

**EXPLORING THE COMPLEX INTERACTION BETWEEN GOVERNANCE AND
KNOWLEDGE**

SYNTHESIS OF THE LITERATURE

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TABLE OF CONTENTS

1. Introduction.....	2
2. Setting the stage: Governance and knowledge in complex environments	3
Complexity	3
Governance.....	3
Knowledge	4
3. Governance and knowledge	5
Knowledge in governance	6
Knowledge’s direct role in governance	6
Knowledge’s indirect role in governance	9
Governance of knowledge.....	11
Governance of knowledge production.....	11
Governance of knowledge dissemination, translation and utilisation	13
4. Putting the pieces together and some food for thought.....	14
Towards an analytical model.....	14
Three hypotheses.....	16
REFERENCES	0

1. Introduction

This literature synthesis maps out and collates the literature relevant for the OECD project “Governing Complex Education Systems”. This project stems from the understanding that governments in OECD countries are facing the challenge of governing increasingly complex education systems. To deal with such a challenge governments should develop governance structures which:

- can handle the complexity of contemporary education systems; and
- can provide actors with the knowledge they need to make decisions on complex issues.

By implication, the focal points of this review are governance and knowledge as understood in complex social, economic and political environments. The key questions we are pursuing here is:

How does governance and knowledge mutually constitute and impact on each other in complex education systems?

There is no readily available literature discussing this question in great depth and width. Instead, there are different schools of academic and policy thinking which grasp and grapple with aspects of this relationship. Hence, this review is necessarily explorative and experimental in nature, it is expected to be unfinished calling for additional theoretical and empirical research in many fields. The main focus falls on the theoretical and analytical perspectives developed in the literature; references to empirical research and policy evaluations appear only occasionally.

As there is no readily available literature to explore our research question a wide range of academic disciplines is queried looking at not only education, but other policy fields:

- public management,
- political science,
- public policy,
- sociology, especially sociology of knowledge,
- institutional economics and
- organisational management, especially knowledge transfer literature.

Nevertheless, findings in academic writings are supplemented by previous work in the field carried out by the OECD and other international organisations.

The papers relevant for this review were identified primarily by pursuing the bibliographic network of key publications and authors in each of the disciplines. These were identified based on salience of arguments in the wider literature and high citation indices.

This review is structured as follows: First, we set the scene by defining and locating governance and knowledge in complex environments. This is a crucial step as both governance and knowledge are concepts used and misused in a variety of ways both in academia and policy. Second, the multi-faceted relationship between governance and knowledge is broken down according to distinct elements and discussed in detail. Finally, the pieces of the puzzle are pulled together and ideas for further discussion and research are offered.

2. Setting the stage: Governance and knowledge in complex environments

Complexity

Already for many years, the complexity of education systems has been perceived to be increasing throughout the developed world due to a number of simultaneous factors (see for example: Halász, 2003; Hodgson, 2000; OECD, 2007):

- stakeholders' preferences and expectations have become more diverse placing more demand on education systems;
- governance structures developed towards more decentralised and flexible forms;
- additional layer of governance has gained increasing importance: international and transnational; and
- information and communication technologies (ICTs) are changing and spreading rapidly.

Nevertheless, the degree and nature of complexity varies greatly across countries and over time within the same country. In addition, it must be noted that complexity of education systems is not completely a given for governments out of their control; reform of governance structures, change in administrative obligations and other measures could potentially decrease or increase complexity.

For the ensuing discussion it is key to note that the increase of complexity in the OECD countries' education systems has wide ranging ramifications (Bammer and Smithson, 2008; Grek and Ozga, 2010; Grin and Loeber, 2007; Hecló, 1974):

- uncertainty and indeterminacy of public policy have increased;
- hence, the difficulty of effectively steering and governing societies in general and education systems in particular has grown; and
- the need for enhanced knowledge, understanding and effective learning have also increased.

Governance

Governance is a concept defined and used in a variety of ways many of which would not suit the present analysis as they either allow for a too broad or too narrow range of phenomena to be considered (Chhotray and Stoker, 2009). For the purposes of this review, the following definition of governance is adopted:

Governance refers to the process of governing societies in a situation where no single actor can claim absolute dominance.

This understanding of governance is in line with, for example, Pierre and Peters (2005, p. 2-6); although their definition is more detailed as it refers to four key activities of the state: (1) articulating a common set of priorities for society; (2) providing coherence; (3) steering; and (4) accountability. For these key activities the state has been the dominant actor for some time, though it, by no means, can claim absolute dominance and in some cases societal actors bear stronger influence (Lyll and Tait, 2005). By implication, governance is understood as process concerning not only decision-making, but also implementation and monitoring.

The governance structures found in advanced democracies vary greatly in many respects of which one will be of particular importance for the subsequent discussions: the degree to which they are capable of

drawing on information of disparate actors, analysing this data and using it for supporting decision-making and implementation (Howlett, 2009; Pierre and Peters, 2005).

This variety is also due to the different traditions or mix of traditions followed by different countries which can have considerable impact on the stock and flows of knowledge available for decision-making and implementation (Christensen and Lægreid, 2007). Some of the influential schools in public management literature discussing these traditions are classical “Weberian” bureaucracy (Olsen, 2005), new public management (Christensen and Lægreid, 2010), network(ed) government (Goldsmith and Eggers, 2004), joined-up government (Bogdanor, 2005) and digital-era government (Dunleavy, Margetts, Bastow and Tinkler, 2006).

Knowledge

Similar to governance, knowledge is also an analytical concept ridden by conceptual controversies and confusion. The essential problem is that every thought can in some way be conceptualised as knowledge, thus a key step is to constrain what we consider to be knowledge. Throughout this review, is the general definition that is used follows Hess and Ostrom, who state that “knowledge is assimilated information and the understanding of how to use it (Hess and Ostrom, 2007, p. 8). An essential component of this is that the quantity of knowledge does not diminish with use, but rather it increases its value as more and more people use it. However for our purposes the concept of knowledge is narrowed down to *policy relevant knowledge*, that is knowledge concerning policy issues and shared by at least some policy makers either within or outside the state (Grin and Loeber, 2007).

As opposed to the standard commodified view on knowledge, here there is a widespread notion that knowledge is embedded in particular social environments such as academic disciplines, practitioner communities, or expert groups (Oborn, Barrett and Racko, 2010). The existence of the so-called “communities of practice” (Brown and Duguid, 1991; Wenger, 1998; Yanow, 2000) brings about the need to translate and situate knowledge generated in one context in order to make it meaningful and readily available in another context.¹ This translation (as well as dissemination) function is often discharged by brokerage agencies (OECD/CERI, 2007).

Our definition of policy relevant knowledge still encompasses a wide array of different forms and types of knowledge which partially overlap with the different communities who created them (Head, 2008). Scientific knowledge, especially that based on randomised control trials, is one of the most robust and influential types of knowledge (OECD/CERI, 2007). Nevertheless, scientific knowledge is not the only type of knowledge considered in this review. Some authors organise different types of knowledge into a hierarchy where quantitative scientific knowledge in general and science based on randomised control trials in particular, represent the most trustworthy and robust forms of knowledge (Fitz-Gibbon, 2000; Oborn, Barrett and Racko, 2010; Sackett, Rosenberg and Gray, 1996). Nevertheless, in this review no explicit hierarchy of knowledge is used as our aims are primarily analytical rather than normative.² As was stated in OECD/CERI (2007): “... our basic proposition [is] that there is no single best method for or type of evidence based policy research”. (p.24)

Formal scientific evidence is just one element of knowledge. Tacit as well as explicit knowledge can play a crucial role in governance and knowledge transfer (Graham and Tetroe, 2009; Jacobson, 2007; I Nonaka, 1994; Polanyi, 1968); similarly, declarative and procedural knowledge may be crucial (Sternberg, Mio and Mio 2009). The public policy literature often makes the distinction between beliefs and policy ideas where beliefs form the defining core of groups of policy makers such as epistemic communities, advocacy coalitions and other similar concepts (Radaelli, 2009; Sabatier, 1988). An influential categorisation of types of knowledge which neatly maps into the distinct stages of the policy cycle is developed by Nutley, Walter and Davies (2003) and brought into the education research literature by Raffae

and Spurs (2007): know-about problems, know-what works, know-how to put into practice, know-how to involve and know-why.

Finally, it must be noted that the absence of knowledge, “non-knowledge” or some types of knowledge can play an important role in governance as knowledge itself as, for example, when the absence of reliable scientific evidence compels policy makers to rely on anecdotal evidence, analogies and others, or similarly the non-existence of basic statistical data on education outcomes allows for individual policy-makers’ opinion to take the role of knowledge serving particularistic interests (Bajomi et al., 2010).

3. Governance and knowledge

Governance and knowledge, constructed as above, partially overlap and mutually constitute each other; nevertheless they are analytically distinct concepts. They mutually constitute each other because, on the one hand, governance is not conceivable without a minimum degree of knowledge, that is, collective action is impossible without agreement about at least some of the basic ideas by some of the actors. On the other hand, creating and sustaining policy relevant knowledge is impossible without some sort of governance structure in place (*i.e.* in complete chaos) as shared understanding is unlikely to be sustainable without recurring acts of governance.

Nevertheless, governance and knowledge are analytically separable as they refer to different elements of reality and hence they can be entered simultaneously in theories and empirical investigations if carefully conceptualised and measured. The analytically distinct concepts of governance and knowledge are in a circular relationship which makes the study of their interaction problematic (Campbell, 2002; John, 1998). In addition, we defined both governance and knowledge in clearly delineated, but broad terms which allows for bringing together a rich set of schools of thought.

In order to analytically unpack the interaction between governance and knowledge and to make the discussion tractable, the two directions of the circular relationship are discussed separately. This approach yields two questions to be explored in the subsequent sections:

- What is the role of knowledge in the governance of complex education systems?
- What is the role of governance in knowledge creation, dissemination and utilisation in education policy?

Based on a broad review of the literature, these two questions can be separately explored on different levels and according to different aspects of policy making. On the one hand, knowledge can play a role in and contribute to governance either directly, *i.e.* as a resource, instrument or input of governance (*e.g.* Hood, 2006; 2007; Howlett, 2011; Sörlin and Vessuri, 2007), or indirectly through shaping actor preferences and means of goal achievement and determining group formation (*e.g.* Freeman, 2006; Grin and Loeber, 2007). On the other hand, governance of knowledge can steer knowledge production as well as dissemination, translation and utilisation (*e.g.* Fuller, 2000; Stehr, 2004; Sörlin and Vessuri, 2007). Each of these aspects of the circular relationship between governance and knowledge leads to distinct literatures which will be discussed in detail below (for an overview see Table 1). The added value of breaking down the relationship is that it allows for constructing a more coherent and richer picture of the interplay between governance and knowledge by putting the individual pieces together at the end (see the final section).

Table 3.1. Governance and knowledge: An overview

Direction of interaction	Aspect of the link	Sub-aspect of the link	Relevant literature
Knowledge in governance	direct: as input, instrument and resource	problem definition	public policy and political science on agenda setting
		policy solution	'what works' literature
		implementation	public management on regulatory instruments
		feedback	literature on evaluation and monitoring
	indirect: through actors	individual level: preference formation and goal attainment	policy learning and organisational learning
		group level: group formation	public policy and political science
Governance of knowledge	knowledge production	facilitating production	science and technology policy, knowledge governance
		direct production	sociology of knowledge, public management and 'what works' literature
	knowledge distribution, translation and utilisation	within the state and across the state-society boundary	knowledge management, knowledge translation and policy learning

Knowledge in governance

Knowledge is an indispensable input to governance either as a resource of political decision making or as in instrument of policy implementation or by impacting on actors. This is supported by, for example, Pierre and Peters (2005, p. 7) who state that “the ability of institutions to governance hinges on the availability of reliable information and the ability to process information”.

Knowledge's direct role in governance

As stated above, knowledge directly feeds into governance as a critical resource in

- problem definition,
- finding policy solutions,
- deriving feedback, and as an
- instrument of policy implementation.³

The role of knowledge in **defining and identifying policy problems** has been subject to academic inquiry for a long time, most notably by students of public policy and political science who analyse the politics of attention and agenda setting (Jones and Baumgartner, 2005; Kingdon, 2010) often as part of the policy cycle (Jann and Wegrich, 2007). Policy problems do not arise naturally; they must be recognised and developed as such by influential policy makers and put on the political agenda subsequently. This is considered to be an inherently political process (Baumgartner and Jones, 1993). In analysing this process, it is of particular importance to recognise that people, including policy makers have finite cognitive capacities and employ various cognitive shortcuts and heuristics to deal with information overloads. By implication, the knowledge of the objective characteristics of policy problems does not sufficiently explain

the intensity of recognition and efforts of problem solving, rather a plausible definition of the problem (D. A. Stone, 2001) and the availability of a policy image exert defining influence (Baumgartner and Jones, 1993). As there is no single accepted model or family of models of problem definition, the role of knowledge in governance cannot be unambiguously defined either. It is problematic that various models assume or imply various micro-mechanisms (Hedström and Swedberg, 1998) which brings about conceptual problems when comparing and synthesising these models.

A particularly often discussed example of how knowledge plays a powerful role in problem definition is the case of OECD's PISA and its impact on national policy making (Grek, 2010; Grek and Ozga, 2010; Mahon and McBride, 2009; Martens and Jakobi, 2010; Martens, Nagel, Windzio and Weymann, 2010). It is argued that in a series of countries, most notably in Germany, PISA results exerted a transformative effect on national understandings of educational performance and inspired a series of education reform measures: new problems emerged, previously neglected aspects of educational performance came to the fore and thus new solutions were sought.

In reality, problem definition and the identification of **policy solutions** are not strictly separated because whether a problem is recognised often depends on whether the governance structures possess the capacity to tackle it (Jann and Wegrich, 2007). This interdependence is articulated explicitly in the garbage can model of policy making (Cohen, March and Olsen, 1972; Kingdon, 2010). By implication, the knowledge which enters the process of problem definition and solutions is not completely distinct in function and form.

The identification and the development of policy solutions is of central concern to the literature on 'what works?' and evidence-based policy making (*e.g.* Davies, Nutley and Smith, 2000; Nutley, Walter and Davies, 2007). This literature looks at how scientific research can influence policy and how effective practices can be reliably identified, codified and translated into policies and practice given predetermined policy goals and problem definitions.⁴ It also acknowledges the two-way and complex relationship between research and policy as well as practice (Best and Holmes, 2010; Nutley, Morton, Jung and Boaz, 2010; Nutley, Walter and Davies, 2007). This research strand thus employs a much narrower definition of knowledge in that it only considers scientific knowledge, and even within scientific knowledge it applies a hierarchy of knowledge types in which the randomised control trial is chief (Fitz-Gibbon, 2000).

In this framework, knowledge is the driving force behind policy change and the key to continuous improvement of public services (Davies, Nutley and Smith, 2000). Accordingly, identifying the interventions which work, *i.e.* effectively delivering the expected results without too much offsetting/unintended consequences, constitutes and should constitute the modus operandi of policy making and governance. This approach clearly represents a rationalist ideal which moves in between normative and positive accounts of governance frequently echoed by government policy papers such as the Modernising Government White Paper of the UK⁵ or international expert groups such as the Cochrane Collaboration in health or the Campbell Collaboration in education and social justice⁶. The importance of evidence in education and some of the governance structures facilitating its use is also elaborated upon by the OECD (OECD/CERI, 2007).

Nevertheless, the empirical account of to what degree research evidence informs policy making and practice is disappointing in many policy fields. There appears to be a large gap between scientific evidence and the reality of policy making and service delivery (Best and Holmes, 2010; Boaz, Grayson, Levitt and Solesbury, 2008; Davies, Nutley and Smith, 2000; Nutley, Walter and Davies, 2007; Oborn, Barrett and Racko, 2010). The reasons why this is the case are manifold so are the suggested remedies. The key factors affecting the use of research are identified to be (Nutley, Walter and Davies, 2007, chapter 3):

- the nature of the research to be applied such as quality of findings and methods and timeliness;

- the personal characteristics of both researchers and potential research users such as research users' the education background and attitudes towards policy change;
- the links between research and its users such as physical access, the existence of knowledge brokers and personal contacts between researchers and research users;
- the context for the use of research such as interests and organisational culture.

Nevertheless, the evidence-based policy movement has also received wide ranging criticism in education policy and other fields alike. The epistemological criticism stresses that evidence-based policy's excessive focus on scientific evidence in general and randomised control trial in particular neglects valuable and important types of knowledge which could contribute to better policies (Ashcroft, 2004; Head, 2008). The democratic criticism underlines that the increased reliance on evidence in policy making diminished the role of negotiation, consensus building and exchange of diverse opinions which constitute the very essence of democracy (Sörlin and Vessuri, 2007). Finally, the methodological criticism concentrates on the problematic of empirically tracing research impact on policy, especially in the case of indirect research impacts (Nutley, Walter and Davies, 2007, chapter 9).

Providing **feedback** about the implemented policies (either rolled-out or piloted) is considered to be a separate element of governance which, nevertheless, is most of the times discussed by the same literature on evidence-based policy making. Identifying what works frequently means evaluating the policies implemented in the country in question or elsewhere. Hence, there is no need to spell out the link between governance and knowledge specifically linked to feedback and monitoring.

Regarding knowledge as an **instrument of policy implementation**, there is a rich literature within public management focusing on information as an implementation tool (Howlett, 2011), information based procedural instruments (Howlett, 2000), information as a policy instrument (Vedung and van der Doelen, 1998), soft regulation (Brandsen, Boogers and Tops, 2006) and other similar concepts. Knowledge as an instrument of implementation has been classified as a procedural instrument, that is an instrument which is "intended to manage state-societal interactions in order to assure general support for government aims and initiatives" (Howlett, 2000 p. 412). Thus, it is considered to achieve its aims indirectly without relying on the state's direct authority. Knowledge as policy instrument can serve two objectives related to networks (Howlett, 2005):

- promote social networks and
- restrict social networks.

The first category entails, for example, education of public servants and information provision; while the second one can take the form of propaganda and information suppression.

Knowledge can be an effective instrument of governance when private and public interests coincide, but it should not be used in cases when universal compliance is necessary (*e.g.* paying taxes or refraining from criminal action) (Vedung and van der Doelen, 1998). In addition, knowledge provision often complements other regulatory instruments in order to enhance their effectiveness.

One often discussed example of information provision is education league tables and performance indicators which are implemented to support education quasi-markets by alleviating information asymmetries (Hood, 2007; Salmi and Saroyan, 2007; Waslander, Pater and Weide, 2010). The essential problem in this case is that parents typically rely on perceptions of reputation, informal networks and myths instead of thoroughly going through official performance data (Waslander, Pater and Weide, 2010). This is of course to be expected as official data, even if easily available, is not always presented in a manner which allows for simple interpretation and use. Thus even if parents use the provided performance

data they might misinterpret it. Furthermore, league tables are often criticised as they provide crude and imperfect measures of education quality at the same time as they are interpreted as precise and reliable measures by users (Salmi and Saroyan, 2007). Similarly, information disclosure regulations are often instituted to support consumer and individual choice and enhance their optimality (Baldwin and Cave, 1999). Research of this issue suggests that using knowledge as a regulatory instrument may be undesirable because its production, standardisation and quality assurance is too costly and because consumers may choose not to value the knowledge gained and rely on other characteristics of products (*e.g.* neglect potential health dangers and choose based on price).

Knowledge's indirect role in governance

As outlined above, knowledge indirectly feeds into governance through

- individual policy makers and
- formation of groups and networks of policy makers.

On the **individual level**, knowledge, especially the acquisition of new knowledge, has an impact on policy makers' beliefs, preferences and instrumental knowledge (means of goal attainment). In turn, the revised beliefs, preferences and instrumental knowledge change how policy makers act and shape governance. The study of policy makers' preferences and instrumental knowledge and their change has been a long tradition in public policy and political science, most notably by scholars of policy learning and partially by students of policy transfer and diffusion (Freeman, 2006; Grin and Loeber, 2007). These efforts have also been supported by academic work done within the organisational learning tradition (Argyris, 1999; Argyris and A, 1996; Lipshitz, Popper and Oz, 1996; I Nonaka, 1994; Willem and Buelens, 2007; Yanow, 2000). Change of beliefs and belief formation are also important objects of scholarly interest here, nevertheless, they are discussed below together with group formation as the two issues are closely intertwined.

There are many models of policy learning: rational learning (Weyland, 2002; 2006), social learning (Hall, 1993), political learning (Hecló, 1974), instrumental learning (Boswell, 2008), collaborative learning (Raffe and Spours, 2007), lesson drawing (Rose, 1991; 1993; 2005), government learning (Etheredge, 1981; Etheredge and Short, 1983) and systematically pinching ideas (Schneider and Ingram, 1988). The attempts to unite some of these models have mainly failed in generating long lasting consensus even on the basic issues (*e.g.* Bennett and Howlett, 1992). In the field of education policy research, three models have been outlined by Raffe and Spours (2007) that can be applied to a range of education policies:

1. rationalist,
2. collaborative and
3. politicised.

In the rationalist model, policy learning takes place within a rational process of structured and centralised decision making, *e.g.* following the classical policy cycle. This brings policy learning close to the previously discussed 'what works' movement. Knowledge is explicit, declarative and universalistic. Here, learning and political contestation are separate, that is, first political goals and options are chosen; second, the learning process determines the best available outcome and aids effective implementation. In the collaborative model, policy learning takes place in a less hierarchical and well structured process of policy making where the boundaries between private and public are blurred. Here, learning is inherently intertwined with political decision making and knowledge itself is contested, diverse, often tacit and embedded in networks. In the politicised model, policy learning also takes place in a centralised, hierarchical setting which is, in addition, highly personalised. Learning is dominated by political

calculation and is ridden with conflict and confusion. Knowledge is diverse and contested on ideological and political grounds.

Raffe and Spurs (2007) suggest that policy making in the English education and training system is dominated by the politicised model. This is manifested in prioritising political (ideology bound) knowledge over academic and practitioner knowledge, constraining bottom-up innovation and aiming at greater control over education research. This has taken place in spite of the strong rhetorical emphasis on professional policy making and evidence. The dominance of political learning has subordinated the two other forms of learning and resulted in drawing superficial lessons causing unintended negative outcomes (Lumby and Foskett, 2007). The overall empirical record of policy learning is not much more positive than what the English case suggests or what has been concluded regarding evidence-based policy making (Freeman, 2006; Radaelli, 2009).

A critical assessment of the policy learning literature and its usefulness for understanding the role knowledge plays in governance starts with highlighting the lack of consensus around the most basic elements of learning (who learns, from what, for what reason?) and the most generic models or families of models. This is further emphasised by the frequent lack of or disagreement among micro-mechanisms (Hedström and Swedberg, 1998). Hence, determining what role knowledge plays in governance is not possible in a clear and straightforward way. Furthermore, many models of policy learning lack the explicit reference to power and interests which can exercise essential impact on learning and preference formation (Fazekas, 2010). Finally, the empirical study of policy learning is problematic in many respects and the applied methods are not appropriate to allow for deciding between competing models and hypotheses (James and Lodge, 2003; Radaelli, 2009).

The above individual level accounts often discuss group and organisation level policy learning as an integral part of their analytical model; thus, sometimes the individual level and **group level** scholarship cannot be clearly separated. Subsequently, we focus on those theories which emphasise group-level interaction and the role of beliefs in group formation. Nevertheless, it must be noted that beliefs are generally taken-for-granted and there is little academic knowledge regarding how beliefs are formed, changed or preserved (Campbell, 2002).⁷

Policy beliefs or paradigms or worldviews as specific forms of knowledge are powerful mediums of governance. They not only define policy sub-systems, groups of policy makers such as advocacy coalitions, issue networks, or epistemic communities, but they also limit the range of alternatives and types of knowledge which policy makers are willing to consider (Campbell, 2002; Sabatier, 1988; Sabatier and Weibe, 2007). Beliefs, paradigms and worldviews are used interchangeably and generally refer to cognitive paradigms, notions of validity, taken-for-granted descriptions, cause-effect relationships and normative ideas about the policy field (Haas, 1992; Hall, 1993; Hecló, 1974; Sabatier and Weibe, 2007). Most importantly, policy beliefs are ‘sticky’ and subject to tradition, context, and experience, implying persistent differences among countries and historical periods (Campbell, 2002).

Beliefs of policy makers typically limit the choice set from which policy problems and options are generated. They also make some types of knowledge invalid and provide a cognitive frame within which new knowledge is interpreted, *i.e.* beliefs guide policy learning. Considering beliefs in policy making reveals that policy makers may act according to the logic of appropriateness rather than consequentiality (March and Olsen, 1989) and beliefs may even override policy makers’ own self interest (Fazekas, 2010; Quirk, 1990).

Beliefs often form the basis for group and network formation and can thus modify how governance is conducted. This has been, most notably, articulated in advocacy coalitions (Sabatier, 1988; Sabatier and Weibe, 2007), issue networks (Hecló, 1974) and epistemic communities (Dunlop, 2009; Haas, 1992).

These examples of policy communities and their numerous versions are characterised by different degrees of cohesion and closeness which is in direct correspondence with how and which beliefs are shared. On this scale, issue networks lie closer to the loosely defined and less closed extreme while epistemic communities are closer to the more closely defined and exclusive end (Pierre and Peters, 2005). While the theoretical frameworks relying on one or the other version of policy communities are useful analytical tools for researchers, these communities often play a crucial role in the international diffusion of ideas (e.g. Haas 1992) and policy change (Sabatier and Weibe, 2007).

Governance of knowledge

Knowledge is a crucial resource in governance of education systems and in the economy and society as a whole as well (*i.e.* knowledge economy and knowledge society) (Sörlin and Vessuri, 2007). Thus, it is not surprising that specific governance arrangements are developed and implemented in OECD countries in order to impact on knowledge production, dissemination and utilisation.

Following the key steps of the knowledge production process, governance's impact on knowledge is discussed in two parts which lead to distinct strands of the literature:

- governance of knowledge production and
- governance of knowledge dissemination, translation and utilisation.

Before proceeding to the detailed discussion of these, it must be noted that this distinction relies on a particular commodified understanding of knowledge. If one takes a situated and embedded understanding of knowledge then the distinction becomes problematic. By implication, we will highlight this aspect below where it plays an important role.

Governance of knowledge production

Governing knowledge production entails two simultaneous activities which governments typically engage in:

- facilitating knowledge production either by non-state actors or through collaboration between state and non-state actors and
- direct production of knowledge by the state.

In the context of this review, the facilitation of knowledge creation and its direct production only concern scientific knowledge, more specifically, policy relevant social sciences because our focus is on policy relevant knowledge and because the relevant literature almost exclusively looks at institutionalised forms of knowledge production (*e.g.* universities, research institutes, think tanks) (Kogan, 2007). The discussions about the **facilitation of knowledge production** frequently sit within a broader field of science and technology policies (*e.g.* OECD, 2010) and also touched upon by research on tertiary education and their research production role (Santiago, Tremblay, Basri and Arnal, 2008). Nevertheless, the most relevant literature is the knowledge governance literature approaching the issues either from management or political science sides (Davies, Laycock, Nutley, et al., 2000a; Foss and Michailova, 2009; Sörlin and Vessuri, 2007).

The key question underlying this scholarship is how public actors can steer research in the desired direction (*e.g.* defining go and no-go areas of research) and how can the quality as well as the 'quantity' of research enhanced. These questions are far from obvious as the state and the main research producing institutions are separated and thus the issue of control and governance arise (Fuller, 2000; Stehr, 2004). In

addition, the growing importance of knowledge in governing the economy and society makes the issue more and more crucial for governments across OECD countries (Sörlin and Vessuri, 2007). This matter was exemplified earlier by the government's efforts within the English education and training system to use the research agenda to serve its own goals and wield power and legitimacy through research (Raffe and Spours, 2007).

There is a range of policy instruments in the hands of policy makers to steer research production, most notably sponsorship and modification of the institutional setting of main research centres such as universities (Kogan, 2007). While some forms of social science research requires little external funding (*e.g.* tenure professor doing research using a library and a personal computer); most of it relies on research funding which can be attached to stronger or weaker restrictions on research questions and objectives, methods of enquiry and publication and dissemination. Sponsorship is typically embedded in varying institutional settings ranging from (1) the autonomous model where researchers can determine all major aspects of scientific enquiry through (2) the partnership model where academics and funders are of equal stance until (3) the managed model where the important characteristics of the research project are defined by the funder, either public or private (Kogan, 2007).

Historically, science has become more politicised in the last half century bringing about more emphasis of policy relevance and responsiveness as opposed to scientific curiosity and blurring the institutional divisions between state and research (Fried, 2008). These implications are also echoed, albeit on a smaller scale, by the evidence-based research literature discussed above; most notably the pathways, pathologies and advantages of policy relevant academic research are explored (Davies, Laycock, Nutley, et al., 2000a). According to this literature, the reasons for insufficient responsiveness of research to policy are threefold: (1) the research agenda is still driven by researcher interests to a large degree; (2) policy and research operates according to different modes of working (*e.g.* timescales); and (3) insufficient demand and understanding of research on the side of policy makers (Davies, Laycock, Nutley, et al., 2000a).

The above developments have brought about a series of problems and concerns regarding the independence, impartiality and objectivity of scientific research especially under the managed model (Henkel, 2000; Henkel, Hanney, Vaux, Walden and Laing, 2000). Furthermore, it is an open question where the ultimate control of knowledge production should lie and what mix of self regulation and external control should scientific communities be subject to (Fuller, 2000; Stehr, 2004).

In addition, there are governmental research organisations and governmental organisations which engage in research among other things. These are not discussed together with the issues of the **direct production of knowledge** as their logic fits more the above outlined facilitation relationship.

The literature on the direct production of knowledge by the central public administration or other governmental organisations such as statistical offices or oversight committees is sporadic and lies within various disciplines. As there is no coherent body of literature on which to base our treatises three salient issues are discussed briefly in order to provide a flavour of the area and facilitate further thinking. These are:

1. *Quantification and official provision of statistical data* as discussed in the sociology of knowledge: it is firmly identified that data collection, analysis and dissemination has represented an effective means of governments to transform public dialogue, increase control over policy areas and eventually to wield more power and extend their authority (Porter, 1995). Furthermore, the reliance on 'hard evidence' also lends legitimacy to public action and potentially increases trust. One example of these issues is the treatment of the educationally impaired children in the UK (Kogan, 2007).

2. *Performance measurement and target setting* within the public domain as discussed in the (new) public management literature: performance measurement and management is often implemented from the centre of the government in order to increase control, bring about transparency and enhance the actual or rhetorical rationality of the policy process (Halligan, 2007; Hood, 2006b; 2007). However, these systems are often contested, gamed and reversed.
3. *Experimentation in policy implementation* such as pilots as discussed by the ‘what works’ literature⁸: Experimentation and piloting are considered not used often enough, though there has been a considerable growth in many countries in the last decade (Davies, Nutley and Tilley, 2000b; Nutley, Walter and Davies, 2007). However, their use gives rise to a number of ethical and practical issues in education.

As said before, a situated and embedded understanding of knowledge reinterprets the above discussion and renders the distinction between knowledge production, dissemination and utilisation somewhat arbitrary. Thus, those accounts in the literature on direct state production of knowledge which follow a situated and embedded understanding of knowledge are discussed below.

Governance of knowledge dissemination, translation and utilisation

As knowledge is a key resource of governance and knowledge production is several steps removed from knowledge utilisation, a range of governance structures have been developed to impact on knowledge dissemination, translation and utilisation.⁹ These structures have been subject to intense enquiry, most notably by students of knowledge management and organisational learning in private and public organisations (Common, 2004; Dierkes, Antal, Child and Ikujiro Nonaka, 2003), knowledge translation (Best and Holmes, 2010), policy learning (Willem and Buelens, 2007) and governance research done within the OECD (OECD, 2001; Saussois, 2003; Scott, 2003).

In this perspective, knowledge is a resource which resides with the actors of governance, especially within the state, but which is at least partially hidden and thus must be realised through active knowledge management (Saussois, 2003). This is imperative in order to increase the policy making capacity of governments (Pierre and Peters, 2005) and to avoid policy failure (Howlett, 2009).

There is a wide range of learning tools, *i.e.* policy measures for promoting dissemination, translation and utilisation of knowledge in governance: (1) routines that enable personnel movement, (2) training, (3) observation, (4) publications, (5) interactions with customers and suppliers and (6) inter-organisational alliances (Oborn, Barrett and Racko, 2010). In a similar vein, Walter, Nutley and Davies (2003) categorised interventions which facilitate research use in policy and practice according to intervention form and content and the intervention’s underpinning mechanism. Their categorisation also includes brokerage agencies which have been endorsed by OECD/CERI (2007), though it should be noted that these agencies may also take part in knowledge production (*e.g.* delivering systematic reviews). Furthermore, several organisational characteristics are said to be associated with effective knowledge sharing such as high levels of trust among staff, absence of power games, or appropriate incentives (Willem and Buelens, 2007).

In spite of this wealth of research the empirical record of knowledge dissemination, translation and utilisation is disappointing as was said already above (Scott, 2003).

More recently, more nuanced measures are promoted to capture complex governance structures’ capacity to analyse and learn, *i.e.* not only within central government, but also across other actors such as schools, health care practitioner and corporatist actors (Davies, Laycock, Nutley, et al., 2000a; Fazekas, 2010; Howlett, 2009). Policy makers’ analytical capacity is likely to be one of the main drivers of low levels of research utilisation even in countries characterised by high overall quality of policy making (Davies, Laycock, Nutley, et al., 2000a; Howlett, 2009).

4. Putting the pieces together and some food for thought

This review has shown that knowledge is crucial for governance and that governance is indispensable for knowledge. As complexity in education systems continues to increase, governance systems' capacity to learn and analyse data becomes more and more crucial. Most institutions involved in education policy have become knowledge intensive organisations whose success most critically depends on their ability to learn. In this final section we will focus more in depth on the interactions between governance and knowledge.

Studying the interaction between governance and knowledge is limited by the differences among disciplines in terms of assumptions, research questions and methods. There is no clear understanding possible of the interaction between knowledge and governance without a supportive theory of policy learning. Students of education and education policy are ideally placed to fill this gap due to their understanding of how learning takes place on an individual and group level.

Conceptually, governance and knowledge partially overlap and mutually constitute each other; nevertheless they are analytically distinct concepts. At times, they appear to blend into each other; for example when knowledge is used to regulate education quasi-markets. Other times, they are clearly separate; for example when research is produced outside governance and informs it only indirectly. Simultaneously, knowledge can be powerful and influential on its own; that is, there are times when ideas themselves enforce change on policy makers and how they think about reality (Hall, 1993; Heclo, 1974). However, much more frequently, knowledge and ideas follow from interests and power relations (Radaelli, 2004).

The interaction between knowledge and power/interests appears to be at the heart of governance. The definition of interests follows from what policy makers know and believe (Campbell, 2002). On the other hand, power and interests often define which knowledge is created and codified, for example, through research funding and formal institutions of knowledge creation (Gordon, 1977). Governmental power can be strengthened by knowledge, especially its codified and trusted forms (*e.g.* natural sciences), but this effect varies by salience of the policy field, nature of the subject field, forms of knowledge and the perceived rationality and authority of knowledge (Kogan, 2007).

Interestingly, the characteristics of policy process and the types of knowledge seem to interact in distinctive ways. We will focus on these interactions to construct an analytical model of the interplay between governance and knowledge.

Towards an analytical model

Some models of policy making tend to go hand in hand with some types of knowledge and hence some forms of learning. Initial thoughts in this direction are offered, for example, by Raffe and Spurs (2007) or Nutley and Webb (2000). Generally speaking, most of these models specify one or a few types of knowledge such as scientific-rational and concentrate on how and at what point this knowledge becomes influential in policy making and policy change. In most *rational* models of policy making, most notably in traditional models of the policy cycle, scientific knowledge, that is codified, explicit and transferable knowledge, plays the central role (see earlier references to the 'what works' movement). Here, knowledge is most important in defining alternative courses of action and appraising their likely consequences. In models which assume *boundedly rational* actors (*e.g.* Lindblom, 1959; Simon, 1957; 1997), the picture is rather different as heuristics, shortcuts and paradigms gain importance in guiding policy making. In yet another often referenced model, the *garbage can* model, problems and solutions are not even assumed to follow in an orderly manner, rather they exist simultaneously and get connected only when windows of opportunity arise (*e.g.* Cohen, March and Olsen, 1972; Pierre and Peters, 2005).

These are not only theoretical models of policy making and the use of knowledge, but also models which are mirrored by real world policy making situations at least partially. However, for understanding how governance and knowledge interact it is necessary to go one step further by considering empirically rooted models of governance and linking them to modes of learning and the knowledge types they centre around. This synthesising step is taken only by a few authors due to analytical complexities, divergent perspectives and the gaps in the relevant literature (Campbell and Pedersen, 2008).

For our general aims, it is sufficient to use simple and widely supported models of governance as outlined by Pierre and Peters (2005) which also have the advantage to be applicable for generating hypothesis regarding the state's access to information and its analytical capacity. The five models as outlined by the authors "constitute a continuum ranging from the most dominated by the state and those in which the state plays the least role and indeed one in which there is argued to be governance without government" (Pierre and Peters, 2005, p. 11). The models, in brief, are:

1. *Étatist* where the government is the principal actor in governance which can take action unilaterally and also decide whether some actors are permitted to exert influence. The state usually relies on a strong and professional bureaucracy for formulating and implementing policies (Campbell and Pedersen, 2008).
2. *Liberal-democratic* where state still plays a preeminent role and it can choose which of the intensely competing actors it grants influence in governance. This system often has weaker permanent bureaucracy and prefers to rely on parliamentary institutions instead.
3. *State-centric* where the state is still the most dominant actor, but it also establishes institutionalised relationships with several of the most powerful societal actors such as business associations and trade unions. This is often labeled as corporatist system (Schmitter and Streeck, 1999) which displays a high degree of consensual decision making. Often, strong state bureaucracy is supporting governance and the institutionally incorporated actors possess considerable permanent organisations too.
4. *Dutch governance school* where the state heavily relies on social networks to govern. Among the many actors who take part in and influence governance, the state is merely one being not necessarily the most powerful. Typically, there is no strong permanent state bureaucracy present and actors decide based on widespread consensus.
5. *Governance without government* where societal actors are more powerful and cater more legitimacy than the state itself. In this model, the state merely provides an arena where other actors come together to decide and implement policies (Rhodes, Weller and Bakvis, 1997). Bureaucracy tends to be weak and lacks powerful analytical capabilities; in addition, consensus is often required for collective action as no actor can authoritatively enforce its will on others.

The other dimension of interest is the modes of learning and the types of knowledge therein. While there is no single source which would constitute a widely accepted view, a small number of distinct models emerge from the literature on policy learning (for an overview see: Freeman, 2006; Grin and Loeber, 2007). These models are distinct in the sense that they are conceptually separate and empirically identifiable; however, they can operate simultaneously and by no means constitute an exhaustive list of learning mechanisms and processes. The learning modes which are often employed in the literature and the underlying knowledge types are:

1. *Rational learning* concerns the dissemination and internationalisation of explicit, declarative, formalised and transferable knowledge, most notably scientific knowledge (Bennett and Howlett,

1992; Rogers, 1995; Rose, 1991). The learning process is not constrained to any particular group, however, mainly those can benefit from it who understand the formalised language of this type of knowledge.

2. *Collaborative learning* denotes learning which targets socially embedded knowledge which is often tacit and procedural thus not readily transferable across contexts and accessible for outsiders (Raffe and Spours, 2007). This type of learning is often tied to policy and practitioner communities.
3. *Politicised or symbolic learning* concerns knowledge about actor preferences, the policy making process itself and ideas and symbols which mobilise political resources (Hecllo, 1974; May, 1992). This learning mode is typically observed in actors who take part in a heavily politicised policy making process.
4. *Social learning* is about core beliefs and paradigms which are typically resistant to change (Haas, 1992; Hall, 1993; Sabatier and Weibe, 2007). Core beliefs and paradigms are shared within policy communities and networks whose members acquire these knowledge types through socialisation.

The five governance models and the four learning modes can be combined in order to show how governance structures are systematically linked to modes of learning (Table 2.). The links are established through a few basic explanatory factors: (1) inclusiveness or openness of the governance structures which determine the access to actors and their knowledge (Campbell and Pedersen, 2008); (2) characteristics of the permanent bureaucracy, most notably its analytical capacity (Howlett, 2009); (3) the degree of consensus among actors required for effective policy formulation and implementation which impacts on shared knowledge; and (4) the availability of knowledge, most crucially explicit statistical and analytical knowledge, determined by its production and the infrastructure for dissemination (Best and Holmes, 2010; Furner and Supple, 2002; Rueschemeyer and Skocpol, 1996; D. Stone, 2004).

Table 2. Governance models and learning modes

Learning mode	Rational learning	Collaborative learning	Politicised/symbolic learning	Social learning
Étapist	High ¹	low	Low	low
Liberal-democratic	Medium	low	High	high
State-centric	Medium	medium	medium	low
Dutch	medium/low	high	medium/high	medium/high
Governance without government	Low	high	high	medium/high

Note: Cells denote how conducive a certain governance model is to a certain mode of learning; conversely, the type of knowledge at disposal in certain governance models. Note 1: In the sense of “dissemination and internationalisation of explicit, declarative, formalised and transferable knowledge” only. The use of scientific evidence is not often a notable feature of such governance models.

Three hypotheses

The above analytical model combines existing theoretical and empirical findings to generate new hypotheses and facilitate thinking and further research. By way of conclusion we propose three hypotheses that follow from this model.

First, rational learning is most prevalent in the state centric governance models while it decreases when moving towards the society centric models. Conversely, collaborative learning is strongest in the governance without government model and decreases as the state becomes more dominant in governance. These two tendencies further elaborate Pierre and Peters (2005, Ch. 2) and exemplifies that a strong state is likely to command formidable resources in terms of statistical data, analytical capacities and capacity to fund scientific research catering towards its needs. Whether they use these resources for that purpose is of course another matter. Whereas, more open forms of governance where power is shared allow governments to tap into the embedded knowledge harbored by societal actors.

Second, the dominance of a strong and permanent state bureaucracy in policy formulation and implementation limits the politicised nature of policy making and facilitates technocratic discourse; hence, étatist and state-centered models display low to medium levels of politicised/symbolic learning. In addition, a marketplace for ideas and competition for attention of the government typically facilitates politically inspired knowledge production and funding (cf. Campbell and Pedersen, 2008).

Third, the capacity of governance structures to allow for paradigm shifts greatly varies with the consensual nature of policy formulation and implementation and with the prominence of a strong, permanent bureaucracy. Hence, étatist and state-centric models are likely to display a higher degree of ‘stickiness’ of policy core beliefs and paradigms.

NOTES

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- ¹ The need for translation arises already when communities assign meaning in a different ways, incommensurability of different understandings and worldviews is not a necessary condition.
- ² It is worth mentioning that our definition of knowledge does not incorporate the notion of truth or validity. The reason is that knowledge used in policy making is often imprecise and incomplete. On the other hand, it is often the case that robust and trustworthy scientific results are neglected over long periods of time.
- ³ Even though knowledge can be understood as institutions, *i.e.* the rules of the game, it is not considered as part of the discussion here because it constitutes a rather different take on the above issues and it leads to a disparate academic literature compared to the ones elaborated here.
- ⁴ Some of the latest contributions to the 'what works' movement move in the direction of policy learning where not only the effectiveness of interventions is looked at, but more complex and indirect ways through which research impacts on policy making and practice (*e.g.* forming worldviews). This aspect is neglected here as it will be discussed under the heading policy learning later on.
- ⁵ www.archive.official-documents.co.uk/document/cm43/4310/4310.htm
- ⁶ www.cochrane.org/about-us
- ⁷ Probably one of the notable exceptions to this statement is the concept of policy-oriented learning within the advocacy coalition framework (Sabatier, 1988; Sabatier and Weibe, 2007).
- ⁸ It must be noted that while pilots are typically carried out by governments, the analysis is frequently done by external research outlays which brings this example closer to the facilitation of knowledge production rather than direct production.
- ⁹ Once again, knowledge dissemination, translation and utilization can be understood as creating new knowledge, thus it is possible to blur the distinction drawn between the sections dealing with knowledge's *direct* role in governance (p. 6) and knowledge's *indirect* role in governance (p. 9).

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