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The Accountability and Legitimacy of Knowledge Expert in Policy Making

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Scientific Ignorance and Public Inaction: How Scientific Expertise Builds the Non-Problem of Occupational Health

Draft version. Please do not quote.

This paper considers the main conclusions that I reached in my book on occupational health policies, titled *Ignorance scientifique et inaction publique*¹. My aim here is twofold. First, I wish to show how the main features of public policy in the field of occupational health allow us to characterize this field as a specific sector. Second, I wish to establish the extent to which these analyses enable us to formulate new hypotheses on the processes of construction of public problems.

To that end, I reconsider questions on the issue of power in public policy. This issue was at the heart of the sociology and political science research agenda in the sixties and seventies, particularly with Peter Bachrach's and Morton Baratz' work on non-decisions. These authors showed how, outside of the decision-making processes, it was possible to highlight power relations that made decisions on an issue difficult or even impossible.

Power is also exercised when A devotes his energies to creating or reinforcing social and political values and institutional practices that limit

¹ (Henry, 2017).

the scope of the political process to public consideration of only those issues which are comparatively innocuous to A. To the extent that A succeeds in doing this, B is prevented, for all practical purposes, from bringing to the fore any issues that might in their resolution be seriously detrimental to A's set of preferences¹

Since the late 1970s the debate generated by their work has died down and the issue of power has to a large extent been neglected². This issue of non-decision is currently addressed primarily through that of public policy monopolies or sub-systems, developed mainly by Baumgartner and Jones in their model of punctuated equilibrium, in which less attention is paid to power relations and power between the actors. Yet this reflection around the non-decision issue has nevertheless meant that power relations, which were previously totally overlooked in sociology and political science, are now taken into account. At the same time, despite the seminal contribution of the article "Two Faces of Power", few studies have been carried out from this perspective³. The main difficulty in carrying out this type of research is that the researcher has to take a stand and, by signalling a non-decision in a particular field, at least implicitly supports the idea that a decision *should* be taken. This position is facilitated when the views on a problem change sufficiently for it to shift from being a non-problem to becoming a public priority. This was the case of asbestos, which, before its emergence as a number one public problem, was characterized as a non-problem for a long time. Problems that retain their status as non-problems for a long time have to receive particular attention, otherwise no research may ever be done on them.

John Gaventa implemented the most systematic way of getting round this difficulty, in his study of the Clear Fork Valley mining district in the main Appalachian valley, a region characterized by extreme inequalities and extensive poverty⁴. Adopting an essentially socio-historical approach, he sharply highlights the role of temporality in the establishment, acceptance and invisibility of power relations. His study clearly shows how, as one moves away from the time in which power relations are established, there is less and less visible evidence of power at play. By means of a historical perspective, Gaventa highlights the fact that resignation to inequalities and power

¹ (Bachrach and Baratz, 1962, 948).

² (Pierson, 2015).

³ With the exception of (Crenson, 1971)

⁴ (Gaventa, 1980).

relations does not mean their disappearance but, on the contrary, a particularly successful form of their silent institutionalization:

Continual defeat gives rise not only to the conscious deferral of action but also to a sense of defeat, or a sense of powerlessness, that may affect the consciousness of potential challengers about grievances, strategies or possibilities for change. Participation denied over time may lead to acceptance of the role of non-participation, as well as to a failure to develop the political resources – skills, organization, consciousness – of political action. Power relationships may develop routines of non-challenge which require no particular action on the part of powerholders to be maintained. [...]

Power relationships, once established, are self-sustaining. Quiescence [inaction] in the face of inequalities may be understood only in terms of the inertia of the situation. For this reason, power in a given community can never be understood simply by observation at a given point in time. Historical investigation must occur to discover whether routines of non-conflict have been shaped, and, if so, how they are maintained.¹

Temporality also plays an extremely important role in the low visibility of inequalities in occupational health, albeit differently to what we see in Gaventa's work. It is because inequalities persist, and have long since ceased to be denounced, that they have gradually become the "normal" state of this area of public intervention². Yet by taking into account this issue of power relations, including in those cases in which they are barely visible, or even invisible, we can renew the way in which institutions and public policy are studied. Based on this example, I show how the institutionalization of inequalities between actors in a system, over time, contributes to maintaining these inequalities and to making them less and less visible.

The follow-up to these studies is situated here, at the interface between the sociology of public policy, and science studies. My aim is to examine the specific forms of articulation between scientific expertise and knowledge, on the one hand, and public policy on the other. In occupational health, the role of scientific knowledge is important, for it serves to highlight the connection between a labour situation and a disease, or the aggregated cases of certain diseases, and to draw attention to a dangerous product or production process. When a certain amount of medical, toxicological and/or epidemiological knowledge is gathered on the negative effects of a product, the alert can be put out and measures can eventually be taken.

¹ (Gaventa, 1980, 255-6.)

² In this respect, see: (Pierson, 2004) and (Pierson, 2015)

Yet in the case of occupational health this question of knowledge must be approached from a particular point of view, mainly for two reasons. The first is that knowledge always has economic implications and is therefore the object of close attention by economic interests. New knowledge in the field of occupational risks can lead to restrictions on use and even to the banning of products, or may increase production costs due to new protective measures being implemented. Issues concerning knowledge are therefore highly sensitive for the firms concerned, which will seek to control them as far as possible. The second reason relates to the process of producing knowledge on occupational health, which is radically different from that found in other areas. Unlike the research carried out by companies to create and commercialize new products (as in the case of pharmacology R&D to develop new medicines), research concerning occupational risks, especially toxicological research, has *a priori* no positive impact on businesses' profits. On the contrary, it is likely to have a negative effect that may even stop or slow down certain economic activities. This research is a field in which the relations between science and economic activity are the opposite of those demonstrated by the sociology of science, which usually highlights the links between scientific dynamics and economic, military or political actors¹. Here, the main objective, for some, is to slow down scientific activity, to ensure that scientific progress is as slow as possible, or even to remain in a state of ignorance and misappreciation of the dangers of a particular product or industrial process.

The question of the production of ignorance has grown significantly in the sociology of science in recent years, notably since the publication of a collective volume intended to promote this type of research, via the neologism "agnostology"², and the recent publication of a handbook on this theme³. These studies differ from a representation of the progress of science that flows straight from ignorance to knowledge. It emphasizes the role of certain economic actors in the deliberate production of ignorance or at least in the slowing down of the production of potentially inconvenient knowledge.

¹ See: (Gibbons et al., 1994); (Nowotny, Scott and Gibbons, 2001). For a discussion, see (Pestre, 2003).

² (Proctor and Schiebinger, 2008).

³ (Gross and McGoey, 2015).

The most obvious way of examining companies' influence on the production of ignorance is to see it as stemming from a struggle against the emergence of new knowledge. This relates first and foremost to firms' striving to mask or deform certain knowledge. The most well-known and widely documented case is the tobacco industry in the US, and its efforts to weaken and cast doubt on the connection between cigarette smoke and lung cancer. The phrase "Doubt is our product", found in a working document of the public relations firm Brown & Williamson that was working for the tobacco industry at the time (1969), has become a symbol of this type of industrial strategy¹. An abundant literature has developed in the US on these themes, produced by historians and sociologists of science, such as Robert Proctor, Naomi Oreskes and Erik Conway, and by scientists such as David Michaels². The approach proposed by these different authors is a highly political reading of the conflicts between, on the one hand firms seeking to format scientific knowledge in order to minimize the negative consequences for their own interests and, on the other, government services or regulatory agencies, especially at federal level, seeking to thwart these strategies in order to regulate dangerous activities. With a greater degree of subtlety, depending on the text, these studies stress the strategies to manipulate scientists, sometimes even by unscrupulous scientists, as in the case of the climate controversies analysed by Naomi Oreskes and Erik Conway³.

Apart from the case of tobacco, many studies have been carried out on firms that try to downplay as much as possible the toxicity of products to which their employees are exposed. The most emblematic case is that of asbestos, which several historians, journalists and sociologists in the UK and the US have studied⁴. We need to remember that, in this case, the industrial investment was made very early and lasted a long time, so that it covered the entire twentieth century and still exists across the world, aside

¹ "Doubt is our product, since it is the best means of competing with the 'body of fact' [linking smoking with disease] that exists in the mind of the general public. It is also the means of establishing a controversy." (Brown and Williamson, 1969), accessible online at: <https://www.industrydocumentslibrary.ucsf.edu/tobacco/docs/#id=jryf0138>.

² (Proctor, 1995); (Oreskes and Conway, 2010); (Michaels, 2008).

³ (Oreskes and Conway, 2010)

⁴ (Proctor, 1995); (Brodeur, 1974); (Tweedale, 2000).

from Europe and North America¹. As follow-up to their history of silicosis², Gerald Markowitz and David Rosner's research on the lead and vinyl chloride industries highlights these industrial strategies of opposing the production of scientific knowledge, with the aim of maintaining dangerous industrial activities³. It shows the numerous cases where firms have refused to publish certain results, have encouraged research that promoted their own interests, or have concentrated research on subjects that did not directly challenge their economic interests or that directly financed scientists so that they would publicly criticize academic research that ran counter to their own interests.

Yet these studies tend to emphasize the intentional and quasi-manipulatory nature of the production of ignorance. Research on the tobacco industry or other industries dealing with toxic substances (asbestos, lead, vinyl chloride) clearly demonstrates the industrial strategies employed with regard to scientists⁴. Yet, although this work is important, it should not overshadow the more structural dimensions of the production of ignorance, especially the more discrete power plays in this regard. The notion of "undone science", as developed in several sociology of science studies, can facilitate such a change of perspective⁵. It expresses the idea that, apart from the direct pressure exerted by industry, many other factors explain the unequal development of scientific knowledge, depending on the economic or social interests involved. Hence, talking of undone science means emphasizing the structural inequalities between, on the one hand the groups that are mobilized to denounce a danger and, on the other hand, the companies that produce that danger⁶:

When social movement leaders and industry reformers who wish to change our societies look to 'Science' for answers to their research questions, they often find an empty space—a special issue of a journal that was never edited, a conference that never took place, an epidemiological study that was never funded—whereas their better-funded adversaries have an arsenal of knowledge to draw on⁷.

¹ (Thébaud-Mony, 1990); (McCulloch and Tweedale, 2008)

² (Rosner and Markowitz, 1991).

³ (Markowitz and Rosner, 2002); see also other examples in (Michaels, 2008).

⁴ See (Proctor, 2011); (McCulloch and Tweedale, 2008); (Markowitz and Rosner, 2002).

⁵ See (Frickel et al., 2010).

⁶ (Hess, 2015).

⁷ (Hess, 2007, 22.).

These approaches therefore insist on the fact that the production of knowledge (and ignorance) is strongly correlated with the resources of the actors likely to be interested by the results of the research. Thus, studies on toxins used in industry, that could be useful to the workers concerned, are not carried out due to a lack of interest by the employers and therefore to the lack of the necessary financial and human resources.

Occupational health issues thus reveal how the structuring of scientific knowledge and the modalities of combination of scientific knowledge and expertise that public policies draw on, play a key part in the policy-making process: from the framing of the problem to address, to the instruments that are supposed to solve it. This paper will focus on the main features of these processes in the quantification of occupational diseases.

A quantification of the issues embedded in former power relations

The legitimacy of occupational health policies stems from the fact that they are made and implemented in a context of social discretion, with little publicity. Without us being able to talk of strategies of concealment – which would require an interpretation in terms of conspiracy – it is noteworthy that these policies can sustainably produce their effects only if they are never the subject of close attention by a large and undifferentiated public. This is implicit in the extensive publicity given to asbestos which, in practice, made it impossible to carry on managing the problem in the framework of former balances of power. Yet while asbestos received sustained attention that temporarily made it a priority for all the news media, that is by no means the case for other occupational toxins, including tens of thousands of chemicals used by industry, from wood dust to ionising radiation. What is however striking, when one analyses the “career” of these problems, is the discretion surrounding the administrative and political trade-offs concerning them.

The degree of publicity granted to these issues has significant effects on the modalities of public intervention. The tensions between the power relations that discretely set in between the actors directly involved in a policy, and a public space for debate less directly connected to the orientation of public policy, have already been studied in political science, notably in the work of Elmer Schattschneider, and of

Frank Baumgartner and Brian Jones¹. In the field of economic policies, Pepper Culpepper has also shown how quiet politics, decided and implemented outside of public debate, made it easier to get the economic actors' point of view to prevail in a decision-making process that could thus remain very informal².

As follow-up to former research on the logics of production of discretion around certain social problems or on the processes of depoliticization, I would like to stress here the logics that underpin the production of what can be defined as public non-problems or socially invisible or barely visible problems. The perspective opened by the notion of the regime of imperceptibility helps to frame the problem better. In her book on the unhealthy building syndrome, Michelle Murphy uses this notion to highlight the modalities of perception and sometimes non-perception of certain chemical pollution used in our contemporary societies³. She shows how societies shape the attention paid to certain problems and in so doing produce forms of social inattention to other issues, mainly through the existence or not of measurement devices or a social (and spatial) differentiation of exposure.

The aim is thus not only to focus on the processes of mobilization leading directly to the emergence of a problem on the public scene, such as the mobilization of civil society non-profit organizations, or articles published in the media, but also to put them into perspective in relation to the mechanisms that to a large extent determine them. Thus, the idea is to highlight, well before the processes of construction of public issues, the various mechanisms that frame the possibilities of mobilization and that facilitate or impede the framing of a problem as requiring public intervention. It is therefore necessary to determine the extent to which, on the contrary, certain devices or the structuring of certain knowledge make the processes of publicizing difficult and more improbable.

The occupational health sector has historically revolved around the notion of occupational disease. This category best condenses the debates and compromises pertaining to the definition of what can be considered as the field of occupational health. Through the study of that which is defined as an occupational disease (and that which is

¹ (Schattschneider, 1960); (Baumgartner and Jones, 1993).

² (Culpepper, 2011).

³ (Murphy, 2006, 9-10 and 23-24.). See also (Murphy, 2004).

not), we can analyse the power relations between the various social groups engaged in this area of public policy¹. The history of this category is directly attached to that of occupational accidents, which in France appeared as a specific legal object in the law of 9 April 1898 that provided for a system of insurance and compensation². Owing to this law, occupational accidents, for which compensation had formerly been obtained through the civil courts – on condition that the employers’ responsibility for the accident could be proved –, were set in a specific insurance scheme. In order to benefit from this new system it was no longer necessary to prove responsibility for the accident, but simply to prove that it was labour related. Occupational accidents were henceforth presumed to be exclusively due to the “occupational risk” for which the company had decided to pay out compensation. The dimension of compromise that this law represented is obvious: employers agreed to automatic compensation via an insurance scheme funded exclusively by their own contributions. In exchange, their responsibility was no longer sought in civil court cases. The employees, on the other hand, agreed to be compensated automatically, but only partially.

Following on from this 1898 law, a law was passed on 25 October 1919, extending the legal system concerning occupational accidents to certain occupational diseases. It transposed the automatic nature of reparation in the field of occupational diseases, through the presumption of imputability. Since then, the French system of recognition of and compensation for occupational diseases has been based on tables that correlate pathologies and labour situations likely to cause them, and that stipulate a maximum period of time within which they can be compensated for. These tables of occupational diseases, of which there are about a hundred, are drawn up and amended by decree at the *Conseil d’Etat* (France’s highest judicial authority), and are included in Annex in the Social Security Code (Article R.461-3). Legally, a worker suffering from a pathology described in a table, and who has practised a professional activity likely to cause it, is recognized as suffering from an occupational disease, provided that the disease is medically diagnosed before the expiry of the set period of compensation. The origin of the disease is then legally imputed to the work that was done. This legal

¹ For a presentation of the main questions raised by the historiography of occupational diseases, see (Rosental, 2009) and more generally (2009).

² (Ewald, 1986)

definition of occupational disease and its tautological nature are clearly apparent in Article L.461-1 of the Social Security Code, of which Paragraph 2 indicates that “any disease is presumed to be an occupational disease if it is listed in a table of occupational diseases and was contracted in the conditions mentioned in this table”.

The occupational disease tables, drawn up at the *Direction générale du travail* (DGT) – the French Department of Labour at the Ministry of Health –, are the outcome of negotiations characterized by opposition between the workers’ representatives and the employers’ unions, in a zero-sum game. The addition of a new occupational disease to the table opens the possibility for compensation of the workers exposed to a risk, but also means an increase in the employers’ contributions. These negotiations take place within the specialized “Occupational Pathologies” Commission of the *Conseil d’orientation sur les conditions de travail* (COCT)¹. Even though its status is only consultative, this commission consisting of representatives of the trade unions and employers’ unions, as well as representatives of the State and qualified persons, is where compromises are reached, on the basis of which the tables are drawn up or amended².

The production of this type of compromise is one of the elements that made it possible to lastingly enter a phase of pacification in labour relations around occupational health. This phenomenon is clearly visible in the transformations of labour relations that followed the enactment of the 1919 law. Until then, many labour disputes had crystallized around demands for the banning of dangerous substances³. Once the law had been passed, demands were instead part of a movement calling for the improvement of the newly instituted compensation system. Whereas at the beginning of the century Britain and Switzerland had already recognized about thirty occupational diseases, by 1919 France had only two occupational disease tables (for diseases caused by exposure to lead and to mercury)⁴. France’s lateness in this respect was to become a key argument urging the trade unions to enter into negotiations to improve the system. As Jean-Claude Devinck analysed the situation:

¹ Created by decree on 25 November 2008, the COCT succeeded the *Conseil supérieur de la prévention des risques professionnels* (CSPRP), itself instituted by the 6 January 1976 law.

² (Déplaudé, 2003).

³ (Devinck, 2010, 70-8.); (Rainhorn, 2010); (Moriceau, 2009).

⁴ (Devinck, 2010)

The wish to make up for lost time at all costs was to resolutely set the French unions' priority as the struggle for compensation for occupational diseases, rather than their eradication. From that point onwards, the labour unions limited their struggle to compensation only for occupational diseases¹.

The compensation system for occupational diseases set up from 1919 thus constituted the base on which, right up to today, relations between social partners have been built in the occupational health field. This definition of occupational disease as a negotiated compromise, formalized in regulations, corresponds to a definition of the problem that is in phase with types of relationships and the configuration of actors engaged in dealing with this problem.

Saying that this system supported labour relations and pacified them does not however mean that labour disputes for better recognition of occupational diseases disappeared. On the contrary, the history of occupational diseases is punctuated with battles for better recognition of certain diseases. But the strength of this compensation system lies in its ability to channel forms of resolution of these conflicts, so that they remain compatible with the existing insurance system. Thus, mobilization around exposure to lead in the factories of the Peñarroya group in the seventies led to a modification of the conditions on which compensation was paid out for lead poisoning². Likewise, conflicts in the seventies related to asbestos resulted, *inter alia*, in amendments to the tables of occupational diseases related to this substance, and to cancerous pathologies being included³.

From the 1970s up until the mid-1980s, mobilization over working conditions always ended up being channelled in the configuration constituted by the actors and the measures for managing occupational risks. They resulted primarily in ad hoc changes to the existing device⁴. Only mobilization around asbestos, which was more recent, led to a broader challenging of the system, with the creation of a number of specific measures (e.g. early retirement system; fund to compensate victims). But their effects remained

¹ (Devinck, 2010, 89.).

² (Pitti, 2010); (Pitti, 2009).

³ (Henry, 2007)

⁴ (Piotet, 1988)

confined to the asbestos problem, without the management of other occupational risks being addressed.

The system of tables is likely to be maintained because it contributes to keeping in place the hierarchies and the power relations between the different groups of actors involved in these negotiations, primarily by consolidating the position of power occupied by the employers. This is facilitated by the fact that the system of tables structurally under-estimates the extent of the effects of work on workers' health.

The production of invisibility of occupational diseases

Many political science studies have highlighted the role of discreet spaces in public policy making, by differentiating them clearly from more public spaces. Thus, from 1960, Schattschneider distinguished between negotiations that took place in the political framework of pressure groups (pressure politics) on the one hand and, on the other, what happened in the space of opposition between political parties (party politics)¹. By systematizing these early intuitions, Baumgartner and Jones' punctuated equilibrium model distinguishes between the periods in which the problems are treated within public policy monopolies (or policy subsystems) and those in which some of them emerge publicly, are put onto the government's agenda, and are dealt with repeatedly². These authors argue that the configurations of actors who have the ability to weigh on public policy in a particular field have this power only insofar as they control the definition of the problem. This definition, on which a group of actors agrees, is thus essential in the maintenance of power relations within a field of government intervention. These two dimensions mutually reinforce each other and lead to sustained institutionalization of compromises, between the different groups of actors, over the way in which a particular area of public intervention ought to be addressed.

In the case of occupational health, we are faced with an extremely stable and lasting network of actors whose compromises on the way of managing occupational risks are old and deeply entrenched. These compromises are blocked around a definition

¹ (Schattschneider, 1960)

² Baumgartner and Jones argue that a public policy monopoly relates to a stable system of actors in charge of a public policy sector unified by common representations of the problem to treat and the solutions to implement (Baumgartner and Jones, 1991); (Baumgartner and Jones, 1993)

of the consequences of work on health, that serves to maintain in the long term the inequalities characterizing power relations between these actors, notably by underestimating the number of occupational diseases. Yet even though these definitions of occupational diseases have evolved over recent decades, the essence of the compromise between these actors has not been challenged, and has led to the near invisibility of the effects of work on health.

The strength of this definition of occupational disease is therefore related to the fact that it reinforces the cohesion of the actors who are behind it, but it also requires that the AT/MP (labour accident / occupational disease) branch, like any insurance institution, regularly put out statistics on the occupational accidents and diseases that it compensates workers for every year¹. Insofar as epidemiological data are fragmented or even, for certain factors, non-existent, the risk is high that the health insurance statistics “conceal any other approach to the extent of occupational disease in France”². From the early 1990s, the risk of these insurance statistics merging with the steering of occupational health policies was highlighted by Annie Thébaud-Mony, the first researcher to demonstrate the under-recognition of occupational pathologies³.

Despite this longstanding criticism, these statistics, which were not intended to become instruments to measure a population’s health, have in practice taken on a crucial role in steering occupational health policy. It is on these data, the only ones available, that the Ministry of Labour, for example, bases its annual report on labour conditions. In 2014 the section on occupational diseases started with the following box presenting health insurance figures:

The number of occupational diseased decreased by 4.7% between 2012 and 2013. The inversion of the trend that began in 2012 thus continued in 2013. The reduction, equivalent to some 2,500 occupational diseases, is explained in 1,900 cases by a reduction in the number of recognized musculo-skeletal disorders⁴.

¹ On the link between statistics, probability and insurance, see (Ewald, 1986) and, more broadly, on the production of statistics, see (Desrosières, 1993).

² (Thébaud-Mony, 1991, 23.).

³ (Thébaud-Mony, 1991, 87-8.).

⁴ (Conseil d’orientation sur les conditions de travail, 2014, 212.).

The section then starts with the following statement: “The knowledge of the number of occupational diseases (excluding the public, agricultural, mining and transport sectors) is based on the statistics of the CNAMTS”¹. We clearly see how the absence of other available data leads to the use of the only existing figures in an attempt to steer a public policy, even when they significantly misrepresent reality. Of course, since the early 1990s the total number of occupational diseases recognized annually has grown substantially, primarily due to a few specific pathologies. The main increase is related to muscular-skeletal disorders (*troubles musculo-squelettiques* – TMS), for which Table 57, that defines them, was rewritten in 1991. Whereas 1,040 TMS were recognized as an occupational disease in 1990, there were 19,804 in 2000, 43,359 in 2011, and 40,613 in 2013². In fact, the recent decline in the number of TMS recognized does not indicate an improvement in working conditions; instead, it reflects a restriction on the possibilities of recognition, induced by a change in the regulations. More generally, in 2013 all muscular and skeletal disorders accounted for 46,537 cases of recognition of occupational disease³. Other pathologies that have increased steeply since the mid-nineties are diseases related to exposure to asbestos, for which there were 4,065 instances of compensation in 2013. Thus, if we subtract the 51,452 occupational diseases recognized in 2013 from the 46, 537 TMS and the 4,065 diseases related to asbestos, there are only 850 occupational diseases that receive compensation in France, which is excessively little, for over 18 million workers who depend on this system of compensation and for pathologies that are potentially extremely numerous. Thus, if we exclude certain specific pathologies (TMS and asbestos, in particular), which are treated differently to other occupational diseases, the inability to recognize the pathologies induced by work during the latter half of the 20th century is starkly obvious. What we

¹ (Conseil d’orientation sur les conditions de travail, 2014, 212.)

² The functioning of the occupational disease tables will be explained in the rest of this book. The revised version of the table introduced in 1991 broadens the possibilities of recognizing these pathologies, but the gradual increase in recognition, prior to this period, pointed out by Nicolas Hatzfeld, also strongly suggests an effect of the intensification of work; see (Hatzfeld, 2006; Hatzfeld, 2009); (Gollac and Volkoff, 1996).

³ The following TMS: peri-articular ailments (Table n° 57), affections due to vibrations (Table n° 69), chronic lesions of the meniscus (Table n° 79) and lumbagos (Tables n° 97 and 98), concerned 46,537 recognitions of occupational diseases in 2013, that is, 86.8% of all recognized occupational diseases”, Conseil d’orientation sur les conditions de travail, *Conditions de travail. Bilan 2014, op. cit.*, p. 216.

see emerging is a public policy that is totally neglected: a system that has hardly been modified, whereas the pathologies related to work constantly change, especially with the proliferation of occupational cancers, very few of which are granted compensation.

The structural under-recognition of occupational diseases is a caricature in the case of cancers, provided, once again, that we consider cancer separately from asbestos. Several classifications exist that enable us to determine whether a substance is carcinogenic. The most well known scientifically is that of the CIRC, as the others are intended essentially for regulatory purposes, like the European Union classifications. The under-estimation of occupational cancers stems above all from the fact that some known carcinogens do not have an occupational health table. In 2017 the CIRC recognized 119 substances as being proven to be carcinogenic (Class 1) and close to 400 as probably or possibly carcinogenic (Class 2)¹. Yet, with only 22 tables of occupational diseases, many carcinogens – some of which are particularly well known – have no table at all, including: “crystalline silica, cadmium, beryllium, unrefined mineral oils, coal gasification, the rubber and leather industries”².

Thus, until 1990, hardly more than a hundred cancers a year were recognized as occupational diseases³. These were mainly cancers that were well-known for their occupational causes, which were granted compensation, such as mesothelioma and certain types of leukaemia⁴. There too, apart from appearance relating to the total number of recognized cancers, compensation for occupational cancer is still at a very low level in France. Judging by the most recent data, published in 2015 by the Ministry of Labour, the occupational cancers that received compensation in 2013 totalled 1,707, of which 1,415 (83%) were related to asbestos. This means that, apart from asbestos-related cancers, only 292 cancers were recognized as occupational diseases in 2013, a

¹ The International Agency for Research on Cancer (IARC) is an organization dependent on the World Health Organization (WHO), one of the roles of which is to classify carcinogenic products. See, on the IARC website: <http://monographs.iarc.fr/FRClassification/index.php>, last update 26 January 2017.

² (Imbernon, 2003, 11.).

³ (Zerbib, 1995).

⁴ “Every year, over 90% of the cases recognized have concerned rare cancers and four tables of occupational diseases: leukaemia due to benzene and to ionizing radiation (Tables M.P. n° 4 and 6), mesothelioma due to asbestos (Tables M.P. n° 30) and cancers of the ethmoid and the sinus due to wood dust (Tables M.P. n° 47). On the other hand, whereas lung cancers are far more frequent and appear on five different tables, they accounted for only 11 cases in 1984 [...], 8 cases in 1985 [...], 5 cases in 1986 [...], 7 cases in 1987 [...] and 24 cases in 1988 (Thébaud-Mony, 1991, 43.).

figure that is climbing only very slightly every year¹. Moreover, if we look closely at the figures, we clearly see that out of the 22 tables for compensation for cancer, 12 allow for the recognition of only 1 or 2 cancers per year, as most recognized cancers, excluding asbestos-related ones, are in four tables: aromatic amine and their salts (77 cancers in 2013), coal tar (62 cases), wood dust (60 cases), benzene (42 cases), so a total of 241 cancers in all². This is very far from the evaluations on which the epidemiologists agree today; that is, that “the share of cancers ascribable to occupational exposure is estimated at between 4 and 8.5%, which in France represents between 14,000 and 30,000 new cases per year (out of the 355,000 new cancer cases estimated in 2012), half of which correspond to highly lethal cancers”³. For some cancers, the gap between the number of cancers estimated by epidemiologists and the cancers effectively recognized is very worrying. For instance, for the year 2002, between 625 and 1,110 cases of occupational bladder cancer were expected, from an epidemiological point of view, whereas only 7 cases were recognized⁴.

All these examples are not intended to highlight once again how ineffective the system is, since this aspect of occupational health policies is now well documented⁵. It is rather to show how the recurrent and lasting dysfunctions of this system of compensation produces biases in the way of understanding public health challenges related to these issues. The fact of granting compensation for (and therefore counting)

¹ (Conseil d'orientation sur les conditions de travail, 2015, 211.)²⁰

² (Conseil d'orientation sur les conditions de travail, 2015, 211.)²⁰.

³ *Plan Cancer 2014-2019. Guérir et prévenir les cancers : donnons les mêmes chances à tous, partout en France*, Paris, Ministère des Affaires sociales, de la Santé et des Droits des femmes, February 2014, p.99 (<http://www.e-cancer.fr/Expertises-et-publications/Catalogue-des-publications/Plan-Cancer-2014-2019>). Voir aussi (Rushton, Hutchings and Brown, 2008).

⁴ (Imbernon, 2003, 18.); for other examples in this regard, see this same report.

⁵ Among the social partners, only the representatives of employers' organizations insist on denying this situation, even though they sometimes find themselves in an awkward position. In its reaction to the publication of the last Diricq report, the MEDEF [the largest employers' federation] started by dismissing an explanation of the increase in the number of occupational diseases recognized in terms of the deterioration of working conditions. It then developed the idea that the increase in these numbers corresponded to a better recognition (suggesting that a certain under-recognition therefore characterized the system). In a second point it went on to deny any demonstration of an under-declaration: “The under-declaration is presented as a widespread phenomenon, without this ever having been scientifically proved, nor statistically demonstrated (only estimations have been put forward, based on no reliable and objective criteria). We cannot understand how the Commission can allow itself to challenge the conclusions of the commission on occupational diseases, composed notably of scientists, doctors of all specialities relevant to the various pathologies considered.” “Contribution des partenaires sociaux », in (Diricq, 2011, 164-5.).

only a tiny proportion of occupational diseases within the AT/MP branch of social security makes the establishment of the link between diseases and exposure to toxins more difficult. Incredulity persists today as to the existence of these cancers or these diseases. A common sense argument that was used for a long time in the case of asbestos, is that if they existed one would have the right to expect them to effectively be taken care of by the institutions whose function that is¹. The denial of occupational cancers is obviously above all the doing of employers' representatives, but it may also be the doing of anyone who is outside this space of negotiation, who does not know the longstanding modes of functioning, and who, logically, expects an institution in charge of "compensation for occupational diseases" to effectively "compensate" them.

At a time when there is a demand for ever more quantified indicators to steer policy, it seems natural to use the existing data to analyse trends. There is therefore a tendency to measure the progress of a policy in the field of occupational cancer prevention, based on the decrease in the only existing figure, that is, the cancers effectively recognized by health insurance. Yet every time this analysis is done, the trade union representatives launch into the difficult explanation of why this approach is not relevant and why, at least initially, a good occupational cancer prevention policy should result in more cancers being effectively recognized every year, and therefore in the indicator being multiplied by 10 or 100.

While studies on "undone science" focus on the logics of knowledge production and the means to explain them, the consequences of long-term unequal distribution of knowledge in an area of public policy receive far less attention in the literature. Yet it is essential to identify them, insofar as they are an essential vehicle of power inequalities in this field.

A clear illustration of this is the lasting controversies around the quantification of cancers due to occupational and environmental exposure, which are a major factor in the under-evaluation of this problem². These controversies became very public in the

¹ On the "functionalization" of institutions, that is, the belief in the fact that institutions exist to fill a number of functions and that they do effectively do so, see(Lacroix and Lagroye, 1992).

² For a critique of the reasoning in terms of the attributable share applied here to the case of cancer, see (Counil and Henry, 2017)

eighties in the US, when the Richard Doll and Richard Peto report triggered a controversy by minimizing the proportion of cancers imputable to occupational factors¹.

In France, even though the debate is far less muffled, wide disparities persist in the evaluation of the role of occupational and environmental factors in the appearance of cancers. As we have seen, epidemiologists now agree that between 14,000 and 30,000 new cancers per year are imputable to working conditions. Yet scientific standpoints regularly seek to minimize their importance, highlighting instead factors related to tobacco and alcohol, which are indeed numerically a more significant cause of cancer. Published by the IARC and disseminated in a synthesized version in French by the *Académie des sciences*, the Doll and Peto report stresses the role of tobacco and alcohol, and significantly downplays occupational and environmental factors by emphasizing their hypothetical nature²: “Occupational exposure is at the origin of 3.7% of cancers in men and 0.5% in women. This percentage is tending to decline in industrialized countries owing mainly to more healthy working conditions”³.

This report has been severely criticized, regarding both the occupational and the environmental aspects⁴. The controversial nature of the debate reveals the low degree of objectification of the effects of exposure to carcinogens in the workplace⁵. The barely stabilized nature of scientific knowledge repeatedly requires the reconstruction of data to strengthen the social existence of occupational and environmental cancers in the population, which in turn requires a huge effort and numerous resources (scientific and technical, as well as human and financial).

This work of collecting data for the purpose of reconstructing the link between occupational exposure and cancer was carried out by the Turin public prosecutor, for example, and allowed for the sentencing of the chief executive officers of the company Eternit in a court ruling in February 2012⁶. In his account of this initiative, the

¹ (Doll and Peto, 1981). On debate related to this report, see in particular: (Proctor, 1995); (Jasanoff, 1990, 29-32.).

² (World Health Organization and International Agency for Research on Cancer, 2007).

³ (Académie nationale de médecine, Académie des sciences, Centre international de recherche sur le cancer and Fédération nationale des centres de lutte contre le cancer, 2007).

⁴ (Salines, Eilstein, Le Moal, Bloch and Imbernon, 2007) ; (Goldberg and Imbernon, 2008).

⁵ More generally, Michelle Murphy shows that the 20th century can be characterized as one in which many environmental and professional contaminations were made invisible; see (Murphy, 2006).

⁶ This ruling, upheld in 2013 by the Appeal Court, was nevertheless quashed by the Supreme Court of Italy because the limitation period had expired.

prosecutor Raffaele Guariniello explains that he embarked on a “search for lost tumours”¹, with a view to identifying occupational cancer cases that “neither the legal authorities nor the social security health insurance, nor the health surveillance authorities were informed of”². This project involved the analysis of “28,339 cases, of which 22,040 were bladder cancers, 2,186 were pleural mesothelioma, 184 peritoneal mesothelioma, and 608 nasal and sinus cancers. After verification, we found that 26,985 of these 28,339 cases were linked to the patients’ occupational exposure”³. The aim of this study was not to compile a register of cancers with a view to producing epidemiological data, but to provide tools to the main judicial actors in order to facilitate the processing of applications for compensation, and to force employers to take more preventive measures. It nevertheless contributed to objectifying a social situation, and to rebuilding the causal links between certain cancers that might otherwise disappear from the administrative statistics, along with the exposure at their origin. Although it relied on considerable mobilization among workers, the Turin court case was successful because the evidence was based on the cases of 2,200 deaths and 700 victims of exposure to asbestos in the town of Casale Monferrato and surrounding areas. Without this meticulous work of recording cases, the trial that served to qualify the facts as an “environmental disaster” would have been impossible, and the victims of this exposure would probably once again have disappeared in the controversies between scientists or specialists. This example clearly shows the extent to which the institutionalization of ignorance about occupational cancers requires a large and sustained investment to reconstruct the causal links between pathologies and exposure to toxins.

Conclusion (to be finished)

Bibliography

Académie nationale de médecine, Académie des sciences, Centre international de recherche sur le cancer, and Fédération nationale des centres de lutte contre le

¹ (Guariniello, 2015, 560.).

² (Guariniello, 2015, 560.)

³ (Guariniello, 2015, 560.)

- cancer. 2007. *Les Causes Du Cancer En France. Rapport - Version Abrégée*. Paris: Académie nationale de médecine.
- Bachrach, Peter, and Morton S. Baratz. 1962. "Two Faces of Power". *The American Political Science Review* 56:947-52.
- Baumgartner, Frank R., and Bryan D. Jones. 1993. *Agendas and Instability in American Politics*. Chicago: University of Chicago Press.
- Baumgartner, Frank R., and Bryan D. Jones. 1991. "Agenda Dynamics and Policy Subsystems". *The Journal of Politics* 53:1044-74.
- Brodeur, Paul. 1974. *Expendable Americans*. New York: Viking Press.
- Brown and Williamson. 1969. *Smoking and Health Proposal*. Brown and Williamson.
- Conseil d'orientation sur les conditions de travail. 2014. *Conditions De Travail. Bilan 2013*. Paris: Ministère du Travail, de l'Emploi, de la Formation professionnelle et du Dialogue social.
- Conseil d'orientation sur les conditions de travail. 2015. *Conditions De Travail. Bilan 2014*. Paris: Ministère du Travail, de l'Emploi, de la Formation professionnelle et du Dialogue social.
- Couil, Emilie, and Emmanuel Henry. 2017. "Frontières Disciplinaires Et Tensions Entre Savoirs Académiques Et Connaissances Issues Du Terrain Dans La Production De Savoir Et D'ignorance En Santé Et Travail". *Travail et Emploi*
- Crenson, Matthew A. 1971. *The Un-Politics of Air Pollution. A Study of Non-Decisionmaking in the Cities*. Baltimore: Johns Hopkins Press.
- Culpepper, Pepper D. 2011. *Quiet Politics and Business Power: Corporate Control in Europe and Japan*. New York: Cambridge University Press.
- Déplaude, Marc-Olivier. 2003. "Codifier Les Maladies Professionnelles : Les Usages Conflictuels De L'expertise Médicale". *Revue française de science politique* 53:707-35.
- Desrosières, Alain. 1993. *La Politique Des Grands Nombres. Histoire De La Raison Statistique*. Paris: La Découverte.
- Devinck, Jean-Claude. 2010. "La Lutte Contre Les Poisons Industriels Et L'élaboration De La Loi Sur Les Maladies Professionnelles". *Sciences sociales et Santé* 28:65-91.
- Diricq, Noël. 2011. *Rapport De La Commission Instituée Par L'article L. 176-2 Du Code De La Sécurité Sociale*. Paris: Ministre du Travail, de l'Emploi et de la Santé.
- Doll, R., and R. Peto. 1981. "The Causes of Cancer: Quantitative Estimates of Avoidable Risks of Cancer in the United States Today.". *Journal of the National Cancer Institute* 66:1191-308.
- Ewald, François. 1986. *L'état Providence*. Paris: Grasset.
- Frickel, Scott, Sahra Gibbon, Jeff Howard, Joanna Kempner, Gwen Ottinger, and David Hess. 2010. "Undone Science: Charting Social Movement and Civil Society Challenges to Research Agenda Setting". *Science, Technology & Human Values* 35:444-73.
- Gaventa, John. 1980. *Power and Powerlessness: Quiescence and Rebellion in an Appalachian Valley*. Oxford: Oxford University Press.
- Gibbons, Michael, Camille Limoges, Helga Nowotny, Simon Schwartzman, Peter Scott, and Martin Trow. 1994. *The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies*. Londres: Sage Publications.
- Goldberg, Marcel, and Ellen Imbernon. 2008. "Cancers Professionnels. L'estimation De

- Leur Nombre Reste À Faire”. *Le Concours médical* 130:50-2.
- Gollac, Michel, and Serge Volkoff. 1996. “Citius, Altius, Fortius. L’intensification Du Travail”. *Actes de la recherche en sciences sociales* 54-67.
- Gross, Matthias, and Linsey McGoey, eds. 2015. *Routledge International Handbook of Ignorance Studies* Abingdon, New York: Routledge.
- Guariniello, Raffaele. 2015. “La Dynamique Sociale De La Lutte Pour La Santé Au Travail. Témoignage D’un Procureur.” In *Les Risques Du Travail. Pour Ne Pas Perdre Sa Vie À La Gagner*, ed. Annie Thébaud-Mony, Philippe Davezies, Laurent Vogel, and Serge Volkoff. Paris: La Découverte.
- Hatzfeld, Nicolas. 2006. “L’émergence Des Troubles Musculo-Squelettiques (1982-1996)”. *Histoire et Mesure* 21:111-40.
- Hatzfeld, Nicolas. 2009. “L’épidémie Des Affections Périarticulaires : Acteurs, Regards, Moments D’une Reconnaissance (1982-1996).” In *Cultures Du Risque Au Travail Et Pratiques De Prévention. La France Au Regard Des Pays Voisins*, ed. Catherine Omnès, and Laure Pitti. Rennes: Presses universitaires de Rennes.
- Henry, Emmanuel. 2007. *Amiante : Un Scandale Improbable. Sociologie D’un Problème Public*. Rennes: Presses universitaires de Rennes.
- Henry, Emmanuel. 2017. *Ignorance Scientifique Et Inaction Publique. Les Politiques De Santé Au Travail*. Paris: Presses de Sciences Po.
- Hess, David J. 2007. *Alternative Pathways in Science and Industry: Activism, Innovation, and the Environment in an Era of Globalization*. Cambridge, Mass.: MIT Press.
- Hess, David J. 2015. “Undone Science: A Review and Typology.” In *Routledge International Handbook of Ignorance Studies*, ed. Matthias Gross, and Linsey McGoey. Abingdon, New York: Routledge.
- Imbernon, Ellen. 2003. *Estimation Du Nombre De Cas De Certains Cancers Attribuables À Des Facteurs Professionnels En France*. Paris: Institut de veille sanitaire.
- Jasanoff, Sheila. 1990. *The Fifth Branch: Science Advisers as Policymakers*. Cambridge: Harvard University Press.
- Lacroix, Bernard, and Jacques Lagroye. 1992. “Introduction.” In *Le Président De La République. Usages Et Genèses D’une Institution*, ed. Bernard Lacroix, and Jacques Lagroye. Paris: Presses de la FNSP.
- Markowitz, Gerald E, and David Rosner. 2002. *Deceit and Denial: The Deadly Politics of Industrial Pollution*. Berkeley, CA: University of California Press.
- McCulloch, Jock, and Geoffrey Tweedale. 2008. *Defending the Indefensible: The Global Asbestos Industry and Its Fight for Survival*. New York: Oxford University Press.
- Michaels, David. 2008. *Doubt is Their Product: How Industry’s Assault on Science Threatens Your Health*. Oxford, New York: Oxford University Press.
- Moriceau, Caroline. 2009. “Les Perceptions Des Risques Au Travail Dans La Seconde Moitié Du Xixe Siècle : Entre Connaissance, Déni Et Prévention”. *Revue d’histoire moderne et contemporaine* 56:11-27.
- Murphy, Michelle. 2004. “Uncertain Exposures and the Privilege of Imperception: Activist Scientists and Race At the U.s. Environmental Protection Agency”. *Osiris* 19:266-82.
- Murphy, Michelle. 2006. *Sick Building Syndrome and the Problem of Uncertainty: Environmental Politics, Technoscience, and Women Workers*. Durham: Duke

- University Press.
- Nowotny, Helga, Peter Scott, and Michael Gibbons. 2001. *Re-Thinking Science: Knowledge and the Public in an Age of Uncertainty*. Cambridge, U.K.: Polity.
- Oreskes, Naomi, and Erik M. Conway. 2010. *Merchants of Doubt: How a Handful of Scientists Obscured the Truth on Issues From Tobacco Smoke to Global Warming*. New York: Bloomsbury Press.
- Rosental, Paul-André. 2009. "De La Silicose Et Des Ambiguïtés De La Notion De "Maladie Professionnelle"". *Revue d'histoire moderne et contemporaine* 56:83-98.
- Pestre, Dominique. 2003. *Science, Argent Et Politique. Un Essai D'interprétation*. Paris: INRA Éditions.
- Pierson, Paul. 2004. *Politics in Time: History, Institutions, and Social Analysis*. Princeton: Princeton University Press.
- Pierson, Paul. 2015. "Power and Path Dependence." In *Advances in Comparative-Historical Analysis*, ed. James Mahoney, and Kathleen Thelen. Cambridge University Press.
- Piotet, Françoise. 1988. "L'amélioration Des Conditions De Travail Entre Échec Et Institutionnalisation". *Revue française de sociologie* 29:19-33.
- Pitti, Laure. 2009. "Du Rôle Des Mouvements Sociaux Dans La Prévention Et La Réparation Des Risques Professionnels : Le Cas De Penarroya, 1971-1988." In *Cultures Du Risque Au Travail Et Pratiques De Prévention. La France Au Regard Des Pays Voisins*, ed. Catherine Omnès, and Laure Pitti. Rennes: Presses universitaires de Rennes.
- Pitti, Laure. 2010. "Experts "Bruts" Et Médecins Critiques. Ou Comment La Mise En Débats Des Savoirs Médicaux a Modifié La Définition Du Saturnisme En France Durant Les Années 1970". *Politix* 91:103-32.
- Proctor, Robert. 1995. *Cancer Wars: How Politics Shapes What We Know and Don't Know About Cancer*. New York: BasicBooks.
- Proctor, Robert, and Londa L. Schiebinger, eds. 2008. *Agnology: The Making and Unmaking of Ignorance* Stanford, Calif.: Stanford University Press.
- Proctor, Robert N. 2011. *Golden Holocaust : Origins of the Cigarette Catastrophe and the Case for Abolition*. Berkeley: University of California Press.
- Rainhorn, Judith. 2010. "Le Mouvement Ouvrier Contre La Peinture Au Plomb. Stratégie Syndicale, Expérience Locale Et Transgression Du Discours Dominant Au Début Du Xxe Siècle". *Politix* 91:7-26.
2009. "Les Maladies Professionnelles. Genèse D'une Question Sociale". *Revue d'histoire moderne et contemporaine* 56
- Rosner, David, and Gerald E. Markowitz. 1991. *Deadly Dust: Silicosis and the Politics of Occupational Disease in Twentieth-Century America*. Princeton, N.J.: Princeton University Press.
- Rushton, L., S. Hutchings, and T. Brown. 2008. "The Burden of Cancer At Work: Estimation as the First Step to Prevention". *Occup Environ Med* 65:789-800.
- Salines, Georges, D. Eilstein, J. Le Moal, J. Bloch, and E. Imbernon. 2007. "Point De Vue Sur Le Rapport "Les Causes Du Cancer En France"". *Revue d'épidémiologie et de santé publique* 55:423-4.
- Schattschneider, Elmer Eric. 1960. *The Semisovereign People: A Realist's View of Democracy in America*. New York: Holt, Rinehart and Winston.
- Thébaud-Mony, Annie. 1990. *L'envers Des Sociétés Industrielles. Approche*

- Comparative Franco-Brésilienne*. Paris: L'Harmattan.
- Thébaud-Mony, Annie. 1991. *De La Connaissance À La Reconnaissance Des Maladies Professionnelles En France. Acteurs Et Logiques Sociales*. Paris: La Documentation Française.
- Tweedale, Geoffrey. 2000. *Magic Mineral to Killer Dust: Turner & Newall and the Asbestos Hazard*. Oxford: Oxford University Press.
- World Health Organization, and International Agency for Research on Cancer. 2007. *Attributable Causes of Cancer in France in the Year 2000*. Lyon: IARC.
- Zerbib, Jean-Claude. 1995. "Amiante : Dangers". *Préventique-sécurité* 11-20.