

Bach, Tobias; Döhler, Marian

Working Paper

Mandated science and the problem of neutral expertise: The case of governmental research agencies

WZB Discussion Paper, No. SP III 2012-602

Provided in Cooperation with:

WZB Berlin Social Science Center

Suggested Citation: Bach, Tobias; Döhler, Marian (2012) : Mandated science and the problem of neutral expertise: The case of governmental research agencies, WZB Discussion Paper, No. SP III 2012-602, Wissenschaftszentrum Berlin für Sozialforschung (WZB), Berlin

This Version is available at:

<https://hdl.handle.net/10419/62134>

Standard-Nutzungsbedingungen:

Die Dokumente auf EconStor dürfen zu eigenen wissenschaftlichen Zwecken und zum Privatgebrauch gespeichert und kopiert werden.

Sie dürfen die Dokumente nicht für öffentliche oder kommerzielle Zwecke vervielfältigen, öffentlich ausstellen, öffentlich zugänglich machen, vertreiben oder anderweitig nutzen.

Sofern die Verfasser die Dokumente unter Open-Content-Lizenzen (insbesondere CC-Lizenzen) zur Verfügung gestellt haben sollten, gelten abweichend von diesen Nutzungsbedingungen die in der dort genannten Lizenz gewährten Nutzungsrechte.

Terms of use:

Documents in EconStor may be saved and copied for your personal and scholarly purposes.

You are not to copy documents for public or commercial purposes, to exhibit the documents publicly, to make them publicly available on the internet, or to distribute or otherwise use the documents in public.

If the documents have been made available under an Open Content Licence (especially Creative Commons Licences), you may exercise further usage rights as specified in the indicated licence.

WZB

Wissenschaftszentrum Berlin
für Sozialforschung



Tobias Bach
Marian Döhler

Mandated science and the problem of neutral expertise – The case of governmental research agencies

Discussion Paper

SP III 2012–602

Juli 2012

Wissenschaftszentrum Berlin für Sozialforschung

Forschungsschwerpunkt

Gesellschaft und wirtschaftliche Dynamik

Forschungsgruppe

Wissenschaftspolitik

Copyright remains with the author(s).

Discussion papers of the WZB serve to disseminate the research results of work in progress prior to publication to encourage the exchange of ideas and academic debate. Inclusion of a paper in the discussion paper series does not constitute publication and should not limit publication in any other venue. The discussion papers published by the WZB represent the views of the respective author(s) and not of the institute as a whole.

Tobias Bach, Marian Döhler

Email: bach@ipw.uni-hannover.de, m.doehler@ipw.uni-hannover.de

Mandated science and the problem of neutral expertise – The case of governmental research agencies

Discussion Paper SP III 2012–602

Wissenschaftszentrum Berlin für Sozialforschung (2012)

Zusammenfassung

Mandated science and the problem of neutral expertise – The case of governmental research agencies

Tobias Bach, Marian Döhler

Wie können Wissenschaftsbehörden, die in den hierarchischen Staatsaufbau integriert sind, nach außen glaubwürdig darstellen, dass sie trotz ihrer Nähe zur Politik neutral bleiben und ihre Beratungsaufgabe allein nach wissenschaftlichen Kriterien erledigen? Im Fall der Ressortforschungseinrichtungen des Bundes scheint dies kein Problem darzustellen, da deren wissenschaftliche Glaubwürdigkeit genau damit begründet wird, dass sie Teil der Exekutive sind. Der Aufsatz nimmt dies zum Ausgangspunkt, um auf Grundlage der Unterscheidung zwischen den idealtypischen Akteurmodellen des „Agenten“ und des „Treuähnders“ die Rolle der Ressortforschung zu untersuchen. Zu diesem Zweck werden ein rechtsstaatlich-juristischer, ein wissenschaftspolitischer und sektorspezifische Expertendiskurse unterschieden. Es wird gezeigt, dass eine variierende Rollen-zuweisung der Ressortforschung als Agent oder Treuhänder dazu beiträgt, konfligierende Wahrnehmungen und Zielvorstellungen zu harmonisieren. Dies wird dadurch ermöglicht, dass Ressortforschungseinrichtungen verschiedene Aufgaben gleichzeitig erfüllen, so dass sie sowohl als Agent wie auch als Treuhänder wahrgenommen werden können. Die schlichte Unterscheidung zwischen Agent und Treuhänder erweist sich damit bei multifunktionalen Organisationen als differenzierungsbedürftig.

Abstract

How can research agencies which are integrated into the hierarchical state apparatus provide credible expertise for policy-decisions? In the case of governmental research agencies (GRAs) in Germany, this does not seem to pose a major problem, as their scientific credibility is taken for granted precisely because they belong to the Federal Government. The article addresses this puzzle by drawing on insights from the literature on delegation relationships which distinguishes between “agents” and “trustees” as ideal types of delegates. These ideal types are used to analyze three dominating discourses regarding GRAs: a legal discourse, a science policy discourse, and sectoral expert discourses. We show that each discourse is characterized by different and often conflicting assumptions regarding the importance of scientific freedom and the legitimacy of hierarchical interventions. The paper suggests that GRAs may simultaneously be agents and trustees under the condition of heterogeneous tasks. The simple distinction between agent and trustee thus becomes problematic for analyzing multi-purpose organizations.

Content

<i>Introduction</i>	<i>P. 1</i>
<i>The theoretical argument</i>	<i>P. 3</i>
<i>The institutional context of governmental research agencies</i>	<i>P. 5</i>
<i>Science-related discourses in the German context</i>	<i>P. 8</i>
<i>Science in a "Rechtsstaat"</i>	<i>P. 9</i>
<i>The science policy discourse</i>	<i>P. 13</i>
<i>Sectoral expert discourses</i>	<i>P. 16</i>
<i>Discussion</i>	<i>P. 20</i>
<i>Conclusions</i>	<i>P. 22</i>
<i>Literature</i>	<i>P. 24</i>

Introduction

Using scientific knowledge or advice for policy-making is so widespread nowadays that it is difficult to keep track with the various interfaces between politics and science.¹ In the following paper we concentrate on a particular institutional design for transferring scientific expertise into the policy-making process: research institutes which are part of the machinery of government and therefore are close to politics. In Germany this form of organizing science for policy-making has a long history (Lundgreen et al. 1986). Most federal ministries can make use of governmental research agencies (GRAs), mainly in the fields of health, agriculture, food safety, and technical norms. These “Ressortforschungseinrichtungen”, which literally means “departmental research facilities”, are characterized by two main properties: first, they are under the direct responsibility of a federal ministry and are therefore part of a hierarchical chain of control; second, they are charged with functions beyond pure research. Most GRAs have a mix of functions including research, policy advice, service to external clients and regulation.

In order to highlight the peculiarities of GRAs we use the term “mandated science” elaborated by Salter (1988). Jasanoff (1990: 76-79) uses the term “regulatory science” synonymously.² At its core this concept assumes that science used in policy-making is different from “research science” in terms of content and context. Two of its characteristics are important for the present paper: first, science and policy are “integrated into a single process in mandated science” (Salter 1988: 187), i.e. the direction and priorities of research are mainly determined by policy-making objectives. Second, agencies performing mandated science are accountable to a large number of actors (e.g. legislature, courts, media), each imposing different standards on the agencies’ work. In particular, mandated science operates under considerable time constraints in which “a decision to wait for more data amounts to (or is perceived as) a decision not to act” (Jasanoff 1990: 78).

¹ Earlier versions of this paper were presented at the 6th ECPR General Conference in Reykjavik (August 2011) and the annual conference of the Standing Group “Policy Analysis and Public Administration” of the German Association of Political Science in Speyer (November 2011). We would like to thank the participants of these events as well as Eva Barlösius, Axel Philipps, Eva Ruffing, Hans-Willy Hohn and Dagmar Simon for their helpful comments.

² In this paper we prefer Salter’s concept to the more elaborate notion of regulatory science. The sole focus on regulation as a particular type of government action would be misleading in the present context because not all GRAs have regulatory tasks.

The concept of mandated or regulatory science nicely reflects the peculiarities of GRAs. In official documents their broader mandate is defined as “preparation, support or implementation of political decisions” which means that they are “inextricably linked with assuming public functions” (Bundesregierung 2007: 3). Without hesitation it is stressed that GRAs are subject to ministerial oversight (Bundesregierung 2007: 4) which is an unequivocal hint that instructions can be issued if the ministry’s expectations are not fulfilled. The starting point of this paper is that, despite this obvious subordination to politics, the scientific neutrality of GRAs in the policy process is not questioned. Quite the opposite is the case: the scientific credibility of GRAs is taken for granted because they belong to the Federal Government (Jasanoff 2005: 262; Weingart/ Lentsch 2008: 166; Barlösius 2009; Böcher/ Krott 2011). This is by no means self-evident.

The vulnerability of government-owned scientific institutions has become particularly visible under the G. W. Bush administration, whose efforts to manipulate scientific expertise according to political considerations, especially in climate and stem cell research, was depicted as a “war on science” (Mooney 2005). It is certainly difficult to generalize from some high profile cases to government-science relations at large. But seemingly, the practice of “political pre-clearance” (Kitrosser 2011: 2411) of scientific reports has not ended under the Obama administration. Even if the U.S. case is regarded as an extreme outlier, it is by no means clear why other governments should defer from influencing scientific expertise (for a Canadian example see Leiss 2000: pp. 53).

To be sure, there are political interferences in Germany as well. Back in 1983, for example, ministerial bureaucrats pressured scientists of the PTB (the national metrology institute) to sugar-coat reports on the adequacy of a salt dome for serving as terminal storage for nuclear waste (Süddeutsche Zeitung 2009). The decision of the Federal Government to focus the investigations on the salt dome is presently subject to a parliamentary committee of inquiry. More recently, the Federal Ministry of Health instructed the BfArM, the German FDA equivalent, to decline the permission for a private applicant to grow small amounts of cannabis for medical reasons (Bundesministerium für Gesundheit 2011). But altogether, the number of cases coming into the public spotlight seems too small to affect the credibility of GRAs. We take this observation as a starting point to ask why GRAs get such a leap of faith in the German case.

The paper proceeds as follows. After outlining our theoretical argument, we present the institutional setting in which GRAs operate. The main section deals with three science-related discourses – a constitutional discourse, a science policy discourse, and sectoral expert discourses – each emphasizing different standards for assessing the credibility of GRAs. Finally, we summarize our findings and discuss their implications for further research.

The theoretical argument

Traditionally, public bureaucracies in parliamentary democracies have been conceived of as part of a chain of delegation from voters to legislators, from legislators to the prime minister, from the prime minister to the ministers, and from the ministers to public bureaucracies (Strøm 2000). The chain of delegation implies a hierarchical relationship between ministers and agencies, which is mirrored by the minister's political accountability for agency failures. From the point of view of agency theory, a principal delegates a task to an agent because the agent has skills, information, or time which the principal lacks. The rationale of delegation is minimizing transaction costs for managing a specific task (Alter 2008). The accountability relationship between principal and agent implies that the agent acts on behalf of the principal, who may (positively or negatively) sanction the agent's behaviour (Strøm 2000). Precisely because the principal lacks information and expertise on what the agent does, the agent may "have incentives and opportunity to take unobservable action that is contrary to the interests of the principal" (Strøm 2000: 271). This is the well-known problem of moral hazard which according to principal-agent theory can be tackled by various mechanisms of oversight. In short, these mechanisms have the purpose to align the agent's preferences with the principal's preferences.

However, principal-agent models of delegation do not question the legitimacy of the principal's preferences. For some tasks, the pursuit of the principal's preferences will lead to inefficient results if the agent acts upon the principal's preferences. This is what Knott and Miller (2008: 391) call "the dark side of principal agent theory". In particular, they expand the notion of "moral hazard" to the principal:

In principal-agency theory, only the agent can exhibit "moral hazard" because the formal responsibility is strictly unidirectional – from the

agent to the principal. The phrase principal's moral hazard makes no sense in the original formulation because the principal's proclivity to follow his or her own interests is presumed to be natural and legitimate. However, from the perspective of the overall efficiency of the relationship between principal and agent, it is possible for the principal's pursuit of his or her own self-interest to be inefficient and therefore ultimately self-destructive (Knott/ Miller 2008: 396).

According to these authors, the problem of politicians' moral hazard is dealt with by delegating substantial authority to agencies which in contrast to principal-agent models of delegation are not responsive to the principal's preferences. These agencies are called trustees (Majone 2001; Alter 2008; Knott/ Miller 2008). The objective of delegation to trustees is credibility, rather than efficiency. For instance, delegation to independent regulatory agencies is explained as a rational decision by elected politicians to increase their policy credibility (Majone 1997, 2001; Gilardi 2002). The "credible commitment" explanation suggests that politicians (which are assumed to have time-inconsistent preferences) increase policy effectiveness by delegating policy implementation to an independent agency. The agency will pursue the policy objectives even when the same politicians change their minds about the policy (e.g. when they are faced with the prospect of short-term benefits). This is the problem of politicians' moral hazard (Knott/ Miller 2008). Thus, delegation to independent regulatory agencies is a solution to the problem of time inconsistency which occurs "when a government's optimal long-run policy differs from its optimal short-run policy" (Majone 2001: 62). In short, "[o]nly an independent delegate, not subject to the power of direction of the delegating authority, can provide credibility to long-term policy commitments" (Majone 2001: 69). Knott and Miller have argued that "the trustee (unlike the agent) is useful only to the extent that he or she acts on different preferences than the principal" (2008: 394).

We assume that government agencies in which policy functions are performed on the basis of scientific expertise create a special dilemma for politicians. On the one hand there will be a strong public expectation that science-based decisions are not simply overruled if politicians have other preferences. On the other hand politicians are tempted to issue instructions when their partisan or clientele-based preferences are contradicted. This will be amplified if constitutional rules explicitly prescribe a wide-ranging ministerial responsibility for administrative action, as is the case in

Germany. This is what we call “the problem of neutral expertise”. An ideal solution would be an agency which could perform both the roles of an agent as well as that of a trustee. As we will argue below, in the case of GRAs the mix of functions opens a venue to reconcile conflicting goals and diverging expectations by external stakeholders. This implies that standard principal-agent or trustee models of delegation are too monolithic to deal with the phenomenon of multipurpose organizations which generate different expectations and role perceptions.

The argument to be unfolded in the following sections is to show how the role of GRAs is oscillating between trustee and agent depending on the audience which assesses the credibility of a GRA. There are two important elements of our explanation. The first element is based on three science-related discourses, each emphasizing a different perspective on the relationship between science and policy-making. This, in turn, is made possible by the specific mix of functions in which scientific expertise is only one of several organizational properties. In order to comprehend these constraints on science we use the concept of mandated science as a second element of our explanation. Mandated science differs from academic or research science in that it “is used for the purposes of making public policy” (Salter 1988: 1-2). This has important consequences both in terms of context and possibly content of scientific activity in (regulatory) agencies (Jasanoff 1990: 77). The following paragraph sketches the main characteristics of GRAs and their politico-administrative context.

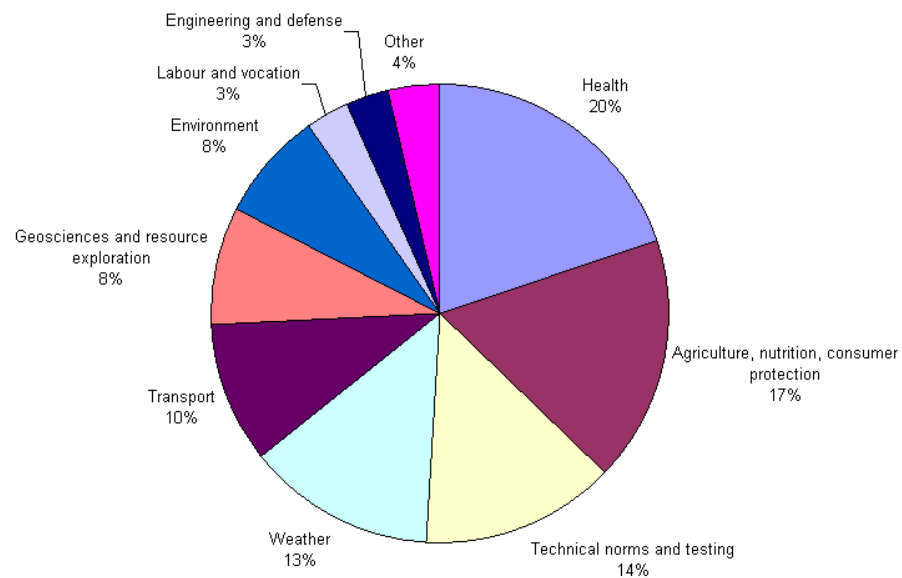
The institutional context of governmental research agencies

The first GRAs date back to the second half of the 19th century, which were created in order to provide scientific support to the state administration in sectors like agriculture, hygiene and technical standardization (Lundgreen et al. 1986). The total number, staff, and budget of GRAs have almost constantly risen since the 1960s until the beginning of the 1990s, followed by a period of stability in terms of the total number of organisations and their budget and a decline in the number of staff (Philipps 2011).³ The latest official government report lists 45 GRAs (BMBF 2010:

³ The composition of the population of GRAs changes over time. The main reasons include the creation of new organisations, mergers of existing organisations, and changes in ministries’ criteria as to which organisations are considered as GRAs within their areas of responsibility (Philipps 2011).

535-543). The majority of staff is working in the areas of health, agriculture (including nutrition and consumer protection), the setting of technical norms, and weather forecasting (Figure 1). With the exception of the Ministries of Foreign Affairs and Finance (i.e. ministries performing traditional state functions), all ministries have GRAs within their area of responsibility.

Figure 1: Staff numbers in GRAs by policy area (percentages)



Source: The categories are drawn from WR (2007: 206-209), the staff numbers are drawn from WR (2010: 59-63) (N=18,043). The category “other” includes social policy, foreign policy, culture, development aid, sports, demography.

In the literature GRAs are often described as “boundary organisations” (Guston 1996) between politics and science. Their defining characteristic is the combination of research activities on the one hand and various functions resulting from their status as government agencies under a ministry on the other hand (Lundgreen et al. 1986: 20; Hohn/ Schimank 1990: 302; Barlösius 2009: 348). The latter include (1) the provision of scientific knowledge for decision making, either in terms of policy formulation or implementation (2) the direct provision of services for stakeholders and (3) the implementation of regulatory policies (Hohn/ Schimank 1990: 307-317). As to the provision of scientific knowledge and information, GRAs undertake specific types of research which generally are not performed by other kinds of research

organizations. This includes long-term and comprehensive collection of information (e.g. environmental monitoring), the definition of technical standards, and the short-term provision of expertise for various purposes, including comments on scientific reports or drafting laws and decrees (Hohn/ Schimank 1990: 309-311). The availability of scientific expertise on short notice is a function of GRAs' hierarchical relationship with their parent ministry. It could be argued that this institutional structure is a means of reducing (prohibitive) transaction costs of alternative institutional structures such as market-based supply of scientific expertise (Williamson 1999). The agencies' service-provider functions for stakeholders include the provision of scientific information tailored to the different target groups, such as the public at large (e.g. health warnings to the population) or specific sectors (e.g. agriculture). Moreover, these services include technical standardization (which is highly important for the producing industries) and individual consulting (Hohn/ Schimank 1990: 311-313).

Finally, GRAs implement regulatory policies. This includes activities such as authorization (e.g. drugs and medical devices, import and export of endangered species) or risk assessment (e.g. food safety) (Hohn/ Schimank 1990: 314-315; WR 2007: 27-28; Kurth/ Glasmacher 2011: 270). The combination of these different functions varies substantially among the population of GRAs (Hohn/ Schimank 1990: 316-317; WR 2007, 2010), which we need to bear in mind with regard to the validity of our claim about the relative importance of different discourses about science and politics. Moreover, some GRAs operate in highly politically salient policy areas (e.g. labour market, food safety, nuclear safety), whereas others are situated in policy areas attracting little attention by politicians and the public at large (e.g. metrology, highway research).

This brief overview suggests that GRAs indeed conduct "mandated science" which includes studies that are "designed and carried out solely for the purpose of supporting particular regulatory decisions" and "scientific work originally produced in more conventional scientific settings" which "is evaluated in terms of the conclusions it can offer to policy makers about the merit of particular regulations" (Salter 1988: 2). Important characteristics of mandated or regulatory science include a focus on the screening and evaluation of other researcher's scientific work (rather than undertaking innovative, open-ended research), using data not available to the public, the existence of external constraints unusual for research science such as

time constraints, the need to come to firm conclusions under conditions of uncertainty, and the orientation towards prediction of e.g. the risks associated with a certain technology (Salter 1988: 187-190; Jasanoff 1990: 76-79). To be sure, we do not claim that GRAs can be adequately described by these characteristics without conducting in-depth empirical research on decision-processes in individual organisations. However, in the literature and various policy documents, these or similar descriptions of GRAs are frequently invoked.

We need to complement the picture with a brief overview of the GRAs' position within the broader politico-administrative context. In Germany's federal politico-administrative system, policy-making largely takes place at the federal level, whereas policy implementation is generally delegated to state administrations. This system of "executive federalism" results in a comparatively small federal bureaucracy. However, the recent history since the 1950s is characterized by an increase in the number of federal agencies which usually were created to tackle emerging policy issues like motorized transportation or environmental pollution (Döhler 2007). GRAs are thus part of a larger group of federal agencies which vary in their formal autonomy and legal status (see Bach/ Jann 2010 for an overview). As a rule, federal agencies operate under full hierarchical oversight by their parent ministry. Thus, the mechanisms by which GRAs maintain their credibility as neutral experts have to be explored by looking beyond formal structures.

Science-related discourses in the German context

Differentiating the context within which GRAs operate into several distinct "discourses" aims at disentangling the policy environment into smaller domains. This is based on the assumption that GRAs, similar to other government agencies, have to respond to multiple audiences (Carpenter/ Krause 2012: 29). Instead of focusing on these audiences we concentrate on the discourses for two reasons. GRAs not only have multiple audiences but moreover are charged with several distinct functions so that the discursive dynamics within separate audiences could be expected to generate different points of reference for assessing the agencies' performance. Whether governmental research agencies are regarded as agents to political principals, or as trustees serving the general public with neutral scientific expertise, depends on which audience is affected by the different functions GRAs have to per-

form. The argument to be outlined is that separate discourses determine the credibility of GRAs by separating the issue of “science close to politics” into smaller pieces. First, considering GRAs first and foremost as public bureaucracies, an established legal discourse claims that the organization and the level of hierarchical control of GRAs are determined by the principle of ministerial oversight.⁴ In case of doubt, the need to ensure an unbroken chain of delegation will prevail over the freedom of science. Second, a more recent science policy discourse sheds a different light on GRAs by considering them primarily as research organizations, using the quality of government research as main criterion for assign agency performance. Third, from a policy analysis perspective, GRAs belong to specific policy subsystems, depending on their policy mission. In that sense, the specific role of GRAs in those subsystems and their interactions with scientific (sub)disciplines, practitioners, firms and other clients is the dominant focus of (multiple) sectoral discourses.

Science in a “Rechtsstaat”

Few observers would deny that German governments operate in a strongly legalized political and administrative culture (Pollitt/ Bouckaert 2004: 52 f.). This mainly refers to the law-making process, in which judicial considerations play a prominent role, the training and attitudes of civil servants and, finally, to the elaborated system of judicial control. These properties are intertwined and sometimes mutually reinforcing. But what does that mean for the relationship between politics and science? The impact of legal thinking does not work in a simple and straightforward way but through several layers of legal reasoning, two of which will be discussed more thoroughly.

The first layer of the legal discourse can be called “constitutional”. It is not directly aiming at GRAs but is nonetheless essential. To start with, GRAs are perceived as part of the federal administration which means they are separated from the sphere of “self administered” (i.e. legally independent) academic institutions (Weingart/ Lentsch 2008: 187). In legal terms they are apportioned to the sphere of responsibility (“Geschäftsbereich”) of a federal ministry (sometimes several ministries), similar

⁴ In Germany, public law is traditionally the dominant discipline for the study of the public sector, which has been challenged by Political Science since the 1970s and Business Economics since the 1990s.

to other agencies. This is of particular importance because there is a consensus in Germany to regard the “science system” as a separate domain in which the rules of politics or economics are not allowed to dominate scientific standards (Knie/ Simon 2010). Even if the assigned task of GRAs is mainly research, this is no escape route from being a subordinated to ministerial oversight. This logic is derived from a constitutional doctrine that has been developed by the Federal Constitutional Court. According to this doctrine all organizations within the public sector, regardless of their function, have to be arranged in a top-down fashion. Hierarchy thus becomes an almost sacred principle because it is seen as a safeguard for executing the law as intended by parliament. The hierarchical principle constitutes something like the “genetic code” of the German administration. There are only few agencies which are not subject to full ministerial oversight, but these are clearly considered exceptional (Döhler 2007: 90-107).

This doctrine is complemented by the principle of ministerial responsibility which points in two directions. One is that each minister is responsible to both the chancellor and to parliament for the full range of (in)activities within his/ her jurisdiction. The other element is that ministers are equipped with comprehensive rights to issue instructions. In the legal discourse it is assumed that this power is not only indispensable to fulfill ministerial responsibility, but in addition will be exclusively exercised to secure the functionality (“Zweckmäßigkeit”) of administrative action (Masing 2010). Whether this is confirmed by reality is difficult to assess because the interactions between ministries and GRAs routinely remain an internal affair. Presumably, this lack of transparency supports the reputation building of GRAs because the “visible ties” on politicians’ hands may be discarded through the backdoor. Interestingly, any suspicion that ministries might use hierarchical interventions for partisan or other inappropriate purposes is alien to the legal discourse (Döhler 2011). Quite the opposite is the case: each deviation from the hierarchical model, and there are only a few, requires thorough substantiation. In a recent paper, a judge of the Federal Constitutional Court has confirmed this doctrine. Granting (more) autonomy to government agencies would not only delegitimize parliament and government because of an ensuing lack of instruments to enforce voters’ preferences. Moreover, the assumption that government ministers might unduly interfere into administrative decisions, is condemned for being an unfair reason for mistrust (Masing 2010: 215).

It is interesting to see how this hierarchical construction is reconciled with the second layer of the legal discourse – the freedom of science (“Wissenschaftsfreiheit”) which is considered a fundamental right and written into the German constitution (Art. 5 III Basic Law). Similar to other fundamental rights, freedom of science is understood as a protection against undue state intervention. Interferences into the sphere of science and research are only justified if “colliding” rights such as physical integrity or privacy have to be protected (Schmidt-Aßmann 2008: 219). Being aware of the inherent tension between “political guidance and research autonomy” (Trute 1999: 88) legal scholars struggle to explain the coexistence between science and hierarchy. According to the dominant opinion GRAs have to support government policies in the first place and therefore some restrictions on their freedom to publish or to conduct research in self-defined areas are deemed appropriate. The Federal Constitutional Court even requires a structural endangering (“strukturelle Gefährdung”) of scientific freedom (Schmidt-Aßmann 2008: 220) before unlawful interferences can be detected. For example, as long as the publication of research is allowed in general, there is no problem if single exceptions are decided upon “in consultation with” the ministry (Bundesarbeitsgericht 2008, No. 37). In other words, the range of restrictions on the freedom of science seems fairly broad and at the discretion of the responsible ministry. More recently, this opinion has met some criticism (Huber 2008: 63; Schmidt-Aßmann 2008: 230), but has not yet lost its dominance.

Because freedom of science is a very basic category which is rarely invoked in day-to-day interactions between politics and GRAs, there are only vague rules as to which type of guidance or instructions are considered as improper. Whereas an instruction to manipulate data or to make use of or to reject a particular scientific method is undoubtedly against the law, a ban for publications or disallowing single research topics would be regarded as proper part of ministerial oversight (Trute 1999: 63, 88; Schmidt-Aßmann 2008: 231).⁵ Federal Courts accept these restrictions by assuming that ministries do not subvert the scientific credibility of GRAs. In correspondence with courtroom language, official statements apply a mix of aloofness and insisting on governmental prerogative. In its recent guidelines for departmental research the Federal Government has conceded that scientific employees in GRAs should have sufficient opportunity to publish their research, but only if this seems

⁵ During the red-green coalition (1998-2005) several research projects on GMOs were prohibited by the Ministry of Agriculture which then was headed by a minister from the – traditionally GMO hostile – Green Party (Hollricher 2005: 21; Döhler 2011: 128-129).

“reasonable” (Bundesregierung 2007: 4). Certainly, the definition of “reasonableness” remains with the responsible ministry. Because it is difficult in most cases to draw a clear line between research, policy advice, services and law enforcement this helps to disperse potential doubts about the legitimacy of ministerial interventions which would meet with more resistance if “pure” research was the target.

This short reconstruction of legal reasoning already contains parts of the explanation for the co-existence between scientific credibility and hierarchical subordination. First, the legal discourse has contributed to a dominant point of view according to which all federal agencies, regardless of their task, have to be subordinated to a ministry which is headed by an elected and responsible politician as part of the democratic chain of delegation (Strøm 2000). Implicit in this perspective is a trust in self-restraint when research and science are subject to ministerial oversight. This is not simply naïve but rather the result of the basic construction of constitutional reasoning which shares some interesting parallels with the principle-agent concept. The main concern in both concepts is avoiding bureaucratic moral hazard. German constitutional thinking shares the premise with principle-agent thinking “that the main problem with regard to public agencies is making the agent responsive to elected officials” (Knott/ Miller 2008: 388) while downplaying the potential damage or costs of hierarchical interventions caused by politicians’ moral hazard (Döhler 2011). Second, the protection emanating from the constitutional freedom of science is mediated through the policy-serving role of governmental research, i.e. its mandatory character. Even if differences between academic and governmental research are rejected,⁶ which is the position of the German Council of Science and Humanities (Wissenschaftsrat, see below), GRAs nevertheless operate under distinct premises. Aside from the already mentioned subordination, the scope and aims of research are circumscribed by political needs, i.e. governmental research is clearly “mandated”. GRA representatives themselves use moderately aspiring descriptions of their work, such as: “primary goals are to translate scientific knowledge to the needs of policymakers and to undertake original scientific research. The latter is often more applied than basic” (Perthes 2011: 286). Even though the majority of GRAs insist on being independent, remarks like the above reflect their accep-

⁶ “Mandatory” or “regulatory science” are no commonly used terms in Germany. The term “Ressortforschung” (governmental research) refers to the affiliation of GRAs to a single ministry, but is not understood as antonym of research or academic science.

tance of political prerogatives. To a certain extent the science policy discourse sheds a different light on the widely accepted subordination of GRAs.

The science policy discourse

Although GRAs employ a considerable number of researchers and are listed in the Federal Government's annual research report, they were until recently not very high on the agenda of the science policy discourse. In the early 1990s the German research policy agenda was dominated by the challenges related to reunification, which also led to the integration of several Eastern German research institutes into existing GRAs. More recently, the policy agenda has been dominated by higher education reforms and the so-called excellence initiative to strengthen high-quality research. In this context, the functional division of tasks between levels of government in federal Germany comes into play. Higher education and research policy is part of the states' responsibility, whereas the Federal Government's role is limited to research funding and international cooperation. Moreover, as already mentioned above, GRAs are first and foremost considered as part of the ministerial hierarchy. Like for agency reforms more generally (Bach/ Jann 2010), the principle of departmental sovereignty has for a long time worked as a powerful barrier to a cross-sectoral perspective on GRAs.

In 2002 the German Council of Science and Humanities (henceforth: Science Council) – an advisory body composed of researchers and representatives of both federal and state governments – began a systematic evaluation of GRAs, starting with the agencies under the responsibility of the Ministry of Agriculture and Consumer Protection (Barlösius 2011). In 2003 the Budget Committee of the German parliament agreed that similar evaluations should be conducted for all GRAs, and the plenary adopted this decision in 2004. This was motivated by the hope to eliminate redundant research (“Doppelforschung” – WR 2007: 18) which was expected to generate budget savings. The evaluation's objective was to assess whether the agencies need to conduct scientific research to perform their mandatory tasks and to assess the quality of the agencies' research activities (WR 2007). After a first round of evaluation during which individual reports (N=13) and a cross-cutting report (WR 2007) were produced, the Federal Government asked the Science Council to evaluate all research agencies which had not been evaluated yet (N=27) (WR 2010).

The Science Council's evaluation reports are detailed accounts of the respective agencies' tasks, with a special focus on research activities (including third party funding, publications and conference participations, cooperation with other scientific organizations, numbers of doctoral dissertations), science-based services and policy advice, the agencies' coordination with their parent ministry, their internal structure and their management autonomy. In addition to agency-specific recommendations, the evaluation reports frequently recommend that research agencies should employ more staff with fixed-term contracts, cooperate extensively with universities and other research institutes, publish their research results in peer-reviewed journals and create a scientific advisory council. Moreover, the parent ministry should grant the agencies more autonomy when it comes to research topics, applications for third party funding and managerial decisions (financial and personnel management). This also includes that top-level positions should be publicly advertised, which is rather unusual for recruitment to agency top positions. More generally, the Science Council argues that any government research agency should conduct own research as an essential precondition for sound policy advice and service delivery (WR 2007). In this context, publishing research results in peer-reviewed journals is considered as one of the hallmarks of safeguarding research quality. Taken together, these measures point into the direction of more autonomous GRAs both in terms of administrative and substantive matters. This perspective stands in sharp contrast with the legal discourse on hierarchically subordinated agencies – which for instance may only publish research results with the parent ministry's fiat.

Arguably, the evaluation has triggered a process of self-reflection among the Federal Government and GRAs (Barlösius 2011). Among other things, the Federal Government agreed upon a concept for "modern government research" in 2007 (Bundesregierung 2007). This document elaborates general ideas on how to modernize GRAs, mainly along the lines of the Science Council's recommendations, while at the same time acknowledging the principle of departmental sovereignty and the necessity to adjust reform measures to each agency's specific situation. Moreover, it stresses that research activities in GRAs are problem-oriented and interdisciplinary and combine short-term provision of information with long-term research.

On an abstract level, the recent twist of the science policy discourse has strengthened the position of GRAs vis-à-vis their parent ministries, not only because academic research criteria have been applied to governmental agencies in public for the first time, but also because a mood in favor of bringing GRAs closer to the “science system” has occurred (Weingart/ Lentsch 2008: 188). In 2005, the GRAs organized themselves in an association which functions as a kind of lobby organization (the so-called “AG Ressortforschung”). Most GRAs have joined this association, which aims at bringing the general conditions for research in GRAs closer to those of other research organizations (e.g. unrestricted access to third-party funding) and to ensure the scientific quality of the GRAs research activities (Kurth/ Glasmacher 2011).

The Federal Government has avoided open criticism against this challenge, the more so as there is no consistent position among ministries. Some are openly hostile to the recommendations of the Science Council (WR 2010) whereas others regard this as an opportunity to improve the scientific performance of their own GRAs. Probably because of the vague wording of the recommendations, which according to insider reports have lost some of their edges during the process of fine tuning in which the Federal Government exerted a decisive influence, not everybody has yet realized that GRAs are increasingly judged from a new perspective. On a formal level, the position of GRAs remains unchanged. But the plausibility of an “automatic” subordination to ministerial oversight is slowly waning. As will be shown in the following section, the tensions arising from this situation are substantially eased by the simultaneous presence of a third discourse family.

Sectoral expert discourses

There is rich literature about the role and effects of expert-based “policy subsystems” for political decision-making (see Weible 2008 for an overview). GRAs are no exception as they tend to operate in the context of sectoral discourses. Not all of these expert discourses are circumscribed by larger policy domains such as traffic, health or environmental policy. Often they are focused on narrower subfields such as traffic accident research, vaccines, radiation or bird diseases. What all these subfields have in common is that they form fairly closed expert circles in which GRAs, clientele groups and professional associations are linked together. These expert cir-

cles regularly operate isolated from public attention and often are characterized – as Jasanoff observed in her comparative analysis of GMO regulation – by “high entry barriers” (2005: 264). Despite this closed-shop image, the German way of organizing scientific expertise for policy-making also has an inclusive component often labeled as “corporatist” (Renn 1995: 152; Jasanoff 2005: 245). The insight to be gained from this overused term is that government officials tend to include potentially affected (and well organized) social or economic interests into a deliberative process. Expert communities thus present balanced “microcosms of the potentially interested and affected segments of society” (Jasanoff 2005: 267). This is not to say that conflicts are ruled out by cooptation. Particularly, if controversial issues such as GMOs, nuclear energy or stem cell research are at stake, sectoral expert discourses may switch from a “collaborative” into an “adversarial” style (Weible 2008: 622). But as long as sectoral expert discourses are embedded in low cost politics which are uncontroversial, they tend to be technical and consensual

The question arises how these sectoralized expert communities may become a springboard for reputation building beyond the more demanding criteria of the science policy discourse. So far evidence to explain why GRAs, despite not being at the top of scientific reputation, are nonetheless regarded as reliable sources of expert knowledge, point into two directions. The first is clientelist orientation. Inside expert communities GRAs are not assessed according to their publication record in scientific journals, their number of patents, their external funds or their standing inside the scientific community. Rather the currency of reputation is the usefulness for clientele with fairly practical needs. According to a survey of all GRAs by the Science Council, employees with a university degree in GRAs devoted on average 19% of their working time on services for stakeholders, 36% on research and development activities, 22% to information gathering and policy advice, 18% to sovereign state functions (defined as regulatory, oversight, or scrutiny functions delegated to the agency by statutory law or governmental regulation), and 5% to training and education. However, the relative share of these different functions in the agencies’ task portfolios varies considerably across the agency population (see Table 1). For instance, almost 50% of all GRAs devote less than 10% to services for clients, and about 25% devote more than 25% to such services, the maximum being 70%.⁷ Typi-

⁷ We are aware that the survey results should be treated with caution, but we nevertheless assume that they fairly well indicate the high degree of variation across GRAs.

cal examples include the Federal Institute for Geosciences and Natural Resources (Bundesanstalt für Geowissenschaften und Rohstoffe) which provides the German industry with information and advice on energy resources and mineral raw materials or the Federal Institute for Materials Research and Testing (Bundesanstalt für Materialforschung und -prüfung) which among other things develops safety standards for chemicals and materials as a measure of promoting economic development.

Table 1: Task portfolios of government research agencies (2008, N=47, estimated percentage of working time of university educated employees)

	Minimum	Maximum	Mean	SD
research and development	0	84	36.4	21.3
information gathering and policy advice	0	70	21.6	14.9
sovereign state functions	0	80	17.8	21.7
provision of services	0	70	18.5	17.9
training and education	0	28	5.3	5.2

Source: WR 2010: 59-63.

If we differentiate between trust of government in GRAs and trust of clientele in GRA expertise, the latter can be seen as a determinant of the former. This of course only applies to GRAs with strong clientelist ties such as in the fields of agriculture, material testing or pharmaceuticals. In other cases the “protective effect” of small epistemic communities will be lower. There are good reasons to assume that the degree of clientelism is a reliable proxy for the attitudes of the parent ministry. In contested and politicized subsectors such as environmental or energy policy, the parent ministry will be interested in preserving a tight grip on GRAs, whereas in consensual and non-political sectors a hands off approach is more likely. The trustee role vis-à-vis sectoral expert communities will only become a problem for GRAs when they “put the interests of the Principal over that of the beneficiary” (Alter 2008: 40).

The second effect of sectoral discourses is more difficult to detect and could be called “compartmentation” (Polt et al. 2010: 155). This refers to the fact that expert communities tend to separate themselves from the larger policy universe, at least as long as they stay out of the political spotlight. The already mentioned clientele demands and interests form a relevant part of this self-reference. But in addition the policy-specific aspirations of parent ministries play an equally decisive role. The pronounced internal pillarization of the German ministerial bureaucracy has an effect on how research questions are framed and, often enough, restrained on fairly narrow subjects. The lack of encompassing or interdisciplinary research is a well-known concern among German research policy-makers. But neither the federal government nor individual ministries ever complained about a lack of research aspirations among GRAs or too much distance to research science. This reflects the particular character of mandatory science even when GRAs are asked to provide policy-advice. This advice may have its foundation in scientific research, but is neither necessarily “innovative nor dedicated to open-ended investigation” but is rather “evaluative in orientation” (Salter 1988: 187). In Salter’s analysis a scientific respondent described his work as “screening” (ibid.) of the scientific work of others. This closely resembles the self-description of some GRAs in the German case (“kompilatorische Forschung”, WR 2008: 22). The peculiarities of mandated science can only flourish within fairly closed expert communities where aspirations are more mixed than in pure academic research settings. This has become part of the official GRA policy. In responding to the recommendations of the Science Council, the Federal Government insisted that there can be no “one size fits all” solution for modernizing GRAs (Bundesregierung 2007: 3). This not only reflects the varying needs of ministries but can be seen as an appreciation of diversity among research agencies. Whereas some GRAs stress that they primarily collect information and act as transmitters of research results to their parent ministry (such as the Federal Agency for Nature Conservation, Bundesamt für Naturschutz), others clearly see themselves as full-fledged research institutes (such as the Institute for Employment Research, Institut für Arbeitsmarkt- und Berufsforschung).

By summarizing the effects of sectoral expert discourses on the credibility of GRAs, the oscillation between agent and trustee roles becomes particularly visible. GRAs perform the role of a trustee as long as delivering information or services to clientele groups is in the forefront. This regularly coincides with the interests of the par-

ent ministry which often is also in the business of protecting sectoral interests, as is case with the Ministry of Economics or the Ministry of Agriculture. The clientelist orientation is bolstered by the separation of expert communities from more general contexts in which contradictory expectations are likely to arise. The trustee perception changes into a principal-agent perspective if GRAs are confronted with the criteria of research-based or academic science, as was the case during the evaluation by the Science Council, or when their advisory role is situated in politically salient and contest fields. Under these conditions ministries tend to perceive their GRAs more as an agent than as a trustee, and the problem of neutral expertise comes to the fore. The double role of trustee and agent, depending on the type of activity pursued, is at the core of the tensions GRAs have to deal with. As Kurth and Glas-macher (2011: 272) argue, trust “is the first condition for successful advice to politics. The political decision-makers and the public (as the most important customers of the politicians) need to trust the experts and the institutions.” However, whereas the trust placed in GRAs by the public (and clientele groups) is based on the assumption of GRAs as trustees, the trust place in GRAs by decision-makers (i.e. especially ministers and their bureaucracies) follows the principal-agent model.

Discussion

Due to their diverging functional portfolios (see Table 1), not all GRAs can be lumped together into a single category. But for the sake of clarifying the general argument, it seems acceptable to summarize the impact of the three discourses on the role perception of GRAs as follows (Table 2).

Table 2: Role assignment to GRAs

Perception of GRAs by	Legal discourse: Agent of parent ministry	Science discourse: Trustee with scientific community as beneficiary	Sectoral discourses: Trustee with clientele as beneficiary
Federal ministries	+	-	+/-
Scientific community	-	+	+/-
Clienteles	+/-	+/-	+

Notes: + positive evaluation, - negative evaluation, +/- indifferent

Assuming that federal ministries, the scientific community and sector-based clientele groups represent the relevant actors who ascribe a particular “image” to GRAs, the above table tells the following story. Different images can be attributed to each single GRA depending on the perspectives of separate audiences and the discourse in which GRAs appear as providers of expertise. From the perspective of a federal ministry, the first preference (+) would be a political environment dominated by the legal discourse in which science and research are subordinated to government prerogatives. In order not to violate the scientific credibility of GRAs, policy-makers and ministerial bureaucrats have recently been forced into concessions so as to conform to the trustee-based image of GRAs. This was demanded and promoted by the scientific community (+) which dislikes the agent image (-). The science discourse has not been strong enough to pull GRAs completely into a trustee-like direction, but has challenged the previous pre-dominance of the legal discourse. Whereas ministries take a positive stance toward the provision of services by GRAs, the scientific community regards client services from a rather neutral point of view (+/-). Sectoral clienteles are neither interested in the legal nor the science discourses as long as GRAs serve their role as trustees and provide crucial services to them.

The central explanation why GRAs are overwhelmingly perceived as credible and neutral science organizations seems to be the opportunity created by their task portfolios. The mix of functions allows assigning different roles or images to GRAs. If they are regarded from the perspective of their regulatory functions, an agent perspective is justified. If they are regarded as producers of scientific expertise parent ministries tend to stress their trustee position. This may raise the question whether this oscillation between different images is not confusing for the general public or, even worse, leads to a “Jekyll and Hyde” notoriety. Again, the separation between the three discourses, each of which has a different audience, provides a plausible answer. Only under rare circumstances, as was the case with the evaluation by the Science Council or crisis situations in the fields of food safety or epidemics, the role switch of GRAs may become visible. So far, this has not changed the perception of the general public and policy-makers alike. But the rise of the scientific discourse has the potential to undermine the hierarchy-based criteria of the legal discourse.

Conclusions

The aim of the present paper was to explore the apparent paradox between the hierarchical subordination of GRAs to parent ministries and their role as supposedly neutral policy advisers. According to the credibility hypothesis only independent agencies which are protected from political interventions can be considered as credible “trustees” taking decisions based on their expertise rather than on political considerations (“neutral expertise”). Also, we used the concept of “mandated science” to emphasize that the research activities of governmental agencies geared towards policy-making work under different conditions than pure academic research which may for instance eschew clear-cut results and instead argue that “further research is needed.” Our findings not only endorse the relevance of Salter’s concept, but furthermore contribute to the puzzle of having “science close to politics” which – against general assumptions – has no deteriorating effect on its credibility. The main explanation is to be found in the three discourses, each taking a somewhat different perspective on the relationship between scientific research and agency credibility and thereby satisfy the expectations of different audiences. This is possible because all three discourses exist simultaneously, so that making reference to the peculiar understanding of the role of science inherent to each discourse helps to satisfy diverging demands towards GRAs.

Moreover, the paper has provided further insights into the discussion on the conditions under which government agencies can be characterized as “trustees” acting on behalf of a beneficiary rather than “agents” acting on behalf of their principal. To recap, the rationales for delegating tasks to either type of actors differ considerably:

Agents are meant to implement the decisions of the Principal, thereby providing efficiency gains for the Principal. By contrast, Principals delegate to Trustees to enhance the credibility of the decision by distancing themselves from the decision, and by harnessing the Trustee’s decision-making authority. (Alter 2008: 40)

The paper suggests that government agencies may simultaneously be agents and trustees under the condition of heterogeneous tasks. The simple distinction between agent and trustee thus becomes problematic for analyzing multi-purpose organizations. Obviously, this combination of tasks provides the ministries, the agencies or external stakeholders with the opportunity to make claims about which logic

of delegation prevails without necessarily taking into account the multi-purpose nature of the organization. Also, the multi-purpose nature of the agencies provides them with the opportunity to move on the agent-trustee continuum by developing relationships with their constituency or by creating a reputation for moral, rational-legal, or expert authority (Alter 2008: 43).

The perspective set out in the paper raises several questions as to how the balancing and oscillation of GRAs between different discourses is handled in practice. There is a need for empirical studies of GRAs with different functional profiles. These studies clearly need to go beyond formal levels of agency autonomy and should focus on agency- and sector-specific mechanism of how scientific credibility is created despite hierarchical subordination. For instance, a possible strategy for GRAs to deal with potentially conflicting demands is internal specialization, with some units or staff conducting research, thereby ensuring scientific credibility, whereas others are responsible for policy advice, regulation or services for stakeholders. This may also be a viable strategy on the population level, e.g. by creating different types of GRAs as suggested by the Science Council (WR 2010). Finally, there is a need to look beyond a single national context and to study how credibility in science and policy sectors is balanced with hierarchical oversight in other politico-administrative contexts. The concept of “mandated science” used in this paper was coined in a very different context, showing that similar tensions are far from being idiosyncratic to the German context.

Literature

Alter, K. J. (2008). Agents or Trustees? International Courts in their Political Context. *European Journal of International Relations*, 14(1), 33 -63.

Bach, T., & Jann, W. (2010). Animals in the administrative zoo: organizational change and agency autonomy in Germany. *International Review of Administrative Sciences*, 76(3), 443-468.

Barlösius, E. (2009). „Forschen mit Gespür für politische Umsetzung“ – Position, interne Strukturierung und Nomos der Ressortforschung. *dms*, 2(2), 347-366.

Barlösius, E. (2011). Der Wandel der Ressortforschungseinrichtungen während des Evaluationsprozesses. In: Hornbostel, Stefan & Anna Schelling (Hg.): *Evaluation: New Balance of Power?* iFQ-Working Paper No. 9, 57-68.

Böcher, M., & Krott, M. (2011). Institutionalisierung multi- und transdisziplinärer Umweltwissenschaften durch Ressortforschungseinrichtungen. In K. Fischer, H. Laitko, & H. Parthey (Eds.), *Interdisziplinarität und Institutionalisierung der Wissenschaft: Wissenschaftsforschung Jahrbuch 2010* (pp. 59-80). Berlin: Wissenschaftlicher Verlag Berlin.

Bundesarbeitsgericht. (2008). Urteil vom 19.3.2008, 7 AZR 1100/06.

Bundesministerium für Bildung und Forschung. (2010). *Bundesbericht Forschung und Innovation 2010*. Bonn, Berlin: BMBF.

Bundesministerium für Gesundheit. (2011). *Kleine Anfrage [...] der Fraktion BÜNDNIS 90/DIE GRÜNEN betreffend „Haltung der Bundesregierung zum medizinisch begründeten Eigenanbau von Cannabis“*. Berlin: BT-Drs. 17/4611.

Bundesregierung. (2007). *Konzept einer modernen Ressortforschung*. Berlin: BMBF.

Carpenter, D. P., & Krause, G. A. (2012). Reputation and Public Administration. *Public Administration Review*, 72(1), 26-32.

Döhler, M. (2007). *Die politische Steuerung der Verwaltung*. Baden-Baden: Nomos.

Döhler, M. (2011). Wie Ministerien (versuchen,) Bundesbehörden (zu) steuern. *Verwaltungsarchiv*, 102(1), 110-133.

Gilardi, F. (2002). Policy Credibility and Delegation to Independent Regulatory Agencies: A Comparative Empirical Analysis. *Journal of European Public Policy*, 9(6), 873-893.

Guston, D. H. (1996). Boundary Organizations in Environmental Policy and Science: An Introduction. *Science, Technology, & Human Values*, 26(4), 399-408.

Hohn, H.-W., & Schimank, U. (1990). *Konflikte und Gleichgewichte im Forschungssystem: Akteurkonstellationen und Entwicklungspfade in der staatlich finanzierten außeruniversitären Forschung*. Schriften aus dem Max-Planck-Institut für Gesellschaftsforschung Köln. Frankfurt/Main: Campus.

Hollricher, K. (2005). Sicherheitsforschung des Verbraucherministeriums: Finger weg, Mund zu. *Labourjournal*, (1-2), 20-23.

Huber, P. M. (2008). *Staat und Wissenschaft*. Paderborn: Ferdinand Schöningh.

Jasanoff, S. (1990). *The Fifth Branch. Science Advisers as Policymakers*. Cambridge, London: Harvard University Press.

Jasanoff, S. (2005). *Designs on nature: science and democracy in Europe and the United States*. Princeton: Princeton University Press.

Kitrosser, H. (2011). Scientific Integrity: The Perils and Promise of White House Administration. *Fordham Law Review*, 79(6), 2395-2424.

Knie, A., & Simon, D. (2010). Stabilität und Wandel des deutschen Wissenschaftssystems. In D. Simon, A. Knie, & S. Hornbostel (Eds.), *Handbuch Wissenschaftspolitik* (pp. 26-38). Wiesbaden: VS Verlag.

Knott, J. H., & Miller, G. J. (2008). When Ambition Checks Ambition. *The American Review of Public Administration*, 38(4), 387 -411.

Kurth, R., & Glasmacher, S. (2011). Looking through the telescope - quality assurance in scientific advice to politics. In J. Lentsch & P. Weingart (Eds.), *The Politics of*

Scientific Advice. Institutional Design for Quality Assurance (pp. 270-285). Cambridge: Cambridge University Press.

Leiss, W. (2000). Between Expertise and Bureaucracy: Risk Management trapped at the Science-Policy Interface. In G. B. Doern & T. Reed (Eds.), *Risky Business. Canada's Changing Science-Based Policy and Regulatory Regime*. Toronto, Buffalo, London: University of Toronto Press.

Lundgreen, P., Horn, B., Krohn, W., Küppers, G., & Paslack, R. (1986). *Staatliche Forschung in Deutschland 1870-1980*. Frankfurt/New York: Campus.

Majone, G. (1997). From the Positive to the Regulatory State: Causes and Consequences of Changes in the Mode of Governance. *Journal of Public Policy*, 17(2), 139-167.

Majone, G. (2001). Nonmajoritarian Institutions and the Limits of Democratic Governance: A Political Transaction-Cost Approach. *Journal of Institutional and Theoretical Economics*, 157(1), 57-78.

Masing, J. (2010). Unabhängige Behörden und ihr Aufgabenprofil. In J. Masing & G. Marcou (Eds.), *Unabhängige Regulierungsbehörden: organisationsrechtliche Herausforderungen in Frankreich und Deutschland* (pp. 181-219). Tübingen: Mohr.

Mooney, C. (2005). *The Republican war on science*. New York: Basic Books.

Perthes, V. (2011). Scientific policy advice and foreign policymaking - Stiftung Wissenschaft und Politik (SWP), the German Institute for International and Security Affairs. In J. Lentsch & P. Weingart (Eds.), *The politics of scientific advice: institutional design for quality assurance* (pp. 286-294). Cambridge: Cambridge University Press.

Philipps, A. (2011). Errichtung und Zurechnung von Ressortforschungseinrichtungen. Eine Frage des Bedarfs an wissenschaftlicher Expertise? *Berichte zur Wissenschaftsgeschichte*, 34(1), 7-26.

Pollitt, C., & Bouckaert, G. (2004). *Public Management Reform. A Comparative Analysis* (2nd ed.). Oxford: Oxford University Press.

Polt, W., Berger, M., Boekholt, P., Cremers, K., Egel, J., Gassler, H., Hofer, R., et al. (2010). *Das deutsche Forschungs- und Innovationssystem. Ein internationaler Sys-*

temvergleich zur Rolle von Wissenschaft, Interaktionen und Governance für die technologische Leistungsfähigkeit. Berlin: Expertenkommission Forschung und Innovation.

Renn, O. (1995). Styles of using scientific expertise. *Science and Public Policy*, 22, 147-156.

Salter, L. (1988). *Mandated Science: Science and Scientists in the Making of Standards*. Dordrecht, Boston, London: Kluwer Academic Publishers.

Schmidt-Aßmann, E. (2008). Verfassungsrechtliche Rahmenbedingungen wissenschaftlicher Politikberatung: Demokratische und rechtsstaatliche Rationalität. *Wissen - Beraten - Entscheiden. Form und Funktion wissenschaftlicher Politikberatung in Deutschland* (pp. 211-235). Weilerswist: Velbrück-Wissenschaft.

Strøm, K. (2000). Delegation and accountability in parliamentary democracies. *European Journal of Political Research*, 37(3), 261-289.

Süddeutsche Zeitung. (2009, September 8). Atomendlager Gorleben: Kohls Minister schönten Gutachten (2009-09-08).

Trute, H.-H. (1999). The Legal Status of Research Organizations in Germany: Between Autonomy and Political Guidance. In A. Orsi Battaglini, U. Karpen, & F. Merloni (Eds.), *The Independence of Science in Europe* (pp. 57-88). Baden-Baden: Nomos.

Weible, C. M. (2008). Expert-Based Information and Policy Subsystems: A Review and Synthesis. *Policy Studies Journal*, 36(4), 615-635.

Weingart, P., & Lentsch, J. (2008). *Wissen - Beraten - Entscheiden. Form und Funktion wissenschaftlicher Politikberatung in Deutschland*. Weilerswist: Velbrück-Wissenschaft.

Williamson, O. E. (1999). Public and private bureaucracies: a transaction cost economics perspectives. *Journal of Law, Economics, and Organization*, 15(1), 306 -342.

Wissenschaftsrat. (2007). *Empfehlungen zur Rolle und künftigen Entwicklung der Bundeseinrichtungen mit FuE-Aufgaben*. Köln: Wissenschaftsrat.

Wissenschaftsrat. (2008). *Stellungnahme zum Bundesamt für Naturschutz (BfN)*, Bonn. Karlsruhe: Wissenschaftsrat, Drs. 8787-08.

Wissenschaftsrat. (2010). *Empfehlungen zur Profilierung der Einrichtungen mit Ressortforschungsaufgaben des Bundes*. Lübeck: Wissenschaftsrat, Drs. 10295-10.