The Uses of Cognition in Policy Analysis:

A First Appraisal

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Abstract

Cognitive approaches have become very fashionable in the field of policy analysis. Nevertheless, despite a common label, cognitive policy analyses vary greatly from one author to the next. So, are policy analysts talking about the same thing? Drawing on the dichotomy established by Sperber between soft cognition and hard cognition, we guess that not all authors seek to transfer theoretical assumptions from one scientific discipline to another. In order to demonstrate this hypothesis, we propose to round out these formal categories with additional sub-divisions based on the degree of conceptual transfer from cognitive science to policy analysis.

Keywords: Cognition, theory, public policy, ideas, policy analysis

1. Introduction

The number of papers and books analysing public policy while making reference to cognition has increased considerably in recent years. As a consequence, since the beginning of the 1980s, policy analysis has divided into two separate approaches that can be usefully combined in certain cases. On the one hand are traditional studies based on policy cycles, as defined by Lasswell (1956); on the other are the so-called cognitive analyses, which consider representations, ideologies, paradigms, or culture as independent variables of public policy outcomes (Dudley et al. 2000: 122-140).

Despite a common label, cognitive policy analyses vary greatly from one author to the next. Indeed, Sabatier and Schlager (2000: 209-234) established three categories according to the importance of ideas, interests, and institutions as independent variables: the "equilibrated cognitive approaches" (e.g. Sabatier, Jenkins-Smith, Kingdon, Baumgartner and Jones) which consider ideas, interests and institutions to be equally relevant; the "minimalist cognitive approaches" (e.g. King, Keohane, and Verba) which favour interests and institutions with respect to ideas; and the "maximalist cognitive approaches" (e.g. Wildavsky, Radaelli, Muller, and Jobert) which regard ideas as the most important factor of change. However, these three ideal-types share a central opposition to rational choice theory.

In the field of policy analysis, the critique of standard economic rationality based on cognitive dimensions of human thought is not new. One of its most famous examples is found in Herbert Simon's "bounded rationality" model of human behaviour (Simon 1957, Jones 2003). In the 1950s, Simon argued that human cognition was much more limited than was claimed by rational choice theory. Principles of "bounded rationality" such as adaptation and uncertainty posit that we must study cognitive factors because they have a causal power in the explanation of human behaviour. His research programme aimed "to replace the global rationality of economic man with a kind of rational behaviour that is compatible with the access to information and the computational capacities that are actually possessed by organisms, including man, in the kinds of environments in which such organisms exist." (Simon 1955: 99-118). Until the 1990s, the field in which the most attention has been focused on cognitive processes has not been public administration studies (March and Simon 1958) but foreign policy decision-making (Holsti 1962: 244-252, Snyder et al. 1962, Rosati 1995, Sylvan and Strathman 2006: 12-34).

Bearing these developments in mind, this paper addresses the following questions: what kind of intellectual transfer do policy analysts make when using the cognitive sciences? And to what extent they integrate hard cognitive processes into their analyses? According to our central hypothesis, many policy analysts use the term cognition, but only some of them develop a complete explanation of policy dynamics based on the development of cognitive sciences.

In order to encompass the entirety of cognitive policy analysis, we constituted a sample of case studies from a wide range of theoretical approaches: the policy paradox of Stone, the strategic analysis of Crozier, the systemic analysis of Thoenig, the policy learning of Heclo, the cultural approach of Wildavsky, the rational choice institutionalism of Ostrom and

Scharpf, the policy frames of Rein and Schon, the historical new institutionalism of Pierson, the policy streams of Kingdon, the sociological new institutionalism of March and Olsen, the policy inheritance of Rose, the narratives of Radaelli and Rhodes, the international regimes of Kehoane, the misperceptions of Jervis, the epistemic communities of Haas, and the four cases presented in this paper: the "punctuated equilibrium model" (PEM) developed by Baumgartner and Jones (1991: 1044-1074; 1992, 1993, 2005); the analysis of "policy paradigms" developed by Hall (1986; 1993: 275-296; 1997: 174-207); the "advocacy coalitions framework" (ACF) of Sabatier and Jenkins-Smith (1993; 1999: 117-166); and the "referentials" approach of Jobert and Muller (1987) and Muller and Surel (1998). Selection of these cases was motivated by the fact that these approaches are among the most popular (but not the only ones) within the "academic market" of policy analyses, and they are usually considered to be cognitive studies by the community of policy analysts – although not always for the same reasons (Sabatier and Schlager 2000: 209-234).

This article comprises two parts and a conclusion. The first part considers the rise of the cognitive sciences and links with the social sciences, while the second part presents the four aforementioned case studies. In conclusion, we discuss the advantages and limits of hard cognitive policy analysis.

2. Cognitive sciences, social sciences, and the different types of integration

2.1 When cognitive approaches met social sciences

According to Gardner (1985), the rise of cognitive science began in the late 1940s with the emergence of cybernetics. During that period, researchers tried to reproduce the mechanisms of cerebral activity. Their main findings (viz. the so-called "retraction-simulation-information" process) were immediately employed by social scientists to shed new light on the phenomena of social systems' self-regulation. Nevertheless, from a hard cognitive viewpoint, the theoretical transfers from cognitive to social science were minimal.

Beginning with the winter courses organised in 1957 at Darmouth College – the starting point of research on artificial intelligence – researchers abandoned the models based on brain impulses and turned their attention to psychic mechanisms, and more specifically to the activities linked to the acquisition of knowledge. This postulate provoked high expectations, since researchers thought they were able to reproduce with a computer the cognitive functions of the human brain (perception, memory, language, reasoning, and so on). At that time, computer science, cognitive psychology, and philosophy became the pillars of this "cognitive turn" (Gardner 1985). Drawing on the studies of cognitivist researchers, social scientists established the first models based on hard cognition in order to analyse mental functions and behaviours, principally in the field of anthropology.

However, during the 1980s, neuroscience resurged as the *avant-garde* of cognitive science through the progress of magnetic resonance imaging. This change made exchange difficult between the social and cognitive sciences since anthropology, sociology, economics, and

linguistics were still – and to a large extent remain – dominated by the precedent paradigm of information processing. Now, fifty years after the first experiments, researchers in cognitive science have reduced their expectations somewhat. Moreover, "neuroscientists are increasingly appreciative of the powerful role that social, political and cultural factors can play in the development, selection or maintenance of basic neurobehavioral mechanisms" (Cacioppo et al. 2003: 647).

Political science did not remain blind to these developments. As we have seen, foreign policy analysts have integrated cognitive psychology into their explanations for 50 years. When the International Society of Political Psychology was founded in 1977, and its journal *Political Psychology* launched in 1978, political psychology appeared to be a fertile interdisciplinary subfield. At the same time, its topical focus shifted from attitudes and voting behaviour to political cognition and the decision-making process. As McGuire (1993: 78-92) writes, during this third era (1980s-1990s) "depicting the person as an information-processing machine is a dominant theoretical model, with specifics drawn from cognitive science assumptions regarding how information is stored in memory and from decision theory assumptions regarding the heuristics of selective retrieval and weighing of information to arrive at a judgment" (1993). Therefore most theoretical integrations from cognitive science to political science since the 1980s are encompassed under the label of "political psychology". Currently, however, the information-processing model is not the only general perspective for political psychologists. Psychoanalytic framework may remain useful to study political leaders (Renshon, 2000; 2005). Many studies focus on the central role of emotion in political decision-making (Marcus et al., 2000; 2011). Evolutionary approaches would supply political science with a theory of the ultimate causes of human preferences and behaviors (Hibbing and Alford, 2008: 183-203) and a new understanding of institutional development (Steinmo and Lewis, 2010). Social neuroscience, which has developed over 20 years (Cacioppo et al. 2003), focuses on the mechanisms linking political and biological events and processes (*Political Psychology*, 2003: 647-870).

Considering this cross-over, it is quite striking that the majority of social science studies which use the term "cognition" make no reference to the results, concepts, or theories developed by cognitive scientists. Among these studies, the concept of cognition usually refers to phenomena involving social constructions of reality (Berger and Luckmann 1966). So are cognitivist authors all talking about the same thing? At first glance, an initial dichotomy can be established between those authors who use the concepts elaborated by cognitive science as metaphors, and those who apply such postulates directly to their own research. This is the point of view of Sperber (1997: 123-136), who distinguishes between *soft cognition* and *hard cognition*. This division is particularly relevant; still, we assume that these formal categories can be usefully complemented by additional sub-divisions based on the theoretical substance of a given transfer from cognitive science to the social sciences. In order to achieve such sub-classification, we can define three types of integration (terminological, methodological, and theoretical) – as well as one type of non-integration – all presented in the next section. We feel these distinctions to be important, because the way in which elements of cognitive science are integrated into policy analysis can also define the

relevant determinants of policy creation and change.

2.2 The types of integration of cognitive sciences into social sciences

By distinguishing between hard and soft cognitivism, Sperber recognises that both approaches focus on knowledge, reasoning, and *praxis*. Nevertheless, only the first one is based on a naturalist and mechanistic approach: firstly, hard cognitivism considers cognition to be a natural phenomenon, since the mechanisms it identifies are supposed to be valid in all human brains; secondly, this approach is mechanistic because it explains given phenomena by their causes and aims to discover regularities; thirdly, it follows a method based on experimental protocols, constituting a major difference with folk psychology.

Following Sperber, social science approaches which try to integrate the hypotheses, results, or concepts developed by cognitive science into their own arguments or definitions would constitute a case of hard cognition. Conversely, those which do not would constitute a case of soft cognition. Nevertheless, we assume there are many intermediary cases between these two extreme positions.

The first category is that of the absence of references to theories or concepts elaborated by cognitive science; but we can distinguish three additional categories of use of cognition by social scientists.

The second category is called *terminological*. What is here integrated into the sociological explanation is neither a concept from cognitive science nor the theory it belongs to, but merely a word. "Cognitive dissonance", "heuristics", or "biases" are frequent examples of this kind of integration.

The third type of integration is *methodological*. A logical schema or a method for gathering evidence, or a tool for data treatment, is integrated with no reference to any cognitive content. A good example of such is Cicourel's use of Chomsky's generative grammar. Chomsky's transformational-generative grammar provides Cicourel (1973) with a logical schema assuming that interpretive procedures are required to make sense of perceptions of social situations (deep structure) and thus to allow decision about the normal forms of use (surface structure). In so doing, the author incorporates into his sociology a theoretical framework without reference to its linguistic-cognitive content.

Finally, the last type of integration is termed *theoretical* because it applies a theory or concept of cognitive science to a problem of social science. More precisely, a social phenomenon is partially or totally explained *via* a cognitive science theory. Sperber's anthropological research programme called "epidemiological analysis of representations" (Sperber 1996; with Hirschfeld 1999: 111-132) is based on this kind of transfer. As he illustrates through his analysis of myth in primitive societies, the use of cognitive sciences explains why in a context lacking an external memorising device (generally writing), overly complex structured myths cannot be transmitted. In the following presentation of four case studies, we consider whether these so-called "cognitive" analyses of public policy employ theoretical integration

or not.

3. The different uses of cognition in four major policy analyses

3.1 The "policy referentials" approach of Jobert and Muller: a case of soft cognition despite its emphasis on ideas

Our first case study concerns the approach developed by the Research Centre on Territorial Planning (CERAT), based in the French city of Grenoble. This approach was developed in the 1970s by researchers studying the rise and transformation of public policies. To do so, CERAT produced a large number of case studies focusing on concrete policy sectors (agriculture, aeronautics, etc.) before generalising their analytical framework to the overall fields of public policy (Jobert and Muller 1987; Muller and Surel 1998), policy analysis (Muller 1990), and European public policy (Muller 1992: 134-156). Cognitive analysis, as theorised by Muller and Jobert, is based on two main postulates: on the one hand, that a specific policy is intellectually connected to society as a whole through the notion of a "referential"; and on the other hand, that policy interactions can be analysed through the concept of "mediation."

Following the paradigm concept of Kuhn (1975), a referential allows integration of social representations and power relations; it is composed of values, norms, algorithms, and images that connect a given sector's policy to the rest of society. A referential is "a representation, an image of reality that policy actors want to modify. This image orients the conception of problems, solutions and proposals elaborated by policy actors" (Muller 1990). This means that the relation between policy actors and the problems they want to solve is profoundly shaped by ideological considerations. This framework constitutes a cognitive approach which "intends to demonstrate that public policies organise according to frames that border the mental universe of actors" (Muller 1990), i.e. their self-construction of society. For example, the agricultural policy implemented in the 1950s in France must be understood as a transition from a traditionalist referential to a modernist one, illustrated by the symbolic shift from the "peasant" to the "agricultural entrepreneur." But CERAT researchers go further by affirming that a referential is a "cognitive and normative matrix" (Surel 2000: 495-512) which describes society as it is, and prescribes measures to be implemented. Consequently, these authors focus less on the origins of these ideas than on their role as variables in the rise and change of public policy (Jobert 1995: 13-24).

Nevertheless, referentials do not appear as if by magic. They need political entrepreneurs – called mediators – to diffuse them among the actors involved in the policy process. Considering public policies to be intellectual fora, the role of mediators consists in diffusing a given ideological vision of society into the policy community. Through the mobilisation of mediators, a coalition can impose its own conception of what the objectives of a given policy should be. This explains the progressive ideological convergence of policy implementation among different sectors (for example, the global neo-liberal turn of the 1990s, led by the Chicago economists, which progressively affected whole sectors of public policy – fiscal

policy, social policy, etc. – in industrialised countries).

As can be observed, the determinants of policy change are not uniquely cognitive, since referentials need the mediation of political entrepreneurs to be diffused among the members of a community. By reintroducing social interactions as a key variable, CERAT researchers undertake neither a description nor an explanation of policy change based on strong cognition. As the references quoted by these authors demonstrate, the approach based on referentials integrates no concept, theory, or methodology from the cognitive sciences. Thus, we consider this approach to be a case of "total absence of reference to cognition."

*3.2 Hall's "policy paradigms" as an incrementalist approach
to public policy devoid of explicit reference to cognition*

Paradoxically, although Hall – a professor at Harvard University – never claimed the label of cognitivist, he is usually considered to be one of the leaders of this current. He focused specifically on the mechanisms of transition from one set of ideas to another within a policy community (1986). Specifically, his research consisted in examining the impact of macro-economic theories on the policy *praxis*.

Economic policy is envisioned from the point of view of scientific paradigms conceptualised by Kuhn (1975). Hall (1993: 275-296) defines a policy paradigm as a set of ideas and norms which encompass the objectives, the instruments, and the nature of the problems that a policy needs to solve. By focusing on the British transition from Keynesian to monetarist economic policy from the 1970s to the 1980s, Hall intends to demonstrate that this paradigm shift occurred in three phases. In an intellectual context dominated by welfare-state ideologists, the first step consisted in modifying the *instruments* used by the British Cabinet to stop the industrial crisis. The discontent provoked by this "first order change" favoured a new governmental strategy through the modification of *techniques* of macro-economic policy (second order change). The third order change occurred when political leaders decided to substitute the old Keynesian *objectives* with monetarist ones. The transition ended with the complete renewal of economic policy: instruments, techniques, and objectives were re-united under a new policy paradigm, as demonstrated by the election of the conservatives in 1979 (Hall 1993: 275-296).

As demonstrated by Hall's references to and quotations from classical currents of policy analysis, the policy paradigm approach aims to revive the policy learning tradition earlier theorised by Heclo (1974). Drawing on the epistemological considerations of Kuhn, Hall limits his studies to the concepts of learning, policy-making, and ideologies, while deliberately ignoring developments in cognitive psychology, cybernetics, or cognitive economy. Nevertheless, he is perfectly conscious of scientific progress produced by such, for example in the field of international relations (Hall 1997: 174-207).

Considered from the angle of cognition, his research deals primarily with the notion of social learning. In so doing, Hall clearly raises the question of the reaction of a community confronted by intellectual incoherence, with respect to its traditional mental framework. As

demonstrated by Hall, abandoning an intellectual framework is a difficult task. This is an incremental process which begins by rejecting the intellectual margins of a given paradigm, while its intellectual core endures. At the end of the day, the mental mechanisms that impede desertion of this intellectual position disappear when confronted by an accumulation of negative empirical evidence. This constitutes the last step before the "conversion" to a new paradigm. As in the Muller-Jobert approach, the role of political leaders and the mass media is fundamental to this complex social interaction, since these actors diffuse and consolidate the new legitimate knowledge. Nevertheless, Hall has no doubts about the determinants of paradigm shifts, since ideas clearly emerge from the day-to-day *praxis*. As a last resort, while Muller and Jobert see ideas as exogenous variables whose success depends only on the persuasive power of mediators, Hall argues that ideas modify policy, because actors can empirically demonstrate whether they "work" or not. In this way, neo-liberalism prevailed because Keynesian assumptions were unable to resolve the economic crisis.

Beyond the debate between constructivism and Popperian neo-positivism, some signs seem to indicate that Hall applied the theory of cognitive dissonance, popularised by Festinger (1957), under a collective form. According to the social psychologist Festinger, cognitive dissonance can be defined as a tension (dissonance) that comes from holding two contradictory thoughts at the same time. This tension obliges the mind to find a solution, so as to reduce the level of dissonance. This solution can consist in acquiring new beliefs, inventing new thoughts, or modifying existing beliefs (Aronson 1992: 303-311, Goethals 1992). In the process of policy change described by Hall, actors also try to find a new coherence by fighting against intellectual inconsistencies. Nevertheless – and this is a major difference with Festinger – in the theory of cognitive dissonance actors are unconsciously "manipulated" by their own cognitive mechanisms. In contrast, the actors described by Hall are conscious of their strategy, even when they are engaged in a learning process.

For Hall, as for Heclo, politics is a question of conscious and progressive adaptation to external conditions. The innovation brought by Hall consists in demonstrating that big changes are not incompatible with the incremental approach to policy. Once more – and even though these elements might only be "shortcuts" used by Hall, to avoid describing all the mental processes of paradigmatic transition – this is a case of total absence of reference to cognition.

3.3 The "advocacy coalitions framework" of Sabatier:
a case of hard cognition deeply rooted in cognitive psychology

In proposing the Advocacy Coalitions Framework (ACF), Sabatier (University of California at Davis) intended to explain why public policies change in the middle-term. The model he created to analyse environmental policies in the United States has continued to develop since 1980, thanks to the collaboration of several researchers (Sabatier and Jenkins-Smith 1999: 117-166), and it is currently a very popular method of analysing public policy (Jenkins-Smith and Sabatier 1994: 175-203).

According to Sabatier, a policy sub-system is constituted by different kinds of actors from government and civil society. These actors tend to divide and organise into different coalitions, each of which defends an intellectual position. Rejecting the vision of rationality as an instrumentally oriented phenomenon, the author assumes that the preferences and strategies of coalition actors are shaped by three concentric spheres: firstly, the "deep core beliefs" which refer to general considerations deeply rooted in the minds of actors (e.g. liberty/equality); secondly, at a more superficial level, the "policy core beliefs" concentrate on knowledge which only applies to a particular policy sector (e.g. is immigration policy really fair?); thirdly, at the surface, the "secondary beliefs" that constitute a practical knowledge which makes sense only in relation to concrete policy issues (e.g. rules of accountancy). While the first two concentric spheres are difficult to modify, the third is quite malleable. Conceived as a collective learning process, the struggle between coalitions is channelled by "policy brokers."

A systematic analysis of his bibliography confirms that Sabatier uses elements of hard cognition in his descriptions of actors and interactions (Massad et al. 1983: 95-116, Sabatier and Hunter 1998: 229-261). First of all, "while the ACF model assumes that actors are instrumentally rational – i.e. they seek to use information and other resources to achieve their goals – it draws much more heavily on work in cognitive and social psychology than in economics" (Sabatier 1998: 98-130). Indeed, Sabatier always refused to introduce rational choice assumptions in his theory, preferring to focus his statements on actors' knowledge. In general terms, Sabatier (1985) considers actors to be constrained by time and information in a bounded rationality framework explicitly attributed to Simon.

Secondly, consistent with the theories of cognitive dissonance and attribution, actors are supposed to interpret reality according to their pre-existing knowledge. To confirm this postulate, Sabatier (1998: 98-130) quotes the analysis of psychologists such as Lord, Ross, and Lepper (1979: 2098-2109), who organised an experiment with individuals both in favour of and against capital punishment. By proposing to this group a set of data related to the death penalty, these researchers demonstrated that actors memorised only the data compatible with their already held opinion. As in Festinger's theory of cognitive dissonance, a psychological bias constrained actors to ignore their own inconsistencies in order to avoid dissonance. In the case of the policy process, this means that actors who suffer a defeat usually prefer to think it is due to the superiority of their adversaries, rather than their own incapacity for problem-solving (Sabatier 1998: 98-130).

Thirdly, Sabatier transferred different elements established by the cognitive psychologists Quattrone and Tversky (1998: 719-736) to his own theory. The latter demonstrated that actors – e.g. electors facing different candidates during a poll – identify their losses more easily than their successes. The political consequence of this finding is that actors are more sensitive to defeats than to victories. Drawing on this data, Sabatier, Hunter, and McLaughlin (1987: 449-476) wrote a fundamental paper for the development of the ACF in 1987. In this article, the three researchers tried empirically to verify the validity of hypotheses proposed by Quattrone and Tversky *via* the case of an environmental conflict over the management of Lake Tahoe in the United States. As a result, the researchers led by Sabatier showed that it

was perfectly possible to apply this theory at the collective level, as follows: the policy debates favour a general distrust and the constitution of opposite coalitions; each coalition tends to envision its opponents as more powerful and spiteful than they actually are; this "devil shift" explains why confrontations between coalitions tend to strengthen the internal integration and duration of groups united around a common understanding and against external ideas; it also clarifies the mechanisms of escalating violence (both symbolic and physical) when actors directly criticise the policy core or the deep core of opposing coalitions – that is, the centre of their belief system.

As a partial conclusion, we find that Sabatier and his colleagues here make an original use of the cognitive sciences. In this case, we are confronted with an approach of hard cognition promoted by researchers seeking to develop a completely new theory based on vocabulary, methodology, and results produced by cognitive scientists – social cognitive psychologists in particular.

3.4 The Baumgartner-Jones' model of "punctuated equilibrium" or the behavioural revolution of policy analysis

As a final case study, we focus on the Punctuated Equilibrium Model (PEM) developed by Baumgartner and Jones, professors at Penn State University and at the University of Texas at Austin, respectively. Initially advanced as an explanation of the development of differences among species, the PEM was created to study the rise and transformation of policy sub-systems (e.g. U.S. Congressional hearings, agenda-setting, nuclear power…) before being generalised to the entirety of public policy (Jones and Bamgartner 2005; John 2006: 975-986).

The main idea Baumgartner and Jones have defended since 1993 is that policy-making patterns follow neither an incremental process – as many policy analysts focusing on implementation state – nor a perpetual renewal process – as policy agenda specialists argue. The concept of (and the term) "punctuated equilibrium" imposes the consideration of policy sub-systems from an historical perspective. In doing so, we observe that institutions and policies are generally stable (that is, in equilibrium), but that dramatic changes (also called punctuations) can occur. This dynamic is revealed in two processes: when facing policy pressure groups, social mobilisations, or external shocks, institutions tend to defend themselves through a series of internal counter-mobilisations exerting a homeostatic effect (*negative feedback process*). But on some occasions, such inputs can progressively destabilise the policy sub-system and provoke the rise of a new equilibrium (*positive feedback process*). This description is abundantly documented in Jones and Baumgartner book's *Policy Dynamics* (2002), through a database compiling the evolution of U.S. public policy over the past 50 years.

Nevertheless, how do we explain both stability and dramatic reversals with a single theoretical approach? In the volume *Agendas and Instability,* Baumgartner and Jones (1993) proposed several exploratory hypotheses drawn from their inductive approach to different

policy systems, like nuclear power or pesticide use. However, after ten years of theoretical improvements, these authors converted the PEM into a real explanatory theory in *The Politics of Attention* (2005) valid for analysing entire aspects of governmental policies. Despite frequent changes in vocabulary, Jones and Baumgartner argue that policy dynamics – i.e. the alternation of equilibrium and punctuation – are tied to the attention that policy-makers devote to a particular set of policy problems faced by their governments. To be more specific, a set of policy entrepreneurs is typically constituted, or driven by, sectoral policy experts; these policy entrepreneurs mobilise to propose to policy-makers an alternative definition of a given policy problem, in order to modify the policy-makers' perceptions into accordance with the interests of the entrepreneurs. Therefore, attention and cerebral processes are at the core of the current version of the punctuated equilibrium approach.

In *The Politics of Attention* (2005) the political system is conceived and studied as a system of information processing. Although information processing is not the only relevant feature of the political system, it largely explains how and why governments devote more attention to one problem over another. Here, Jones and Baumgartner try to answer two related questions: on the one hand, how is information provided to policy-makers during the policy cycle? And on the other hand, how do policy actors interpret and assimilate the information to which they have access? The first section of *The Politics of Attention* constitutes the real keystone of the PEM by providing the theoretical grounding of an explanation in terms of human and organisational information processing. These elements, largely drawn from the analyses of H. Simon, also constitute the basis for the two volumes by Bryan D. Jones (1994, 2001) dedicated to cognition and bounded rationality in politics. According to Jones, the main characteristic of human cognitive structure is resistance to change, or a natural preference for *status quo*. But Jones goes further by applying this postulate to organisations. Indeed, Jones proposes a behavioural explanation of the organisational decision-making process by arguing that organisations – like individuals – are generally ruled by routines and the fear of uncertainty, and they tend to develop a *negative feedback process* for maintaining stability. As a consequence, the inference between human behaviour and collective choice is causal (and not metaphorical) since organisations respond to the same patterns as the people that inhabit them. Clearly, bounded rationality constitutes the core of the PEM.

The main conclusion that these authors draw from organisational decision-making is the process of attention allocation is necessarily inefficient. Theoretically speaking, the speed and intensity of a purely rational decision-making process should be proportional to the severity of signals arising from the environment. However, several biases impede such an automatic answer. Firstly, attention is limited by overload and usually constrained by emotion; consequently, organisations face serious limits to planning long behaviour sequences, and policy-makers tend to operate on goals sequentially, rather than simultaneously. Secondly, the intensity of a given signal is crucial for generating an answer on the political agenda; moreover, this intensity is relative to the importance of other issues facing a government at the same time. Thirdly, the identification of policy-makers with their previous decisions – depending on their ideology, their feeling of organisational belonging, or the phenomenon of path dependency – constitutes a set of *frictions* which considerably slow the translation of a

signal into concrete measures. The concept of friction has become central in the PEM, since it emphasises the gradual difficulties associated with converting the inputs into outputs. Such a process is generally possible (in liberal democracies, decision-making is never completely sealed), but it faces much resistance that can slow or modify the substance of the initial inputs. In short, the less friction an input meets, the faster it converts into an output.

But as Jones and Baumgartner state, to consider this theory of policy-making as a mere description of a "policy thermostat" would be a mistake. First, despite its innovative character, a signal can be ignored by policy-makers whose attention is centred on another topic, or because consideration of the signal would go against their moral or religious convictions. Second, we must consider the limited processing capacity of policy agenda-makers, who tend to focus only on routine problems and/or very extraordinary issues. This is why Jones and Baumgartner (2005: 49) conclude categorically that: "There is an extreme *allegiance* to the *status quo*". In some cases, such a situation may be the result of ideological frictions, but it tends to be a product of the incapability of human cognition to deal simultaneously with the entirety of problems produced by the environment (further exacerbated by the inefficiency of administrative routines). Conversely, when a topic catches the attention of policy-makers, this usually means that the problem – as well as its solutions and objectives – will be re-evaluated in light of recent developments.

Our conclusion is that this represents a clear example of theoretical integration deeply rooted in a hard cognition perspective. As the authors of the PEM stress, a remark by mathematician B. Mandelbrot can be taken to summarise most of their theory: "Man tends to react either by overestimation or neglect". (Jones and Baumgartner 2005: 50 and 87).

4. Conclusion: Hard cognition, rationality, and policy analysis: towards a research programme?

As stated at the outset, the term "cognition" can be used in very different ways by policy analysts, despite the generic notion of "cognitive policy analysis". The four case studies examined in this paper illustrate the two main relationships between social and cognitive sciences: on one side, Hall, Muller, and Jobert seem to ignore developments in cognitive science, or at least never refer to them; on the other side, Sabatier, Jones, and Baumgartner aim to enrich policy analysis with results, methods, and theories elaborated by cognitive scientists. By focusing on information processing, reasoning, memorising, and so on, the former approach demonstrates how useful and relevant hard cognition can be to understanding policymaking. Thus, it may constitute interesting scientific grounds on which constructivist approaches may be built in order to avoid the "black box" objection raised by rational choice theorists.

To explain any social behaviour, referentials, paradigms, or frames must rely on causal mechanisms. Hard cognition provides cognitive analyses with solid causal mechanisms. This is one reason for adopting hard rather than soft cognitive explanations in policy analysis. However, mechanisms are never described by soft cognitive theorists. Frames, ideas, or

paradigms are assumed, and the results (behaviours) are supposed to be at least partly produced by these entities.

A second reason favouring the hard approach is the very wide range of mechanisms that a hard cognitive perspective proposes as potential explanations, including counter-intuitive processes, such as the reduction of cognitive dissonance. If soft cognitive policy analyses inspired by constructivist intuition and a socialisation approach make for interesting theories of why policy-makers do what they do, hard cognitive mechanisms are still required to explain how they do it. At the same time, cognitive psychology is more and more a social discipline, as it studies how the social environment, social groups, and social identity interact with natural psychological processes to influence social judgment and behaviour (Schwartz 1998: 239-264).

However, integrating hard cognitive explanations into policy analyses would not be sufficient as a research programme, because it still fails to address the question of rationality. Since the 1970s, cognitive psychology handbooks have presented long lists of errors and biases, demonstrating that the standard model of rationality is unrealistic. But can policy analysis be complete if it does not focus on the way policy-makers think? When we study a decision-making process, we often find evidence of previous discussions, debates, propositions – i.e. evidence of reasoning. Can we ignore these elements? What today's cognitive policy analysis needs is a research programme that clearly instructs on how to combine hard cognitive explanations and rational explanations.

Traditionally, rational explanations are based on what Aristotle called the practical syllogism: *beliefs + desires* produce *behaviour*. As we have seen, this model must be reconsidered through the results of cognitive science, which depict individuals as much more fragmented, demonstrating how such a syllogism is neither clear nor systematic and depends heavily on different types of beliefs and desires. But does this mean that rationality has become a useless concept for policy analysis? Some political psychologists and policy analysts propose reconsideration of Simon's concept of bounded rationality (Lupia et al. 2000; Jones 2003: 395-412; Bendor, 2010). From this perspective, an explanation must combine "the premise that people have reasons for what they do with the premise that our treatment of how people reason should be informed by modern scholarship about how cognition affects information processing." (Lupia et al. 2000: 12). We believe that bounded rationality is an acceptable conception of a social actor's mindset, if we define it as a rationality of action based on beliefs that are partly produced by cognitive processes. In this way, reasons and cognitive processes can be bound together, allowing a complete and satisfying explanation of some political behaviours.

One reason why social theorists continue to argue over rationality is that they focus more heavily on *a priori* explanatory factors, rather than on the kinds of objects they are seeking to explain. Many fail to realise that they unconsciously restrict the scope of their explanatory theory to certain kinds of objects that remain unfortunately implicit. As a consequence, compatible types of explanation, each equally justified and equally relevant to the objects they have been constructed for, continue to challenge one another. As soon as we focus

primarily on the kinds of objects we want to explain, we can choose the type of explanation that seems more relevant and more convincing. By doing so, we can eventually combine rationalist theories and cognitive processes, depending on the kinds of object we study (Table 1)

First of all, two main analytical categories must be distinguished: social behaviour and mental behaviour. Social behaviour is what people do as material human beings living among other people in society (whether real or fictive). The main lesson we can draw from the "primary focus" rule is that, when it comes to social behaviour, rationalist explanations and cognitive processes will not oppose one another, because the latter deal with what happens in the mind, and not the subsequent actions. If the research data show that the social behaviour has been frequently repeated (compared with the number of situations where the person is placed under the same conditions), it seems more rational to rely on socialisation theories that are well built to explain this kind of recurring social behaviour. In contrast, we would not try to explain *via* social disposition a behaviour where the empirical research shows that a person prepared, explained, and justified in advance. Here rationalist explanations seem more suitable. In this case, the explanation of the behaviour has then to show that the person desires X and believes that her behaviour will allow her to obtain X.

At the mental level of a deliberate action, we have to address the question of why this person desires X and believes that such a behaviour will allow her to obtain it. Here, cognitive processes and rationalist explanations are in opposition. Mental behaviour includes all kinds of beliefs (opinions, social representations, certainties, values, etc.), inferences (deductions, inductions, abductions, etc.), and information processes (perceiving, selecting, categorising, memorising, denying, spreading apart, etc.). When it comes to explaining why people think what they think, we have to explain where these beliefs come from, why people make such inferences, and how they process information from their environment. Here again there are two approaches. People either produce their beliefs and inferences through conscious and voluntary reasoning, or they follow intuition. Cognitive processes are generally defined as unintentional and unconscious, the point being that we cannot choose *not* to undergo them. When they occur, it is not because we consciously want to follow them as rules for inference or perception. Indeed, many cognitive processes imply by definition that they are unintentional. For instance, the reduction of cognitive dissonance that arises after a person does something with which he/she later disagrees (or of which he/she is not proud) must be involuntary, because we cannot intentionally change our feelings or emotions about what we have done (any more than we can wish not be ashamed, or in love). On the contrary, reasons are supposed to be the results of conscious and intentional inferences. Obviously, when we think, it is usually difficult to pinpoint exactly what we are conscious of. Once again, this leads us to focus primarily on the kinds of objects we have to explain.

As Kahneman (2003: 1449-1475) writes, "intuition" and "reasoning" could effectively guide the empirical research: "[...] Reasoning is done deliberately and effortfully, but intuitive thoughts seem to come spontaneously to mind, without conscious search or computation, and without effort." Through empirical research we then must seek signs or evidence that the mental behaviour we study is closer to one type or the other. According to the results, we

choose the theory that is both the most consistent and the most relevant, i.e. either reasons or cognitive processes.

Table 1. Steps of explanation

Explanation steps		Explanandum			
Object		Social behaviour (policy decision-making)			
1/ Primary focus rule		Empirical research for evidence of			
2/ Kind of social behaviour	*Social behaviour*	Deliberate action			Habit
3/ Choice of explanation		Rationalist approach			Socialisation theories
Explanans		Reasons			Social dispositions
Object		Desires	Beliefs	Inferences	Mental dispositions
4/ Primary focus rule	*Mental behaviour*	*Empirical research for evidence of*	*Empirical research for evidence of*	*Empirical research for evidence of*	
5/ Kind of mental behaviour		Reasoning / Intuition	Reasoning / Intuition	Reasoning / Intuition	Intuition
6/ Choice of explanation		Rationalist / Hard cognitive	Rationalist / Hard cognitive	Rationalist / Hard cognitive	Hard cognitive

Explanans	Conscious inferences	Biases, heuristics, cognitive dissonance	Conscious inferences	Biases, heuristics, cognitive dissonance	Conscious inferences	Biases, heuristics, cognitive dissonance	Biases, heuristics, cognitive dissonance

On the one hand, when empirical investigations show that a decision has been prepared, thought through, and planned, it seems difficult not to attribute particular sets of reasons (beliefs and desires) to the decision-makers. The logic behind the explanation is therefore: actors did what they did because they had reasons to do it. But such reasons are inferences that tie beliefs and desires. In order to give sense to action, we need to explain the beliefs implied in the action. In such a case, if the mental behaviour is closer to intuition than to reasoning, then hard cognitive processes are helpful in explaining what and why actors thought what they thought at the time that they did what they did.

On the other hand, when empirical investigations show that a policy decision-making process occurs as a matter of habit, as the usual way of doing something, or as a decision taken in a state of emergency, social dispositions may represent a more convincing approach for the direct explanation of social behaviour, which relies on hard cognitive processes at the mental level.

Policy analysis cannot focus only on decision-making, which is only one aspect of the policy-making process. But as policies are considered and implemented by people who have to make choices and adapt their behaviour, decision-making seems an important part of policy analysis. Cognitive science provides policy studies with a rich and scientifically grounded toolbox about the decision-making process. This is why scholars such as Sabatier, and Baumgartner and Jones, integrate hard cognitive processes into their political explanations. The rediscovery of Simon's original bounded rationality should then become a very promising research programme for policy studies, much more solid than soft cognitive approaches.

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