. From that moment on, our venture progressed, partly in the institutions to which we were affiliated and partly on their margins. Thus for more than 30 years I was engaged in a long dialogue with Alain Desrosières on the social history of statistics, which took the form of a point by point discussion of a bibliography, of his writings or of mine, and of shared teaching at the *National School of Statistics* (ENSAE).

This collaboration could not be taken for granted because we were not on the same side of the ATM. ATMs, the automatic teller machines that are found on the walls of banks, have two points of access. One is inside the bank and enables bank staff to fill them up with banknotes; the other is outside the bank, in the street, and is used by customer who, by keying in their personal identification numbers (PINs), can obtain cash in the form of banknotes, which are conveyed from inside the bank to the outside through a small slot. And of course customers know nothing about how ATMs are filled with banknotes and bank staff know only a little about the customers' needs that prompt the withdrawals. The same applies to the statistical 'data' that are produced by some statisticians who, for some users, are analogous to the bank staff who are unaware of all their customers' needs, while those same users are wholly ignorant of the way in which these 'data' are produced. In his capacity as a civil servant at INSEE and in his first post overseeing the accounts for 'lace and guipure[17]', Desrosières should have identified with the government statisticians who produce data and post them through the small slot in an ATM to those who seize upon them, such as academics like me, who turn them into what they call 'evidencing tools' in other disciplines, such as economics and social sciences, or managers and administrators, who turn them into tools used to govern populations and things. In fact, neither of us conformed to this norm of a well-defined division of labour between producers and consumers of 'data', which of course can scarcely be regarded as 'givens', in either economic or epistemological terms. However, this made us very much aware of this arbitrary division between producers and consumers and of the need to go beyond it.

For Alain Desrosières, the project took the form of a commitment to research and to the identification of research questions. It is this project whose various stages, and the gains made, I would now like to retrace. My aim is not simply to pay tribute to him but also to provide an introduction to his work on the social history of statistics that might persuade readers of the benefits of ridding ourselves of the two opposing caricatures usually associated with it: progress through quantification versus lies, manipulation and alienation. Approaching

[17] A coarse, large-patterned lace without a net ground.

statistics simultaneously as an 'evidencing tool and a tool of government' offers a much more comprehensive and effective perspective for understanding its role, both past and present, in the management of government and of individuals. This will offer us an opportunity to initiate or continue a debate on and an assessment of Alain Desrosières's arguments and to contrast them with other, more familiar interpreters in this field. Let everyone take possession of them, discuss them and enrich them.

A graduate of the Ecole Polytechnique (year of admission 1960) who chose to serve the state in a post as close to social demand as possible, Alain Desrosières joined the public administration as a senior civil servant at INSEE, the French national statistical institute. Thus it was with one foot in the vast state apparatus dedicated, in collaboration with the statistical departments of the various ministries, to producing statistics and economic studies and another in the network of sociologists and economists affiliated to the CNRS or to university departments that he constructed an original approach to the use of statistics in society. The initial focus of this approach was on the social and economic data produced by the institution that employed him, using an interpretative framework borrowed from Bourdieu, who had been his professor at the ENSAE. Alain Desrosières later (2003) explained what he had taken from this 'unlikely encounter between statisticians and Bourdieu', a teacher whose intimate knowledge of Algerian society he was very soon to share (Alain did his military service there and returned on official business in the course of the 'Work and Workers in Algeria' project (Bourdieu et al. 1963), together with a favourable attitude towards statistics as an evidencing tool (an 'initial legacy' he called it), which was unusual among critical sociologists, and – finally and above all – a 'requirement for reflexivity that led me to examine the historically and socially situated dimensions of the technical tools themselves' (the 'second legacy'). Like Bourdieu et al (1968), he very quickly convinced himself of the fact that social data are not 'givens' in either the epistemological or economic sense, since they are constructed and costly to produce. Rather, they result from a process of knowledge production for which the social and cognitive prerequisites require clarification. Alain also adopted the concepts of field and habitus in order to explain the reproduction of inequalities and dominance relationships.

This doxa derived from Bourdieu constituted the framework for his early studies of the French productive system (Desrosières 1972) and the marriage market (Desrosières 1978), two subjects associated with his early posts at the Department of Enterprise (1965-72) and then at the Department of Population and Households (78-87) and for which he drew on Benzecri's data analysis techniques and the early deliberations on this methodology with Michel Volle and Ludovic Lebart. Alain recently talked about the vogue for such analyses among sociologists (Desrosières 2008). Having outlined the method's origins in the concept of correlation, developed in biometrics and psychometrics, he describes it as opposed to the econometric modelling method that was cast in the same mould. The former is characterised by description and exploration, the topological principle (distance and proximity) and the language of individuals, properties and groups, the latter by inductive inference, causation theory and the explanation and language of variables. However, he went beyond these epistemological considerations by engaging in an historical survey of the social uses of this

method in the representation of social space in the 1970s, providing cartographic evidence of an equivalence between the space occupied by groups and that in which practices are located. This empirically obtained equivalence corroborated Bourdieu's notion of field, as well as his theory of social reproduction and mobility, but it was also applied to analyses of family budgets (M. Glaude) and ways of life (S. Juan), or even of 'socio-styles' (lifestyles) (B. Cathelat). These analyses brought this social mapping to the attention of the press (the *Nouvel Observateur*), albeit not without a certain degree of slippage from academic standards, particularly with regard to the transparency of the processing procedures.

Bourdieu's sociology was still present in the background of his work on socio-occupational categories, which begun when he was at the Research Unit between 1974 and 1978 and was systematised between 1979 and 1982. The father's socio-occupational classification was 'the favourite variable for adherents of Bourdieu's initial legacy'. And so he set about the task of recasting the socio-occupational classifications as he had been asked to do, drawing on an early study by Guibert, Laganier and Volle and referring explicitly to *Distinction* (Bourdieu 1979). The main idea was to 'denaturalise' the categories and to 'historicise and sociologise the statistical tools, particularly the classifications'. Desrosières (2003) highlights the contradiction that had to be overcome at the time between using numbers in order to obtain a secure scientific foothold and destabilising that foothold by arguing that the evidence was socially constructed by the dominant groups.

For Desrosières, the historicisation of statistics began in 1976. Together with Jacques Mairesse, he organised the Vaucresson seminars on the history of statistics that were to lead to the publication by INSEE of the two volumes (1977, 1987) of *Pour une histoire de la statistique*. After the small number of studies by B. Gilles and J. Dupâquier, this publication paved the way for a French history of statistics. Alain's contribution to the 1977 publication was twofold. He wrote a short article with Mairesse and Volle on the high points of French statistics, of which March, Carmille and Gruson are the heroes, which owes a great deal to the Michel Volle's research on 'the profession of statistician' (1980) and industrial classifications (1982), which was published some time afterwards. He also features in this book as the author of a comprehensive, well documented report on *the history of socio-occupational classifications,* in which he discusses the paradox between the apparent mathematical rigour of statistical records and the no less apparent social complexity of the conventions governing their classification. Statistics had found its historian, but one who focused solely on its administrative side, where the 'data' were produced. The ATM was not transcended. Alain distanced himself through formalisation in order better to identify the procedures used to gather and classify data and he was to reveal to me that he did not suspect at the time of the Vaucresson seminars that it would be possible to link it to a history of mathematical statistics as a method of proof.

The sociologisation of statistics, which vied with its historicisation, was an equally important question. As early as the beginning of the 1980s, Alain Desrosières sought out sociologists both within and outside his institution. Seconded on a half-time basis to the

Centre de Sociologie Européenne, where he kept company with Michael Pollack and organised with him a seminar on 'the social history of social science policies and techniques', he put considerable effort into the first *Statistics and Sociology* seminars, held in October 1982, which attracted 200 participants, half of them from the statistical departments of the various ministries and half from CNRS and university research centres. The report on the seminars emphasises the main difficulties encountered in bringing the two disciplines together due to the heterogeneity of their objects of enquiry, values and methods and their client-supplier relationship (the ATM again). However, it also makes the case for overcoming these difficulties through a joint study of the construction of the instruments and procedures of sociological research. Thus the dialogue had to be continued. Alain was always to describe himself as a statistician *and* sociologist.

His work on classifications led to the construction, with Laurent Thevenot, of a new classification (known as the PCS). *Les catégories socioprofessionnelles* (1988) (*Socio-occupational categories*), a short book that was to make his name known to the general public, sets out the arguments underlying the PCS. Alain Desrosières drew close to the Groupe de sociologie politique et morale (Political and Moral Sociology Group, or GSPM) and to Thévenot's work on the economics of social coding (*l'économie du codage social* 1983), investment in forms (*investissements de formes* 1986) and the economics of worth (*les économies de la grandeur* 1991) in which he examines statistical operations. At the same time, Alain discovered the writings of the convention school (Eymard-Duvernay, Orléan, Salais, Dupuy, Favereau) from which he was to borrow the idea of a multiplicity of conventions of equivalence and a plurality of corporate logics (Salais et Thevenot 1986). And by way of contrast to the sociology of conventions, historical considerations led him, during this transitional period when the Fordist regime was clearly being abandoned in favour of the as yet uncertain neo-liberal regime, to investigate the regulationist school as well.

Desrosières did not choose between history and sociology. At the beginning of the 1980s, a third way presented itself, that forged by the British *science studies* school, which was engaged at the time in developing an approach to the sociology of scientific knowledge. The strong programme formulated by David Bloor constituted a method of investigation that was causal (i.e. explanatory), impartial (agnostic as to what was true or false), symmetrical (in its study of both winners and losers) and reflexive (it applied these principles to itself). Its adaptation to the French case by Bruno Latour, in *Les microbes guerre et paix* (published in English as *The Pasteurization of France*) and *Irréduction* (1964) (*Irreductions* in English) and *La science telle qu'elle se fait* (1989), and by Michel Callon, in his translation and actor-network theories, is equally abrasive. This approach provides tools with which scholars can distance themselves from the standard epistemology and macro-history and adopt a micro-sociological approach to the actors by studying laboratory controversies and procedures. It is also a method for conceptualising both science as a cognitive and social construction and hence for conceptualising the history of statistics, including mathematical statistics, in terms

of social issues, translation, conflicts and controversies and the construction of the notions of proof and truth[18].

The third influence on, or rather impetus for, Alain's research was the internalist history of mathematical statistics, expounded by B. Bru and P. Crepel with regard to Laplace and Condorcet in the new seminar on the history of probability and statistics organised by Bru, Barbut and Coumet (with which he was associated from its beginnings in 1983), and Sigler's 1986 book, which was taken up in my initial presentations at the EHESS[19]. Alain's renewed interest in mathematical statistics and probability, despite his lack of interest in modelling, dated from this period. The tools made available by the science studies approach and convention theory were to enable him to link two bodies of research findings. The first included the results of Quetelet, March and Cheysson's analyses of administrative statistics, comparisons of different European statistical systems (his admiration for Szreter's work in the UK dates from this period) and institutional statistics (relating to the SGF, SNS, CNS, ENSAE), which he began to compile and publish in 'Histoire de formes' (Desrosières 1985), 'Masses individus moyennes" (Desrosières 1988) and 'Les spécificités de la statistique publique française' (Desrosières 1989). The second was the body of data on the mathematical history of statistics and probability that he had read in the work of Kendall, Stigler and Benzecri and in the two volumes of *The Probabilistic Revolution*, edited in 1987 and 1989 by Kruger, Daston, Heidelberg, Gigerenzer and Morgan and based on the proceedings of an international seminar held in Bielefeld. In this book, Alain found a broad, international and interdisciplinary approach to statistics that for the first time linked the mathematical and statist traditions.

It was to this linkage that his major book, *La politique des grands nombres,* was devoted. It was published in 1993 and has been translated into several languages[20], the English version appearing in 1998. This book is an integrated narrative, woven from these two histories of statistics, the social history of institutions and their methods of production, gathering (surveys or registers), coding and recording, on the one hand, and the cognitive history of the formal transformations to which the products of these operations were subjected and their enlistment as evidencing tools (regression or factor analysis), on the other. The duality of these two points of view had struck him for a long time. This history, which combined the two strands but could not be properly unified as long as the historiographies resisted, is spread out over more than two centuries but reads perfectly well because it does not indulge in any useless erudition; Desrosières forced himself to investigate all the innovations and controversies encountered from the perspective of the sociology of scientific knowledge. Yule, for example, transposes the methods of regression analysis used in

[18] Even recently, (in 'Est-il bon est-il méchant'), Desrosières was citing Latour's *Irreductions* as a source of stimulation for conceptualising the notions of convention of equivalence and incommensurability in contrast to the use of long statistical series in quantitative history, the abuses of econometric modelling and the widespread use of benchmarking in the 2000s.

[19] Ecole des hautes études en sciences sociales, Paris.

[20] It is said to have been translated into 17 languages, including Uzbek! This information remains to be confirmed, however.

biometry to economics. Within what framework does he do this, why and from whom? Alain Desrosières launches into a description of the issues at stake in the treatment of poverty in England at the beginning of the century, of which a regression-based comparative study of indoor and outdoor assistance constitutes one episode. He analyses a large number of controversies: German statistics vs. political arithmetic; Peuchet's literary statistics vs. Duvillard's calculations; aleatory contracts vs. probabilism and degree of faith, realism and nominalism in the theory of averages, homogeneity vs. heterogeneity of populations, Quetelet's average man vs. Galton's genius, causalism vs. contingency in Pearson's work, French and English administrative statistics, case studies vs. surveys, census vs. polling, eugenicists vs. hygienists, various principles for classifying deaths, various interpretations of chance and the notion of the model in econometrics (Koopmans vs. Vining, Keynes vs. Tinbergen).

These controversies are strung like pearls on one or two threads that constitute his favoured topics and which often take the form of tensions between two poles. The first tension arises out of the duality between the history of mathematical sources and the history of their uses, between the history of the state and the history of science. It is further intensified by the fragmentation of historiographies: the history of ideas and of theories, the history of facts, the history of quantification and formalisation, the history of the production of information and the history of science and of expertise were at the time still largely confined within their own separate fields (Armatte and Desrosières, 2000). A second conflict, this time methodological in nature, between internalist and externalist histories does not entirely match up with the first. It is commonplace to observe that the history of mathematics draws almost exclusively on mathematical concepts and ideas and that the history of the state draws on a wide range of external knowledge in the political sciences. However, it is no longer unusual today to view the history of quantification and modelling from a sociological perspective. Desrosières is fairly successful in doing this by adopting an anthropological approach to science based on the analysis of controversies, combining in almost every case a cognitive section with one concerned with the social issues at stake.

The third source of tension that runs right through the book from introduction to conclusion opposes a realist vision of statistics (it describes a reality) to a constructivist vision (reality is the result of a statistical construction based on conventions). This tension recurs in several historical contexts: what is the legitimacy of a realist interpretation of an average, an indicator, a correlation or a model? How are we to characterise the various ways in which authors have challenged this realism: Moreau de Jonnès's nominalism, Cournot's rationalism, Pearson's idealism, the constructivism of the post-modernists, etc.? This question of realism overlaps with that of the dual cognitive and social nature of statistics, although the one cannot always be reduced to the other: although realism is more common in representations of the hard sciences, this is not a general rule. '*The gap between technical object and social objects – dating back to the seventeenth century – is now a deep one. (…) (and) it is both difficult and indispensable to conceive these objects as simultaneously constructed and real, conventional, and solid. For want of such an endeavor, statistical information runs the risk of oscillating*

endlessly between opposing and complementary states: an undebatable reference situated above these debates, and a target of polemical denunciations destroying the complex pyramid of equivalences' (Desrosières 1993, p.398). Is statistics used to describe or as a basis for action? Is it a 'science of the state' or a means of processing large numbers? Does one have to be a mathematician, a sociologists or even an economist in order to recount its history? Desrosières does not always come down in favour of one or other of these alternatives. It is a question of 'attitude', he says. In each individual case, he suggests certain facts that point in one direction and others that point in the opposite direction.

The conclusion of his book returns to these tensions. In the first, the opposition is between 'two linguistic registers: that of description and science (*there is*) and that of prescription and action (*we must*). In the second, it is between 'two attitudes to the question of reality, one realist (or objectivist) and the other relativist (or historicist). From these two antitheses, Desrosières derives a four-box grid of the possible combinations. Over and above the commonest case, in which realism and the scientific approach are combined, he invites readers to consider the case of a constructivist approach to formal knowledge (which makes it possible 'to reconstruct a genesis and the social practices that have led to a solid statistical object') and that of a realist and objective approach to public action, which ultimately has been the *doxa* of modernity since Bernouli's *Art of conjecture*. The final case, that of a constructivist (or deconstructivist) approach to decision-making, to action and to the management of things and people, is based on the hypothesis that 'the conventions defining the objects certainly give rise to realities, even though these objects are resistant to proof and to any attempt to unravel them'. To conclude, statisticians seek to 'do things that hold', for both formal and social reasons. In other words, they construct objects (indices, classifications, models, etc.) that have both formal qualities that enable them to provide a coherent and realistic representation of reality and social legitimacy as a convention, as an element of society. These two properties make them socially useful as links, as bases for negotiation, in short as tools of government. In order for these objects (categories, concepts, measures) to hold, they have to be based on conventions that 'must simultaneously remain undebated, so that life may follow its course, and debatable, so that life can change its course'. It seems to us that this last sentence in the book presages an attempt to resolve this contradiction through change, though a series of expert regimes combining knowledge and power in a certain way and through the resulting cycle of life and death of social conventions. These were to be themes of his writings in the next decade.

In the postface to the second edition of the *Politics of Large Numbers* (2000), Desrosières assesses the reception given to his book and takes stock of the studies published since 1993. Thus one can read the long list of publications and collaborations that influenced him. He skimmed through the 'internalist' histories by Benzecri, Hald and Stigler, decried the 'Whiggish' perspective that dominates the history of economic thought and deals with statistics 'at best as an instrument' but appreciated the seminal studies by Mary Morgan, Judy Klein and Michel Armatte on econometrics. He visibly preferred the more 'externalist' studies by Ted Porter on the construction of objectivity, by Margo Anderson and Stephen

Fienberg, Jean-Pierre Beaud and Jean-Guy Prévost, Silvana Patriarca and Simon Szreter and, in France, by Luc Blondiaux on polls, Eric Brian on the intertwining of the government and geometry in production of figures in the classical age, de Martine Mespoulet, Emmanuel Didier on national statistical systems and their methods of investigation (registers, censuses, surveys) and by Berlivet, Dodier, Gollac and Spenlauer on the public policy evaluation. Philosophers also exerted a notable influence on him, including Hacking, to whose lecture on constructivism (*Construction of What* ?, 1999) at the Collège de France he was respondent. However, Foucault, whose lectures (Sécurité Territoire Populations, 1978 and Naissance de la Biopolitique, 1979) were not published until 2004, was not yet part of the landscape. Desrosières was fascinated by the Sokal affair, the great controversy of the time. Alan Sokal, a physics professor at New York University, perpetrated a publishing hoax that sought to smash to pieces the deconstructivist approaches of the science studies school. Finally, taking stock of the various critiques of his book, he acknowledged that the history of states, the producers of sources useful to their own governance, and the history of the methodology, of the enrolled forms and of the philosophy of reality for which they are the vectors, were not clearly linked in 1993. He noted, however, that the reactions to his book were also distributed around the two poles without ever focusing on both at the same time. Alain Desrosières did not yet have any miracle solution for this.

The solution was to emerge with an article, which, it seems to me, plays a key role as a crossing point at which the epistemological and political approaches start to be linked. This is the celebrated article entitled *The state, the market and statistics,* the first version of which, written in 1997, was published in 2000 in the *Courrier des statistiques*, in 2001 in the *Cambridge History of Science* (Porter and Ross eds., vol.7), in 2003 in *Historicités de l'action publique* (Laborier and Trom) and is reproduced as Chapter 3 in the Argument statistique volume 1, 2008. In this article, Desrosières identifies five ideal-typical forms of the state from the point of view of its role in the economy:

- *the engineer state* which directly replaces private initiative with state intervention (Colbert's royal factories, Ecole polytechnique and the Saint-Simonianism of post-revolutionary years, *New Deal* and *Manhattan Project* in the USA in the 1940, French economic planning in the 1950s);
- *the liberal state* trusts in the market and its mechanisms to produce the optimal state of equilibrium. The market economy requires price and production data in order to justify, support and provide a theoretical underpinning for these mechaisms (England of the Corn Laws, France in 1860, agricultural statistics in the USA at the end of the 19th century);
- *the welfare state* is concerned with the protection of workers against the risks of unemployment, illness and accident (1880-1930 with the Office du Travail (Department of Labour) and insurance schemes; eugenics; price indices; budget surveys;
- *the Keynesian state* seeks to put in place the apparatus required to regulate, at a global level, the balance between supply and demand, and to this end makes use of national accounting, economic modelling and planning;

- *the neo-liberal state* that emerged in Europe after the 1980s reduces state intervention in economic exchanges to a minimum and relies on decentralised power, the supposed efficiency of market and the supervision of individual behaviour. It makes extensive use of incentives and competition.

Each of these five configurations, which can be likened to expert regimes that combine knowledge and social control in a particular way, is associated with a favoured set of statistical tools and methods that are used to support the exercise of power and the implementation of public policies. Thus data collection technologies and, more generally, population and production statistics, are adapted to the needs of the engineer state; price statistics, together with standard microeconomic theory, are used to support the liberal state; budget surveys and probabilistic insurance techniques are used by the welfare state, while national accounting, consumption and employment surveys and econometric techniques meet the needs of the Keynesian state. The crisis of these last two models, which are relatively intertwined, was followed by the shift towards neo-liberalism of the Thatcher-Reagan years that put an end to the methods of forecasting and planning based on macroeconomic data; they were replaced by the widespread use of benchmarking, which is based on the rational expectations hypothesis, competition between economic agents and ex-post evaluations of their performance using sets of indicators that are only weakly linked to each other by logical or statistical relations. The French organic law relating to financial legislation, the 'open method of coordination' and the opening up of new markets ('tradable pollution rights') at the European level are the most striking examples. Here too, Alain drew on the work of numerous researchers who cannot be listed here for want of space.

This article constitutes an undoubted advance in Desrosière's efforts to better articulate the dual nature of statistics as both an evidencing tool and an instrument of government within an historical framework in which sudden breaks and continuities succeed one another. However, the principal difficulty is still the matching of these abstract, ideal-typical forms to clearly situated historical regimes, which is both necessary, since the ideal types are merely generalised from historical cases, and impossible, since historical regimes of the same type (Colbertism and Gaullism, Keynesian and Soviet planning) each have their own specific characteristics and cannot be likened to each other.

We have now reached the late 1990s, when Alain Desrosière's devoted himself, quite logically, to dealing with the fallout from his book and, in the first decade of the new century, to an attempt to synthesis his research themes into a sociology of quantification. He inaugurated the first course at ENSAE on the history of statistics (he was soon joined by Michel Armatte), which provided an exceptional opportunity to engage the future managers of the public statistical service (particularly those destined for a career in the state engineers corps) in a reflexive exercise informed by both history and sociology that would enable them to see behind the formal objects that they manipulate and understand their role in measuring and constructing the state. In 1992, he joined the editorial committee of *Genèse*, which gave him an opportunity to put his approach and arguments across to a wider audience, not only

through his own publications but also through those of the young scholars who were following in his wake and whose work he followed voraciously. In May 2002, he launched the first seminars on the sociology of quantification, which were attended by some 100 participants. The presentations were, curiously, divided between two themes: the history of statistics (Porter, Didier, Amossé, Mespoulet, Berlivet, Beck and Armatte) and the history of accounting (Miller, Chiapello, Lemarchand, Godechot and Capron). This programme is testimony to Alain Desrosières's desire to widen the scope of his research. The parallel between statistics and accounting is, after all, very tempting, by virtue in particular of their dual ability to describe and constitute an economic reality by using an equivalent (counting of individuals in the former case, counting of monetary units in the latter). Increasing familiarity with the writings of Miller and, in 2006, the collaboration with Eve Chiapello on a joint article on positive accounting theory were to typify this attempt, which remains incomplete, to establish a wider field of enquiry within which a sociology of quantification could be developed.

At the beginning of the new century, he joined the A. Koyré Centre as an associate researcher and regularly attended the seminars on the governance of science and climate modelling. This was an opportunity for him to incorporate his work on statistics more effectively into a more general approach to science in society in the 20th century and to include modelling in his approaches to quantification (Pestre 2001, Dahan et Pestre 2004, Dahan 2007, Armatte 2010). In February 2006, he contributed to the launch of the first *Seminars on the history of statistics* at INSEE; a second series was held in March 2008. Retirement, which he took in 2005, scarcely changed his work habits (he continued to go to his office at INSEE), did not lead to the break-up of his networks and afforded him little additional time to assuage his insatiable curiosity.

The articles he published in 2007 for the Centre Cournot and in 2008 with the Presses des Mines are evidence of a final significant advance in his thinking. They are focused on his new slogan: *to quantify is to agree + to measure.* This leitmotiv is the means whereby the realist and constructivist approaches to statistics could finally be truly linked together by reducing the gap between them: the real could not be denied by an absolute form of constructivism in which the act of measurement totally created the object (*What is not socially constructed*? Hacking had asked) and, conversely, the role of quantification in the government of men and things could not be denied by an absolute form of realism in which things supposedly had an independent existence prior to being measured. Bachelard and Bourdieu had already declared that the real is constructed. The idea that quantification is based on negotiated conventions, since it requires a certain degree of agreement on the thing that is to be measured, such as 'the qualities of the quantities' for example, banishes the spectre of realism and, symmetrically, that of relativism. It surreptitiously introduces the social into the very heart of the logic underlying orders, categories and metrology and gives the lie to the notion that these conventions are arbitrary. This approach to quantification can, incidentally, be virtually duplicated in a very similar approach to modelling, as I suggested to Alain.

Desrosières's work in recent years was centred around the publication in 2008 by the Presses des Mines of a collection of articles in two volumes, whose titles 'Pour une sociologie historique de la quantification' and 'Gouverner par les nombres' clearly reflect the two approaches that he had sought throughout his life to combine: statistics as an evidencing tool and as a tool of government. The introduction to the first volume develops this theme, taking as its starting point the equation 'to quantify is to agree and then to measure'. The introduction to the second volume, which is entitled 'Les mots et les nombres. Pour une sociologie de l'argument statistique", takes as its starting point the triptych of state, market and statistics. These two introductions, one dealing with a sociologically informed metrology based on the notion of convention, the other with policymaking informed by statistical instruments, specify the scope of this sociology of quantification. It is a twofold approach, social and cognitive simultaneously, to the construction of the figures that underlie the imposition both of evidence and of the power to govern. In a final article, which might be regarded as a summary of his thinking, Alain Desrosières (2011, 2014) resumed and extended his analyses of the neo-liberal regime, drawing together the threads of his arguments in a highly pertinent way. He introduces a new idea, namely that indicators retroactively influence the behaviour of agents, as actors undergoing quantification. This idea supplements the notion of performativity that Michel Callon deploys in order to account for the changes to reality brought about by scientific theory.

The moving tribute paid to him by his colleagues at INSEE on the occasion of his retirement, the encomium he received from the historians gathered in Berlin in May 2006 for the study day organised in his honour by the Centre Marc Bloch and the Max Planck Institute for the History of Sciences, and the meeting of his closest friends at Vertrieux on the occasion of his 70th birthday in 2010 reflect, more objectively than my own personal memories, the aura of respect and friendship that surrounded Alain Desrosières, well beyond the close-knit circles of family and colleagues. What stands out from these tributes is not only a body of work that has influenced minds, served as a point of reference and encouraged others to dedicate themselves to scholarship but also a consistent series of portraits of the man, of his qualities and his aptitudes. Alain was an excellent reader of others' work, with very incisive and forceful views on their strengths and weaknesses. He was what several people have called a '*mailleur*', that is a connector able to bring together diverse intellectual worlds. When he was awarded an honorary doctorate by his colleagues at UQAM, in Montreal, Alain set out very clearly what he owed to others and what he thought he himself had contributed through his work. As far as I am concerned, the verdict is clear: I owe him an enormous debt of gratitude, not only for his friendship but also for our intellectual exchanges, the one always going hand in hand with the other. And in writing this introduction I hope I have given as many people as possible access to his work.

We're here take a small part of the bibliography of books and articles Alain Desrosières established itself until 2001 and completed by us. The * et ** identify articles from tomes 1 and 2 of the book *l'argument statistique*.

References

Armatte, M. (2010). *La science économique comme ingénierie. Quantification et Modélisation*, Paris : Presses des Mines.

Bourdieu, P., Chamboredon, J.-C., & Passeron, J.C (1968). *Le métier de sociologue,* Paris : Mouton.

Bourdieu, P., Darbel A., Rivet J.-P., Seibel C. (1963). *Travail et travailleurs en Algérie,* Paris : Mouton.

Dahan, A. (Ed.)(2007). *Les modèles du futur*, Paris : La Découverte.

Dahan A. & Pestre D (Eds) (2004. *Les Sciences dans et pour la Guerre*, Paris : EHESS.

Desrosières, A. (1972). Un découpage de l'industrie en trois secteurs. *Economie et statistique*, 40, 25-39.

Desrosières, A., Mairesse, J. & Volle, M. (1976) (with). Les temps forts de l'histoire de la statistique française. *Economie et Statistique*, 83, 19-28.

Desrosières, A. (1977). Eléments pour l'histoire des nomenclatures socio-professionnelles. In *Pour une histoire de la statistique* - Tome I : Constributions, Paris : INSEE, 155-231.

Desrosières, A., & Thévenot, L. (1979). Les mots et les chiffres : les nomenclatures socioprofessionnelles. *Economie et Statistique*, 110, 49-67.

Desrosières, A. (1982). Un essai de mise en relation des histoires récentes de la statistique et de la sociologie. In *Actes de la journée d'étude "Sociologie et statistique*", Paris : INSEE - Société Française de Sociologie, Tome 1, 161-182.

Desrosières, A. (1985). Histoires de formes : statistiques et sciences sociales avant 1940. *Revue Française de Sociologie,* 26 (2), 277-310.

Desrosières, A., & Thévenot, L. (1988). *Les catégories socioprofessionnelles*. Paris : La Découverte.

Desrosières, A. (1988). Masses, individus, moyennes : la statistique sociale au XIX^{e} siècle. *Hermes*, 2, 41-66.

Desrosières, A. (1989). Les spécificités de la statistique publique en France : une mise en perspective historique. *Courrier des statistiques*, 49, 37-54.

Desrosières, A. (1990). How to make things which hold together : social science, statistics and the state. In P. Wagner B. Wittrock & R. Whitley (Eds), *Discourses on society*, Dordrecht: Kluwer Academic Publishers, 195-218.

Desrosières, A. (1993). *La politique des grands nombres. Histoire de la raison statistique*, Paris : La Découverte.

Desrosières, A. (1994). La commission et l'équation : une comparaison historique entre les Plans français et néerlandais. *Note INSEE-CREST*, n° 36/J310, du 31 mai 1994.

Desrosières, A. (1997). Refléter ou instituer : l'invention des indicateurs statistiques. In Dupoirier, E. & Parodi, J.-L. (Eds), *Les indicateurs socio-politiques aujourd'hui*, Paris : L'Harmattan, 15-33. *

Desrosières, A. (1998). *The Politics of Large Numbers. A History of Statistical Reasoning*, Cambridge: Harvard University Press.

Desrosières, A. (1999), La commission et l'équation : une comparaison des plans français et néerlandais entre 1945 et 1980. *Genèses*, 34, 28-52. **

Desrosières, A., & Armatte, M. (2000). Méthodes mathématiques et statistiques en économie : nouvelles questions sur d'anciennes querelles. In Beaud, J.-P., & Prevost, J.-G. (Eds.), *L'ère du chiffre, systèmes statistiques et traditions nationales*. Montréal : Presses Universitaires du Québec, 431-481.

Desrosières, A. (2000). L'État, le marché et les statistiques. Cinq façons d'agir sur l'économie. *Courrier des statistiques,* 95-96, 3-10.

Desrosières, A. (2000). L'histoire de la statistique comme genre : styles d'écriture et usages sociaux. *Genèses*, 39, 121-137.*

Desrosières, A. (2001). Managing the Economy: the State, the Market and Statistics. In Porter, T. & Ross, D. (Eds). *The Cambridge History of Science, vol.7 : Modern Social and Behavioral Sciences.* Cambridge: Cambridge University Press.

Desrosières, A. (2001). Entre réalisme métrologique et conventions d'équivalence : les ambigüités de la sociologie quantitative. *Genèses*, 43, 112-127. *

Desrosières, A., & Chiapello, E. (2003). Les paradoxes de la métrologie économique : le cas étrange de la *Positive Accounting Theory.* In Breviglieri, M., Lafaye, C. & Trom, D. (Eds). *Sens de la justice, sens critique.* Paris : Economica.

Desrosières, A. (2003). Bourdieu et les statisticiens : une rencontre improbable et ses deux héritages. In Encrevé, P., & Lagrave, R.-M. (Eds). *Travailler avec Bourdieu*, Paris : Flammarion, 209-218.

Desrosières, A. (2003). Du travail à la consommation : les usages des enquêtes des budgets de famille. *Journal de la SFdS,* 1-2, 75-111. **

Desrosières, A. (2003). Historiciser l'action publique. L'Etat, le marché et les statistiques. In Laborier, P., & Trom, D. (Eds). *Historicités de l'action publique*. PUF : Paris, 207-221.*

Desrosières, A. (2003). Les qualités des quantités. *Courrier des statistiques,* 105-106, 51-63.**

Desrosières, A. (2005). Enquêtes versus registres administratifs : les deux sources de la statistique publique. *Genèses,* 58, 4-27. **

Desrosières, A. (2006). Les recherches de Ian Hacking sur l'histoire des usages des probabilités et des statistiques dans le raisonnement inductif, http://www.jehps.net. *

Desrosières, A. (2007). Comparer l'incomparable. Essai sur les usages sociaux des probabilités et des statistiques. In Touffut, J.-P. (Ed.). *La société du probable. Les mathématiques sociales après Augustin Cournot,* Paris : Albin Michel, 163-200.

Desrosières, A. (2008). *Gouverner par les nombres*. *L'argument statistique 2*, Paris : Presses de l'École des Mines.

Desrosières, A. (2008). *Pour une sociologie historique de la quantification. L'argument statistique 1*. Paris : Presses de l'École des Mines.

Desrosières, A. (2011). The Methodological Standpoint of the "économie des conventions". *Historical Social Research*, 36, 103-124.

Desrosières, A. (2014). *Prouver et gouverner. Une analyse politique des statistiques publiques*. Paris : La Découverte.

Krüger, L., Gigerenzer, G., & Morgan, M. (1987-T1 & 1989-T2), *The Probabilistic Revolution.* Cambridge: MIT Press.

Latour, B. (1984). *Les microbes guerre et paix,* suivi de *Irréduction.* Paris : Métaillé.

Pestre, D. (2003). *Science, argent et politique. Un essai d'interprétation*. Paris : INRA.

Salais, R. & Thevenot, L. (1986). *Le travail. Marchés, règles, conventions.* Paris : Economica.

Stigler, S.M. (1986). *The History of Statistics.* Cambridge: Harvard University Press.



http://www.springer.com/978-3-319-43999-0

The Social Sciences of Quantification
From Politics of Large Numbers to Target-Driven Policies
Bruno, I.; Jany-Catrice, F.; Touchelay, B. (Eds.)
2016, XI, 204 p., Hardcover
ISBN: 978-3-319-43999-0