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Diaz-Bone, Rainer; Didier, Emmanuel

Veröffentlichungsversion / Published Version

Zeitschriftenartikel / journal article

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Empfohlene Zitierung / Suggested Citation:

Diaz-Bone, R., & Didier, E. (2016). The sociology of quantification - perspectives on an emerging field in the social sciences. *Historical Social Research*, 41(2), 7-26. <https://doi.org/10.12759/hsr.41.2016.2.7-26>

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The Sociology of Quantification – Perspectives on an Emerging Field in the Social Sciences

Rainer Diaz-Bone & Emmanuel Didier*

Abstract: »Die Soziologie der Quantifizierung – Perspektiven auf ein entstehendes Feld in den Sozialwissenschaften«. The introductory article to this HSR Special Issue presents the emerging field of sociology of quantification, which can be regarded as a transdisciplinary approach to the analysis of processes of quantification. Processes of categorization and classification are included because they can result in processes of generating figures and numbers also. The contribution sketches the science-historical development of this field. It is argued that processes of quantification are related in many ways with other social and socio-economic processes. Therefore, one can speak of a comprehensive political economy of statistics, quantification and categorization. Especially the works of the French statistician and sociologist Alain Desrosières are an innovative and far-reaching groundwork for the analysis of statistics, quantification and categorization. Also, Desrosières has pointed to the fundamental role of conventions for processes of quantification (as for processes of categorization) and he has published important contributions to the French science movement of economics of convention (*économie des conventions*). At the end of the article, a set of positions for a sociology of quantification are presented.

Keywords: Sociology of quantification, Alain Desrosières, Pierre Bourdieu, Michel Foucault, economics of convention, history of statistics, measurement, categories, categorization, INSEE.

1. Introduction

To quantify is to invent a convention and then to measure.
(Desrosières 2008, 10)¹

Quantification has made modern states, sciences and economies possible. And – vice versa – states, science and economy are driving forces for quantification processes (Woolf 1961; Duncan 1984; Porter 1995; Desrosières 1998, 2003; Didier 2009). Social scientists claim that numbers in society enforce trust (Por-

* Rainer Diaz-Bone, Department of Sociology, University of Lucerne, Frohburgstrasse 3, 6002 Lucerne, Switzerland; rainer.diazbone@unilu.ch.
Emmanuel Didier, Epidapo, UCLA Institute for Society and Genetics, Box 957221, 3308 LSB, Los Angeles, CA 90095-7221, USA; edidier@ucla.edu.

¹ Translation by the authors.

ter 1995) and that we are living in “worlds of numbers”² or in “worlds of indicators” (Rottenburg et al. 2015). All these wordings point to the development of the last century which came up not only in specialized worlds, but also in the experience of everyday life worlds of ordinary people (Gigerenzer et al. 1989). They point to a change of worlds in which quantitative information became more and more a dominant form of information relevant for coordination, for evaluation and for valuation. The establishment of the metric system in Europe in the 19th century, the upcoming of industrial production, the unification of currencies, the processes of nation building and of internationalization promoted the importance of quantitative information, which are endowed with a huge scope in space and time, which also facilitate comparisons between units and points in time (Porter 1995; Desrosières 1998, 2008, 2008a, 2014; Thévenot 1984; Espeland and Stevens 1998, 2008).³

With the Internet for two decades at least, a new form of political economy has evolved, which is based on quantitative information, on algorithms and new forms of the public, and of services and products. The amount of data which is analyzed – more and more on an automated basis and in real time – has given birth to the widely nowadays applied buzz word “big data” (Mayer-Schönberger and Cukier 2013; Burrows and Savage 2014).⁴ All in all, the economization and computerization of societies and the Internet will make quantification a more and more important research phenomenon.⁵

2. Sociology of Quantification – An Emerging Scientific Field?

The sociology of quantification analyzes processes of production and communication of numbers, also of graphs as visual representations of numeric data not only in relation to the political power that they unleash, not only in relation to “society” and not only in relation to classical sociological research questions (as social inequality, pluralities of valuation and coordination, conflict and critique, rationalization, labor division and its organization, social cognition etc.), but also as social processes “in itself and as such.”

² In German “*Zahlenwelten*,” see also Kalthoff (forthcoming).

³ For the establishment of the metric system see also Duncan (1984) and Alder (2002); for the establishment of time measurements see Zerubavel (1976, 1977, 1981).

⁴ The Internet is linking not only human beings but also texts, data files, objects and machines. More and more machines and objects are directly connected by the Internet, which is called the “Internet of things” (in short IoT, see Atzori et al. 2010). This trend accelerates the speed with which data are generated, traded, matched and analyzed.

⁵ And it is an open discussion whether the classical social research methods and research approaches are still appropriate for the analysis of these new data formats (Savage and Burrows 2007; Burrows and Savage 2014).

For one thing, we shall have to overcome our tendency to think of social measurement or quantification as something external to the social system in the sense, say, that the tailor's tape measure is external to the customer's waist. On the contrary, I argue, the quantification is implicit – sometimes explicit, for an observer not blinded by methodological preconceptions – in the social process itself before any social scientist intrudes (Duncan 1984, 36).

This latter perspective is strongly represented today by actor-network theory and convention theory. So the range of phenomena of sociology of quantification includes quantification processes *in* the sciences,⁶ quantification in society driven *by* the sciences,⁷ quantification processes driven by *other* social processes, including for example implementations of numeric technologies, standardization procedures,⁸ bureaucratic management, political decision-taking and newer trends as self-quantification – although in modern societies, which are penetrated by scientific concepts; these distinctions cannot be conceived as clear cut. Thereby, all stages of quantification processes are of interest as the construction and implementation of categories and indicators; the transformation of knowledge into quantitative information; the usages, representations and ways of communication of numbers; the very different ways to use the numbers once they are produced; and finally the (e)valuations and impacts based on these quantitative figures.

One has immediately to add that the *sociology* of quantification in fact is a transdisciplinary scientific movement – not restricted to the discipline of sociology. Without the contributions of statisticians, economists, historians, philosophers, information theorists, anthropologists and political scientists, this scientific strand would not exist, and especially historical analysis was groundwork for this field. Renowned scholars as Fernand Braudel or Charles Tilly not only used quantitative data and applied quantitative methods for historical analysis, they also practiced the old and noble “critique of the sources” which consisted in reflexive consideration about the methods of quantification.⁹ As this HSR Special Issue demonstrates, historians still offer important contributions to the

⁶ The sociology of statistics thus should be regarded as part of the sociology of quantification (see the works of Desrosières 2008, 2008a, 2014; and also contributions as Camic and Xie 1994; Anderson 1988; Raftery 2001; Godin 2005; Camargo 2009; Didier 2009; or the contributions in Alonso and Starr 1987). See also the classical literature on foundations, problems and reflections of measurement and quantification in the social sciences (Sydenham 1979; Woolf 1961; Lazarsfeld 1961; Duncan 1984; Roberts 1985). See also the contribution of Centemeri (2011).

⁷ This perspective is advanced by the so-called performativity approach, see below. See also the contributions from Fabian Muniesa (2016) and Corine Eyraud (2016) in this HSR Special Issue.

⁸ See for interrelations of standardization, conventions and quantification Lampland and Star (2009), Thévenot (2009), Timmermans and Epstein (2010) and Busch (2011).

⁹ Cliometrics is the sub-discipline in historical analysis using econometric methods in the historical analysis of quantitative historical data.

analysis of quantification and in the discipline of history.¹⁰ And since four decades now, the association QUANTUM has gathered researchers who apply computerized statistical methods in the analysis of historical data.¹¹

Also, the contributions in this HSR Special Issue demonstrate that research contributions in this area are more and more interrelated, i.e. authors relate to each other's work and are aware of each other's perspectives on quantification. This new quality can be grasped by the notion of "field."¹² There are influential precursors which can be regarded as classical studies. Several traditions can be identified. First, the French one, going back to Durkheim and Mauss (1903), and then Bourdieu (1984), who all considered, in a Kantian twist of mind, that social categorization and social enumeration were a social product of special importance, and thus that they were crucial objects of sociological inquiry. Second, an American tradition began much later, during World War II, with the rebellion of some sociologists against the wave of quantification that the discipline of sociology underwent then. Symbolic interactionists on the one hand with especially Herbert Blumer (1969) and later Howard Becker (1972), and ethnomethodologists on the other, with Garfinkel (1967) and Aaron Cicourel (1964), began to make quantification an object of sociology, in a clear critical tone, aiming at questioning the monopole of the quantitative criteria of proof. This rebellion happened to finally take shape only at the very end of the 1970s, in the denomination of "qualitative sociology." Another tradition of research comes from the historians of science. After Thomas Kuhn's *Structure of Scientific Revolutions*, published first in 1962 (see Kuhn 1996), Lorenz Krüger gathered a group of scholars at the University of Bielefeld to discuss whether the apparition of probability was in itself a scientific revolution or not. This led both to the publication of two collective volumes entitled *The Probabilistic Revolution* (1987, 1990) and to the shaping of a group of historians often identified as "the Bielefeld Group." Finally, another kind of research, sometimes referred to as "the internalists," took shape when users of quantification, that is professional statisticians, economists and sociologists, got themselves interested in the question of their own history. Very famous examples of this are Paul Lazarsfeld's "Notes on the history of quantification in sociology" (Lazarsfeld 1961)¹³ and Otis D. Duncan's "Notes on social measurement" (Duncan 1984).

¹⁰ See the contributions from Lars Behrisch (2016), Martin Lengwiler (2016) and Daniel Speich Chassé (2016) in this HSR Special Issue.

¹¹ The journal *Historical Social Research* is also the official journal of QUANTUM. See <<http://www.gesis.org/en/hsr/profile/quantum>>.

¹² The sociological notion of field was developed by Pierre Bourdieu. See for an application in the analysis of economy Bourdieu (2005); see also Martin (2003).

¹³ This article from Lazarsfeld is reprinted in Woolf (1961).

3. Alain Desrosières' Legacy

Now, there are important modern publications in the field of sociology of quantification as Theodore M. Porter's book *Trust in numbers* (1995), and articles written by Wendy Espeland and co-authors (Carruthers and Espeland 1991; Espeland and Sauders 2007; Espeland and Stevens 1998, 2008; Espeland and Vannebo 1998). But the most important and most influential works – at least in Europe – were published by the French statistician and sociologist Alain Desrosières who mixed all together these four traditions of social studies of quantification. And the contributions in this HSR Special Issue refer to are grounded in his seminal work. From its beginning, sociology of quantification in France has focused firstly on social categories, classifications and counts of categorizations. Here, French scholars could continue this tradition founded by Emile Durkheim, which was advanced by Pierre Bourdieu and the French scientific movement of the so-called *économie des conventions* (EC, see below).

The very specificity of Alain Desrosières in this field, made possible by the very specificity of the institution that hired him, was that he was not only a social student of statistics. He studied statistics reflexively because he was *also* a practitioner of statistics and was aiming at improving them. The INSEE (*Institut national de la statistique et des études économiques*) has this very great originality compared to other statistical institutes around the world that it belongs to its duty not only to produce data (such as the Census Bureau does magnificently), but also to produce studies based on these data – which is devoted mainly to academics in the US. In France, people like Alain Desrosières are paid to be *at the same time* bureau of the census professionals and university professors.

In the 1970s, Desrosières was given the task to refurbish the socio-professional categories in France which were getting old (they had been created in the 1940s). It led him, under the impulse of Bourdieu, to dig into their history and to produce new theories of quantification, and to a better understanding of the mechanisms of categorization. Only then, he himself (and others) transformed the most important social nomenclature in France! Social studies of statistics were put to use for statistics. This episode became one epitome contribution in the field (Desrosières and Thévenot 1979, 2002; Diaz-Bone 2015).¹⁴ Also French studies on quantification were mainly interested in the activities of state institutions and in public action (see the contributions in Besson 1992). But later, the analysis of indicators and accounting became also

¹⁴ See also the contributions of Thomas Amossé (2016) and Etienne Penissat et al. (2016) in this HSR Special Issue.

part of these studies in France (see for example Desrosières 1995, 2001, 2015; Chiapello and Desrosières 2006; Salais 2004, 2012; Thévenot 2009, 2011).¹⁵

In the US, as well as in the UK and in Germany, sociologists from the beginning on did research on metric measurements, on the analysis of book-keeping, accounting and on rankings. These were more important than the analysis of categorizations – although some work on categories and the differences between categorization and quantification do exist, as the conceptual distinction of “marking” which is using numbers to represent categorical relationships and “commensuration” which is using numbers to represent metric relationships (Espeland and Stevens 2008, 409).¹⁶ The German contributions to the sociology of quantification focused also on numeric calculation and representation (Stagl 1976; Aly and Roth 2004). Also German scholars early cooperated with British scholars in the field of accounting.¹⁷

But still sociology of quantification is no unified field, and it is not a fully established field. One reason for this is that scholars who work on quantification are also engaged in other – and sometimes much better institutionalized – fields of research. This can be regarded as impediment, but an advantageous consequence of this is to have contributions to sociology of quantification from different other scientific strands and fields as from the social studies of science and technology (Latour and Woolgar 1979; Latour 1987),¹⁸ the performativity approach in economic sociology and in the sociology of finance (Callon 1998; MacKenzie 2006) or critical accounting studies (Miller and Hopwood 1994; Power 1997). Another reason is that there is still no clear cut set of research problems, no coherent agenda and no elaborated theoretical and associated methodological approach for such a scientific field – maybe with the exception of Alain Desrosières’ work as we discuss below. Although this field emerges as an international one, it is fragmented by crossing national and cultural boundaries as well as by language frontiers. For some years now the number of international meetings, conferences and research groups is rising.¹⁹ Likewise more and more editorships are published – offering an international collection of

¹⁵ See also the contributions of Eve Chiapello and Christian Walter (2016), Corine Eyraud (2016), Robert Salais (2016) and Laurent Thévenot (2016) in this HSR Special Issue.

¹⁶ One of the important exceptions in US sociology is the research on classification in the tradition of symbolic interactionism of Bowker and Star (1999); further exceptions are for example the contributions of DiMaggio (1987), and for the relationship of categorization with quantification see the contributions of Zuckerman (1999), Zhao (2005, 2008) or Fourcade and Healy (2013).

¹⁷ See the contributions in Kalthoff et al. (2000) and in Mennicken and Vollmer (2007).

¹⁸ See also the forthcoming special issue of the *Journal Science & Technology Studies* (S&TS): “Numbering, numbers and after numbers: Doing & undoing calculative practices.” See also Godin (2005).

¹⁹ Two examples: At the *Wissenschaftskolleg zu Berlin* there has been a focus group on quantification in 2013/2014 (headed by Wendy Espeland). Laurent Thévenot organized a conference on the sociology of quantification at Paris Malakoff in November 2015.

contributions (see for example Adkins and Lury 2012; Rottenburg et al. 2015; Bruno et al. 2016, forthcoming). An “Alain Desrosières Prize” has even been set up by the *Société française de statistique* to reward annually the work of a young social student of quantification. These developments make scholars more and more aware of each other and of the sociology of quantification as an emerging field. Maybe the claim of an emerging field at this moment is more a hypothesis, but we think that the evidence for this claim is gathering.

The work of Alain Desrosières can be regarded as the best suited groundwork for sociology of quantification as a scientific field.²⁰ Alain Desrosières was an internationally and widely renowned scholar not only in the field of sociology of quantification but also as an expert in the history of statistics.²¹ Especially his book *The politics of large numbers* (Desrosières 1998) was received in many countries and many disciplines.²² Alain Desrosières was also a “*compagnon de route*” of the French movement of the so-called “*économie des conventions*” (in English “economics of convention,” in short EC) which postulated the conventional (and therefore social) nature of qualities and quantities (Desrosières 2011, 2008, 2008a, 2014; Diaz-Bone 2015).²³ So presenting and discussing his work needs to recognize Desrosières’ relation to the French tradition of epistemology (which is presented in the sociology of Pierre Bourdieu) and his contribution to the scientific movement of EC.

Conventions are at the heart of the processes of quantification and of economization. Alain Desrosières emphasized this point, arguing that statistics must be conceived as simultaneously conventional and real (Desrosières 2009, 2014). It is this concept of convention as basis for cognition and valuation which was made famous by EC. From early on Desrosières had close relations to this scientific movement and his publications (especially the later ones) can be regarded as contributions to EC (Diaz-Bone 2015).²⁴ EC was founded in the 1980s by a group of economists in the Region of Paris: François Eymard-Duvernay, Olivier Favereau, André Orléan, Robert Salais and Laurent Thévenot (see Salais and Thévenot 1986; Storper and Salais 1997; Favereau and Lazega 2002; Eymard-Duvernay 2006, 2006a; Diaz-Bone 2011, 2015). Since more than ten years, the internationalization of EC has been an ongoing process

²⁰ See also the contributions in the special issue of *Statistique et société* edited by Didier and Droesbeke (2014) as well as the contributions in the special issue of *Partecipazione et conflitto* edited by Bruno, Didier and Vitale (2014).

²¹ He was born 18th of April 1940 in Lyon and died on 15th of February 2013 in Paris.

²² Originally published in France in 1993 as *La politique des grands nombres*.

²³ See the contributions of Rainer Diaz-Bone (2016) and Emmanuel Didier (2016) in this HSR Special Issue.

²⁴ Alain Desrosières regarded himself not to be part of the inner core of founders of EC, but published works contributing to this complex pragmatic institutionalism of EC (Diaz-Bone 2011, 2015). In fact, one of his last written articles reveals his close affiliation to this movement (see Desrosières 2011).

and the journal *Historical Social Research* has already published a series of special issues devoted to EC and its applications.²⁵ Nowadays, it is more than evident for the growing international network of conventionalists that the contributions of Alain Desrosières are not only seminal for the sociology of quantification but also for EC. Desrosières' writings integrated analysis of categorization and quantification from its beginnings with EC (Diaz-Bone 2015).

4. Governing by Numbers, Critique, Statactivism and Retroaction

But the work of Alain Desrosières expands well beyond the crucial question of the interrelationship of social categorizations, quantification and conventions. One of the threads that is woven all along his oeuvre is the question of the relationship between quantification and government. The titles of his books speak for themselves: *The politics of large numbers* (Desrosières 1998), *Governing through numbers* (Desrosières 2008a), *To prove and to govern* (Desrosières 2014).

This point raises the question of his relationship to the work of Michel Foucault. Foucault – especially in *Territory, Security, Population* (Foucault et al. 2004) – where, in short passages, Foucault proposes to study the link between statistical practices and governmentality. This link, which Foucault points out more than he really explores, has been dug deeper by Ewald, a close student of Foucault, in his work on the welfare state (1986) where he has a whole chapter on the governmentality of the average.

But at the INSEE, if Foucault was used for his work on nomenclatures (Foucault 1994), his work on governmentality was not familiar. The reason is that his works were taught during his classes of the *college de France*. Even though pronounced at the end of the 1970s, his works were published only in 2004. And it happened simply that the administrators of the INSEE did not go to the public lectures of Foucault.

On the contrary, Foucault had one very influential auditor in the person of Colin Gordon, a very interesting character in that he always remained outside of the university system. Gordon actually sat in person at Foucault-conferences and

²⁵ In 2011, the first HSR Special Issue "Conventions and institutions from a historical perspective" offered introductions, theoretical considerations and empirical applications of this French approach (Diaz-Bone and Salais 2011). In 2012, a follow-up issue was published offering discussions and further considerations (Diaz-Bone and Salais 2012). In 2015, the next HSR Special Issue "Law and conventions from a historical perspective" was published, presenting research of convention theory in the transdisciplinary field of sociology of law, history of law and economic sociology of law (Diaz-Bone, Didry and Salais 2015). The articles in these issues are available in the HSR Archive, available at: <<http://www.gesis.org/en/hsr/archive>>.

became enthusiastic (Jardim 2013). His enthusiasm gave rise to the book *The Foucault Effect* which was edited with Graham Burchell and Peter Miller (Foucault et al. 1991), who at the time were working in the sociology of accounting.

Desrosières, in a kind of paradox, was much more aware of the work of the team at the London School of Economics because they were working on a specific quantification technique, accounting (Rose 1991; Miller 2001). So what he knew about the Foucault of governmentality had made an English detour.

In other words, Desrosières was not influenced by the work of Foucault, at least until the very end of the 2000s, and the reverse actually is also true. The main differences between them ensue from the raw fact that Desrosières was first interested in quantification when Foucault was first focusing on government. Thus, Foucault did not see that there are actually different statistical techniques and that it makes a difference. He linked statistics, all statistics, mainly to neoliberal governmentality. On the contrary, for Desrosières, the baseline is that there are several different statistical methods, which have very different effects in the government of the population. For him, it soon became clear that different modes of quantification are associated with different modes of government. For example, he has shown how French seventeenth century Colbertism also had its specific statistics. This work of Desrosières would end up in his famous *Table of the five forms of State* (2003).²⁶ Foucault, and with him Ewald and Donzelot, had only an intuition of the object that Desrosières was pursuing.

After this work on the relationship between quantification and governmentality, Desrosières focused on a whole new set of questions related to the specific case of quantification used by a neoliberal government such as the one that he was witnessing since the middle of the 2000s (Desrosières 2015). He always was passionate in the political scene in which he was living. As shown in this very HSR Special Issue, this led him to tackle three questions. First, that of the benchmarking techniques and retroaction (Desrosières 2015; Bruno and Didier 2013), second the question of the randomized experiments applied to public policies (Bardet and Cusso 2012), and third the question of statistical activism (Bruno et al. 2014).

Thus, Desrosières opened up a whole series of topics that deserve to be approached through the study of their relationships to quantification and conventions. From the ways societies produce their own categories and nomenclature, to the ways numbers are used and thus participate to the government of the population passing by the specificities of control in our neoliberal world. His work might be illuminating in many different ways.

²⁶ See the contribution from Rainer Diaz-Bone (2016) in this HSR Special Issue (in particular, Table 3).

5. Positions for a Sociology of Quantification

We propose to consider a set of positions which could be suited to integrate a more coherent field of research on categorization and quantification.²⁷

- 1) Sociology of quantification has been very productive when it has considered the societal interrelations and the division of labor (of different actors) engaged and entangled in a kind of a widely understood “political economy of coding, categorization and quantification” overarching many stages of production, distribution, application and recognition of categories and quantifications. Laurent Thévenot (1983) and Alain Desrosières (2011a) have worked out this embracing perspective on social engagements in categories and quantifications wherein social representations, the exertion of power, social reproduction, the interrelation of state and other social institutions are involved in the definition, establishment and application of categories and quantifications in social space (Boltanski and Thévenot 1983). Laurent Thévenot (1983) and Alain Desrosières (2007) coined the notion of statistical chains, respectively long chains which integrate these stages. The invention (construction), implementation and application of categories and quantification are costly societal investments in the sense of the concept of investment in form developed by François Eymard-Duvernay and Laurent Thévenot (Eymard-Duvernay and Thévenot 1983, 1983a; Thévenot 1984; Diaz-Bone 2015). So we claim for the interest of analyzing also the core processes of categorization and quantification which focus only on single parts of these chains. So we claim for the need to analyze also the core processes of quantification and their socio-epistemological prerequisites – not only the societal uses of numbers and the impacts of quantification.
- 2) Since *The politics of large numbers* (Desrosières 1998), the perspective on quantification is often based on a pragmatist and conventionalist approach. Quantifications are possible after conventions (how to categorize respectively how to measure) have been invented (Desrosières 2008, 10). There are no naturally given categories or measures. Both are the result of constellations of objects, human beings, dispositives (“instruments”), conventions and practices. This position is a critical stance against too simple positivistic ideas of categorization and measurement in the social sciences.
- 3) The historical and pragmatist perspectives of conventionalists on categorizations and quantifications lead to the rejection of the dichotomy between externalist and instrumentalist explanations. Conventionalists do not choose between the two. Both categorizations and quantifications

²⁷ Of course, we propose them for discussion in the field and not as “rules.”

have to be interpreted and applied by actors in situations. This is an internalist perspective as starting point, reconstructing the meaning of categorizations and quantifications from an actor's situation which is extended to the analysis of the wide-ranging socio-historical scope of categorizations and quantifications in whole societies as result (Storper and Salais 1997; Boltanski and Thévenot 2006; Diaz-Bone 2015). This position is a critical stance against the assumption that categorizations or quantifications serve only certain social classes, only some institutions or special interests and have a given and complete meaning. It is not meant to regard the interpretation and application of categories and measure as free and arbitrary in situations. But the effects of quantification cannot be bound to one or several social entities. They spill all over any social setting, including on those who might have set up the quantitative tool (Didier 2013).

- 4) Categorization and quantification may have their uses and misuses but this depends on agencies and socio-political constellations and also on (e)valuating positions. There is no reason to condemn or avoid quantification (or quantitative methods) per se. This position is a critical stance against scholars who study quantifications and statistics as objects and reject quantitative methods and criticize quantification or categorization on which quantification can be based.²⁸ The abstinence from methodological expertise would bereave social sciences not only from their analytical power but also from their potential to engage for fairer forms of quantification and coordination.
- 5) Many of the contributions in this HSR Special Issue engage implicitly or explicitly for a kind of "public sociology" (Burawoy 2005) i.e. a scientific discipline bringing in its analyses (in this case of quantification and its social preconditions and its consequences) into public debates about the improvement of society – however, this will be defined by engaged citizens. The privatization of quantification processes and the monopolization of data as resources are not only an increasing problem for citizens – being analyzed and controlled by indicators without a legitimate conventional basis –, but this trend will also undermine social research infrastructures and social science research. Instead of private and hidden interest, publicly debated and justifiable scientific standards should be the ground for quantification, measures and categories. What is at stake here is a new understanding of science as a core element of modern states. Thereby, states can no longer be understood as officialdoms or pure for-

²⁸ Historical social research without quantitative data would be a "fallback" into the history of events, ideas or "great man" (see for an outline of historical social research the outline by Wilhelm Heinz Schröder (1994)).

mal bureaucracies but as ways how to bring in a common good into forms of valuating and coordinating public issues (Salais 2015).

6. Contributions in this HSR Special Issue

This HSR Special Issue “Conventions and quantification – transdisciplinary perspectives” presents a collection of contributions from scholars from different disciplines such as historical sciences, sociology, statistics, economics and others who all refer to the works of Alain Desrosières and who are more or less influenced by his work. (And the notion of “sociology of quantification” we used above should not be restricted to disciplinary boundaries – such as sociology only.) The way Desrosières crossed the disciplinary boundaries made him a true transdisciplinary scientist.

The first article of *Emmanuel Didier* (Los Angeles) situates the career and work of Alain Desrosières in his Parisian and transdisciplinary context. *Rainer Diaz-Bone* (Lucerne) links the work of Desrosières to EC and discusses the difference between categorization and (metric measurement). Didier and Diaz-Bone emphasize the importance of the “political economy of quantification and categorization,” which the writings of Alain Desrosières – as the writings of Laurent Thévenot – have introduced. The *Centre d'études de l'emploi* (CEE, the French center for the study of employment) was a leading research institution for EC. *Thomas Amossé* (Paris) portrays the research on quantification done in the course of this institution and he also relates this to the emerging EC. Two of the founders of EC, Laurent Thévenot and Robert Salais, are also contributing to this HSR Special Issue. *Laurent Thévenot* (Paris) presents the 30-year-old tradition of the “politics of statistics” and of the analysis of the “political economy of coding,” which was a birth element of EC and sociology of quantification in France. His contribution relates important concepts – nowadays regarded as part of the theoretical body of EC – also to the analysis of quantification. *Robert Salais* (Paris) claims for the awareness and the need of the close interrelationship of statistical conventions and social conventions. Referring to the tradition of EC and the work of the economist Amartya Sen, he argues that the ethical and normative basis of the informational basis of socio-economic coordination and evaluation offers an inherent integrative power for more social justice and social integration. The international group of authors of the next contribution continues the exploratory strategy, invented by Luc Boltanski and Laurent Thévenot which is to entangle actors in card games with socio-economic categories and classifications. *Etienne Penissat* (Lille), *Cécile Brousse* (Paris), *Jérôme Deauvieu* (Paris), *Julien Chevillard* (Lausanne), *Emmanuelle Barozet* (Santiago de Chile) and *Oscar Mac-Clure* (Santiago de Chile) analyze the initial study and its further replications and application in different countries. *Eve Chiapello* (Paris) and *Christian Walter* (Paris) study

the different forms of financialization of the economy. They identify different conventions which make different forms of financialization and professions in the economy possible. *Corine Eyraud* (Aix-en-Provence) analyzes the change in the public accounting in France. She works out the different political philosophies which are involved in these accounting systems of the state. *Fabian Muniesa* (Paris) focuses the training and the pedagogy in the Harvard Business School which implies a certain form of the valuation of enterprises. His article works out how the underlying convention of economic valuation came up. The Millennium Development Goals as defined by the United Nations in 2000 is the topic under study in the contribution of *Daniel Speich Chassé* (Lucerne). He analyzes the historical co-construction of institutions and statistics, whereby the Domestic Gross Production in the postcolonial age is of special interest to him. *Lars Behrisch* (Utrecht) examines the early history of statistics in the ancient regime in France. He traces the problems in the establishment of a nationwide agrarian statistics. Finally, *Wendy Espeland* (Chicago) proposes the idea of “reverse engineering” and she also relates quantifications to emotions.

Special References

Contributions within this HSR Special Issue:
Conventions and Quantification – Transdisciplinary Perspectives on
Statistics and Classifications

- Amossé, Thomas. 2016. The *Centre d'Etudes de l'Emploi* (1970-2015): Statistics – On the Cusp of Social Sciences and the State. *Historical Social Research* 41 (2): 72-95. doi: 10.12759/hsr.41.2016.2.72-95.
- Behrisch, Lars. 2016. Statistics and Politics in the 18th Century. *Historical Social Research* 41 (2): 238-257. doi: 10.12759/hsr.41.2016.2. 238-257.
- Chiapello, Eve, and Christian Walter. 2016. The Three Ages of Financial Quantification: A Conventionalist Approach to the Financiers' Metrology. *Historical Social Research* 41 (2): 155-177. doi: 10.12759/hsr.41.2016.2. 155-177.
- Diaz-Bone, Rainer. 2016. Convention Theory, Classification and Quantification. *Historical Social Research* 41 (2): 48-71. doi: 10.12759/hsr.41.2016.2. 48-71.
- Didier, Emmanuel. 2016. Alain Desrosières and the Parisian Flock. Social Studies of Quantification in France since the 1970s. *Historical Social Research* 41 (2): 27-47. doi: 10.12759/hsr.41.2016.2. 27-47.
- Espeland, Wendy. 2016. Reverse Engineering and Emotional Attachments as Mechanisms Mediating the Effects of Quantification. *Historical Social Research* 41 (2): 280-304. doi: 10.12759/hsr.41.2016.2. 280-304.
- Eyraud, Corine. 2016. Quantification Devices and Political or Social Philosophy. Thoughts Inspired by the French State Accounting Reform. *Historical Social Research* 41 (2): 178-195. doi: 10.12759/hsr.41.2016.2. 178-195.
- Lengwiler, Martin. 2016. Risky Calculations: Financial Mathematics and Securitization since the 1970s. *Historical Social Research* 41 (2): 258-279. doi: 10.12759/hsr.41.2016.2.258-279.

- Muniesa, Fabian. 2016. Setting the Habit of Capitalization: The Pedagogy of Earning Power at the Harvard Business School, 1920-1940. *Historical Social Research* 41 (2): 196-217. doi: 10.12759/hsr.41.2016.2. 196-217.
- Penissat, Etienne, Cécile Brousse, Jérôme Deauvieux, Julien Chevillard, Emmanuelle Barozet, and Oscar Mac-Clure. 2016. From Statistical Categorizations to Ordinary Categorizations of Social Space: History and Legacy of an Original Study Based on a Card Game. *Historical Social Research* 41 (2): 135-154. doi: 10.12759/hsr.41.2016.2. 135-154.
- Salais, Robert. 2016. Quantification and Objectivity. From Statistical Conventions to Social Conventions. *Historical Social Research* 41 (2): 118-134. doi: 10.12759/hsr.41.2016.2. 118-134.
- Speich Chassé, Daniel. 2016. The Roots of the Millennium Development Goals: A Framework for Studying the History of Global Statistics. *Historical Social Research* 41 (2): 218-237. doi: 10.12759/hsr.41.2016.2. 218-237.
- Thévenot, Laurent. 2016. From Social Coding to Economics of Convention: A Thirty-Year Perspective on the Analysis of Qualification and Quantification Investments. *Historical Social Research* 41 (2): 96-117. doi: 10.12759/hsr.41.2016.2. 96-117.

References

- Adkins, Lisa, and Celia Lury, eds. 2012. *Measure and value*. New York: Wiley.
- Alder, Ken. 2002. *The measure of all things: The seven-year odyssey and hidden error that transformed the world*. New York: Free Press.
- Alonso, William, and Paul Starr, eds. 1987. *The politics of numbers*. New York: Russell Sage Foundation.
- Aly, Götz, and Karl Heinz Roth. 2004. *The Nazi Census: identification and control in the Third Reich*. Philadelphia: Temple University Press.
- Anderson, Margo J. 1988. *The American census: A social history*. New Haven: Yale University Press.
- Atzori, Luigi, Antonio Iera, and Giacomo Morabito. 2010. The Internet of things. *Computer Networks* 54 (15): 2787-805.
- Bardet, Fabrice, and Roser Cussó. 2012. Les essais randomisés contrôlés, révolution des politiques de développement? Une évaluation par la Banque mondiale de l'empowerment au Bangladesh. *Revue française de socio-économie* 10 (2): 175-98.
- Becker, Howard S., and Irving Louis Horowitz. 1972. Radical politics and sociological research: Observations on methodology and ideology. *American Journal of Sociology* 78 (1): 48-66.
- Besson, Jean-Louis, ed. 1992. *La cité des chiffres ou l'illusion des statistiques*. Paris: Editions Autrement.
- Boltanski, Luc, and Laurent Thévenot. 1983. Finding one's way in social space: A study based on games. *Social Science Information* 22 (4/5): 631-80.
- Boltanski, Luc, and Laurent Thévenot. 2006. *On justification. Economies of worth*. Princeton: Princeton University Press.

- Bourdieu, Pierre. 1984. *Distinction. A social critique of the judgement of taste*. Cambridge, MA: Harvard University Press.
- Bourdieu, Pierre. 2005. *The social structures of the economy*. Cambridge: Polity Press.
- Blumer, Herbert. 1969. *Symbolic interactionism. Perspective and method*. Englewood Cliffs: Prentice-Hall.
- Bowker, Geoffrey C., and Susan L. Star. 1999. *Sorting things out: Classification and its consequences*. Cambridge, MA: MIT Press.
- Bruno, Isabelle, and Emmanuel Didier. 2013. *Benchmarking. L'État sous pression statistique*. Paris: La Découverte.
- Bruno, Isabelle, Emmanuel Didier, and Julien Prévieux, eds. 2014. *Statactivisme. Comment lutter avec les nombres*. Paris: La Découverte.
- Bruno, Isabelle, Florence Jany-Catrice, and Béatrice Touchelay, eds. 2016, forthcoming. *The social sciences of quantification*. Heidelberg: Springer.
- Burawoy, Michael. 2005. For public sociology. *American Sociological Review* 70 (1): 4-28.
- Burrows, Roger, and Mike Savage. 2014. After the crisis? Big Data and the methodological challenges of empirical sociology. *Big Data & Society* 1 (1): 1-6.
- Busch, Lawrence. 2011. *Standards. Recipes for reality*. Cambridge, MA: MIT Press.
- Callon, Michel, ed. 1998. *The laws of the market*. Oxford: Blackwell.
- Camargo, Alexandre de Paiva Rio. 2009. Sociology of statistics: possibilities of a new field of investigation. *História, Ciências, Saúde* 16 (4): 903-25.
- Camic, Charles, and Yu Xie. 1994. The Statistical Turn in American Social Science: Columbia University, 1890-1915. *American Sociological Review* 59 (5): 773-805.
- Carruthers, Bruce G., and Wendy N. Espeland. 1991. Accounting for rationality: Double-entry bookkeeping and the rhetoric of economic rationality. *American Journal of Sociology* 97 (1): 31-69.
- Centemeri, Laura. 2012. The contribution of the sociology of quantification to a discussion of objectivity in economics. In *Facts, values and objectivity in economics*, ed. José Castro Caldas and Vítor Neves, 110-25. London: Routledge.
- Chiapello, Eve, and Alain Desrosières. 2006. La quantification de l'économie et la branche en sciences sociales: paradoxes, contradictions et omissions. In *L'économie des conventions. Méthodes et résultats. Vol. 1: Débats*, ed. François Eymard-Duverney, 297-310. Paris: La Découverte.
- Cicourel, Aaron V. 1964. *Method and measurement in sociology*. New York: Free Press.
- Desrosières, Alain. 1995. Classer et mesurer: les deux faces de l'argument statistique. *Réseaux* 13: 11-29.
- Desrosières, Alain. 1998. *The politics of large numbers: A history of statistical reasoning*. Cambridge, MA: Harvard University Press.
- Desrosières, Alain. 2001. Entre réalisme métrologique et conventions d'équivalence: les ambiguïtés de la sociologie quantitative. *Genèses* 43: 112-27.
- Desrosières, Alain. 2003. Managing the economy. In *The Cambridge history of science. Vol 7: The modern social sciences*, ed. Theodore M. Porter and Dorothy Ross, 553-64. Cambridge: Cambridge University Press.
- Desrosières, Alain. 2007. Surveys versus administrative records: Reflections on the duality of statistical sources. *Courrier des statistiques. English series* 13: 7-19.

- Desrosières, Alain. 2008. *Pour une sociologie historique de la quantification. L'argument statistique I*. Paris: Mines ParisTech.
- Desrosières, Alain. 2008a. *Gouverner par les nombres. L'argument statistique II*. Paris: Mines ParisTech.
- Desrosières, Alain. 2009. How to be real and conventional: A discussion of the quality criteria of official statistics. *Minerva* 47: 307-22.
- Desrosières, Alain. 2011. The economics of convention and statistics: The paradox of origins. *Historical Social Research* 36 (4): 64-81 <<http://www.ssoar.info/ssoar/handle/document/36315>>.
- Desrosières, Alain. 2011a. Words and numbers. For a sociology of the statistical argument. In *The mutual construction of statistics and society*, ed. Ann R. Saetnan, Mork Lomell and Svein Hammer, 41-63. London: Routledge.
- Desrosières, Alain. 2014. *Prouver et gouverner. Une analyse politique des statistiques publiques*. Paris: La Découverte.
- Desrosières, Alain. 2014a. Statistics and social critique. *Partizipazione et conflito* 7 (2): 348-59.
- Desrosières, Alain. 2015. Retroaction: How indicators feed back onto quantified actors. In *The world of indicators. The making of governmental knowledge through quantification*, ed. Richard Rottenburg, Sally E. Merry, Sung-Joan Park and Johanna Mugler, 329-53. Cambridge: Cambridge University Press.
- Desrosières, Alain, and Laurent Thévenot. 1979. Les mots et les chiffres: les nomenclatures socio-professionnelles. *Economie et statistique* 110: 49-65.
- Desrosières, Alain, and Laurent Thévenot. 2002. *Les catégories socioprofessionnelles*, 5th ed. Paris: La Découverte.
- Diaz-Bone, Rainer. 2011. The methodological standpoint of the “économie des conventions”. *Historical Social Research* 36 (4): 43-63 <<http://www.ssoar.info/ssoar/handle/document/36305>>.
- Diaz-Bone, Rainer, ed. 2011. *Die Soziologie der Konventionen. Grundlagen einer pragmatischen Anthropologie*. Frankfurt a. M.: Campus.
- Diaz-Bone, Rainer. 2015. *Die “Economie des conventions”. Grundlagen und Entwicklungen der neuen französischen Wirtschaftssoziologie*. Wiesbaden: Springer VS Verlag.
- Diaz-Bone, Rainer, and Robert Salais, eds. 2011. Conventions and institutions from a historical perspective. Special Issue of *Historical Social Research* 36 (4) <<http://www.gesis.org/en/hsr/archive/2011/364-conventions-institutions>>.
- Diaz-Bone, Rainer, and Robert Salais, eds. 2012. The Économie des Conventions – Transdisciplinary discussions and perspectives. Focus of *Historical Social Research* 37 (4) <<http://www.gesis.org/en/hsr/archive/2012/374-the-economie-des-conventions>>.
- Diaz-Bone, Rainer, Claude Didry, and Robert Salais, eds. 2015. Law and conventions from a historical perspective. Special Issue of *Historical Social Research* 40 (1) <<http://www.gesis.org/en/hsr/archive/2015/401-law-and-conventions>>.
- Didier, Emmanuel. 2009. *En quoi consiste l'Amérique? Les statistiques, le new deal et la démocratie*. Paris: La Découverte.
- Didier, Emmanuel. 2013. Histoire de la représentativité statistique: quand le politique refait toujours surface. In *La représentativité en statistique*, ed. Marion Selz, 15-30. Paris: Presses Universitaire des France/INED.

- Didier, Emmanuel, and Cyprien Tasset. 2013. Pour un stactivisme. La quantification comme instrument d'ouverture du possible. *Traces* 24: 123-40.
- Didier, Emmanuel, and Jean-Jacques Droesbeke, eds. 2014. Hommage à Alain Desrosières. Special issue of *Statistique et société* 2 (3).
- DiMaggio, Paul. J. 1987. Classification in art. *American Sociological Review* 52 (4): 440-55.
- Duncan, Otis D. 1984. *Notes on social measurement. Historical and critical*. New York: Russell Sage.
- Durkheim, Emile, and Marcel Mauss. 1963. *Primitive classification*. London: Cohen & West.
- Espeland Wendy N., and Michael M. Sauder. 2007. Rankings and reactivity: How public measures recreate social worlds. *American Journal of Sociology* 113 (1): 1-40.
- Espeland, Wendy N., and Mitchell L. Stevens. 1998. Commensuration as a Social Process. *Annual Review of Sociology* 24 (3): 13-43.
- Espeland, Wendy N., and Mitchell L. Stevens. 2008. A sociology of quantification. *European Journal of Sociology* 49 (3): 401-36.
- Espeland, Wendy N., and Berit Vannebo. 2008. Accountability, quantification, and law. *Annual Review of Law and Social Science* 3: 21-43.
- Ewald, François. 1986. *L'Etat providence*. Paris: Grasset.
- Eymard-Duvernay, François, ed. 2006. *L'économie des conventions. Méthodes et résultat, Vol. 1: Débats*. Paris: La Découverte.
- Eymard-Duvernay, François, ed. 2006a. *L'économie des conventions. Méthodes et résultats, Vol. 2: Développements*. Paris: La Découverte.
- Eymard-Duvernay, François, and Laurent Thévenot. 1983. *Investissements spécifiques et concurrence sur le marché*. Paris: INSEE.
- Eymard-Duvernay, François, and Laurent Thévenot. 1983a. *Les investissements de forme. Leur usage pour la main d'œuvre*. Paris: INSEE.
- Favereau, Olivier, and Emmanuel Lazega, eds. 2002. *Conventions and structures in economic organization. Markets, networks, hierarchies*. Cheltenham: Edward Elgar.
- Foucault, Michel. 1994. *The order of things. An archaeology of the human sciences*. London: Routledge.
- Foucault, Michel, Graham Burchell, Colin Gordon, and Peter Miller, eds. 1991. *The Foucault effect: Studies in governmentality*. Chicago: University of Chicago Press.
- Foucault, Michel, Michel Senellart, François Ewald, and Alessandro Fontana. 2004. *Sécurité, territoire, population. Cours au Collège de France, 1977-1978*. Paris: Gallimard.
- Fourcade, Marion, and Kieran Healy 2013. Classification situations: Life-changes in the neoliberal era. *Accounting, Organizations and Society* 38 (8): 559-72.
- Garfinkel, Harold. 1967. *Studies in ethnomethodology*. Englewood Cliffs: Prentice-Hall.
- Gigerenzer, Gerd, ed. 1989. *The empire of chance: How probability changed science and everyday life*. Cambridge: Cambridge University Press.
- Godin, Benoît. 2005. *Measurement and statistics on science and technology. 1920 to the present*. London: Routledge.

- Gooday, Graeme J. N. 2004. *The morals of measurement: Accuracy, irony, and trust in late Victorian electrical practice*. Cambridge: Cambridge University Press.
- Hayes, Matthew. 2011. The social history of quantifying inflation: A sociological critique. *Journal of Economic Issues* 45 (1): 97-111.
- Jardim, Fabiana. 2013. A brief genealogy of governmentality studies: The Foucault effect and its developments. An interview with Colin Gordon. *Educação e pesquisa* 39 (4): 1067-87.
- Kalthoff, Herbert. Forthcoming. *Zahlenwelten. Sozio-Materialität und innovative Praxis in der Bankwirtschaft*. Stuttgart: Lucius & Lucius.
- Kalthoff, Herbert, Richard Rottenburg, and Hans-Jürgen Wagner, eds. 2000. *Facts and figures – Economic representations and practices*. Marburg: Metropolis.
- Kuhn, Thomas S. 1996. *The structure of scientific revolutions*, 3rd ed. Chicago: Chicago University Press.
- Krüger, Lorenz, ed. 1987. *The probabilistic revolution*, 2 vols. Cambridge, MA: MIT Press.
- Lampland, Martha, and Susan L. Star, eds. 2009. *Standards and their stories: How quantifying, classifying, and formalizing practices shape everyday life*. Ithaca: Cornell University Press.
- Latour, Bruno. 1987. *Science in action*. Cambridge: Harvard University Press.
- Latour, Bruno, and Steve Woolgar. 1979. *Laboratory life. The construction of scientific facts*. Princeton: Princeton University Press.
- Lazarsfeld, Paul. 1961. Notes on the history of quantification in sociology. Trends, sources, problems. *Isis* 52 (2): 277-333.
- MacKenzie, Donald. 2006. *An engine, not a camera. How financial models shape markets*. Cambridge, MA: MIT Press.
- Martin, John L. 2003. What is field theory? *American Journal of Sociology* 109 (1): 1-49.
- Mayer-Schönberger, Viktor, and Kenneth Cukier. 2013. *Big data. A revolution that will transform how we live, work and think*. London: John Murray.
- Mennicken, Andrea, and Hendrik Vollmer, eds. 2007. *Zahlenwerk. Kalkulation, Organisation und Gesellschaft*. Wiesbaden: VS Verlag.
- Miller, Peter. 2001. Governing by numbers: Why calculative practices matter. *Social Research* 68 (2): 379-96.
- Miller, Peter, and Anthony Hopwood. 1994. *Accounting as social and institutional practice*. Cambridge: Cambridge University Press.
- Porter, Theodore M. 1995. *Trust in numbers. The pursuit of objectivity in science and public life*. Princeton: Princeton University Press.
- Power, Michael. 1997. *The audit society: Rituals of verification*. Oxford: Oxford University Press.
- Raftery, Adrian E. 2001. Statistics in sociology. *Sociological Methodology* 31: 1-45.
- Roberts, Fred S. 1985. *Measurement theory – with applications to decision making, utility, and the social sciences*. Cambridge: Cambridge University Press.
- Rose, Nicolas. 1991. Governing by numbers: Figuring out democracy. *Accounting, Organizations and Society* 16 (7): 673-92.

- Rottenburg, Richard, Sally E. Merry, Sung-Joan Park, and Johanna Mugler, eds. 2015. *The world of indicators. The making of governmental knowledge through quantification*. Cambridge: Cambridge University Press.
- Salais, Robert. 2004. La Politique des indicateurs. Du taux de chômage au taux d'emploi dans la stratégie européenne pour l'emploi (SEE). In *Action publique et sciences sociales*, ed. Bénédicte Zimmermann, 287-331. Paris: MSH.
- Salais, Robert. 2012. Quantification and the economics of convention. *Historical Social Research* 37 (4): 55-63 <<http://www.ssoar.info/ssoar/handle/document/38001>>.
- Salais, Robert. 2015. Revisiter la question de l'État à la lumière de la crise de l'Europe. *Revue française de socio-économie* 2015 (2): 245-62.
- Salais, Robert, and Laurent Thévenot, eds. 1986. *Le travail. Marchés, règles, conventions*. Paris: Economica.
- Savage, Mike, and Roger Burrows. 2007. The coming crisis of empirical sociology. *Sociology* 41 (5): 885-99.
- Schröder, Wilhelm Heinz. 1994. Historische Sozialforschung: Identifikation, Organisation, Institution. *Historical Social Research Supplement* 6 <<http://www.gesis.org/en/hsr/archive/hsr-supplement/hsr-suppl-6>>.
- Speich Chassé, Daniel. 2013. *Die Erfindung des Bruttosozialprodukts: Globale Ungleichheit in der Wissensgeschichte der Ökonomie*. Göttingen: Vandenhoeck & Ruprecht.
- Stagl, Justin. 1979. Vom Dialog zum Fragebogen. *Miszellen zur Geschichte der Umfrage. Kölner Zeitschrift für Soziologie und Sozialpsychologie* 31 (3): 611-38.
- Storper, Michael, and Robert Salais. 1997. *Worlds of production. The action frameworks of the economy*. Cambridge: Harvard University Press.
- Sydenham, Peter H. 1979. *Measuring instruments: Tools of knowledge and control*. Stevenage: Peter Peregrinus.
- Thévenot, Laurent. 1983. L'économie du codage social. *Critiques de l'économie politique* 23/24: 188-222.
- Thévenot, Laurent. 1984. Rules and implements: Investments in forms. *Social Science Information* 23 (1): 1-45.
- Thévenot, Laurent. 2001. Organized complexity. Conventions of coordination and the composition of economic arrangement. *European Journal of Social Theory* 4 (4): 405-25.
- Thévenot, Laurent. 2009. Governing life by standards: A view from engagements. *Social Studies of Science* 39 (5): 793-813.
- Thévenot, Laurent. 2011. Conventions for measuring and questioning politics. The case of 50 years of police evaluation through a statistical survey. *Historical Social Research* 36 (4): 192-217 <<http://www.ssoar.info/ssoar/handle/document/36321>>.
- Thiry, Géraldine. 2015. Beyond GDP: Conceptual grounds of quantification. The case of the Index of Economic Well-Being (IEWB). *Social Indicators Research* 121 (2): 313-43.
- Timmermans, Stefan, and Steven Epstein. 2010. A world of standards but not a standard world. Toward a sociology of standards and standardization. *Annual Review of Sociology* 36: 69-89.
- Woolf, Harry, ed. 1961. *Quantification*. Indianapolis: Bobbs-Merrill.

- Zerubavel, Eviatar. 1976. Time tables and scheduling: On the social organization of time. *Sociological Inquiry* 46 (2): 87-94.
- Zerubavel, Eviatar. 1977. The French republican calendar: A case study in the sociology of time. *American Sociological Review* 42 (6): 868-77.
- Zerubavel, Eviatar. 1981. *Hidden rhythms. Schedules and calendars in social life*. Chicago: University of Chicago Press.
- Zhao, Wei. 2005. Understanding classifications. Empirical evidence from the American and French wine industries. *Poetics* 33 (3/4): 179-200.
- Zhao, Wei. 2008. Social categories, classification systems, and determinants of wine price in the California and French wine industries. *Sociological Perspectives* 51 (1): 163-99.
- Zuckerman, Ezra. 1999. The categorical imperative: Securities analysts and the illegitimacy discount. *American Journal of Sociology* 104 (5): 1398-438.