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Implementing regional innovation policies: doctrines and factors of influence

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Abstract

This article examines the implementation of regional innovation policies by focusing on a selected group of bureaucrats and evaluating the characteristics of the doctrines of action they utilize when creating innovation. The data used in the article were collected through in-depth interviews conducted with 21 employees in the Trade and Industry Departments in two county administrations, the offices of Innovation Norway in two counties and the Agricultural Departments of two County Governors' offices. The primary task for all the interviewed employees is to facilitate innovation within their respective counties. The analysis shows that the employees' doctrines are characterized by being interpretations of what, according to different theories of innovation, is necessary to create innovation. The strategies used by the employees in both the Trade and Industry Departments and the Innovation Norway offices are very similar to what is prescribed by the theories of innovation, while the doctrines of the officials in the Agricultural Departments deviate from these theories.

Keywords: Public regional policy, Innovation policy, Doctrines of action

Topic and research question

Implementation of regional innovation policies is the topic of this article. The focus, more specifically, is on the question of what characterizes the doctrines of action of a selected group of regional bureaucrats. The implementation of public policies has been a matter of significant scientific interest for the last 30 years. Among other things, results have revealed that features of the executive apparatus itself often have an independent influence on how the policies are put into practice (Hill, 2011; Kjelberg & Reitan, 1995). In the field of implementation research, the need for more studies with a 'Bottom-Up' approach is frequently pointed out. Such research focuses on specific factors and properties of the agents who actually implement policy (Winter, 2003, 2006). The present study focuses specifically on how the organizational and demographic characteristics of the executive apparatus may affect the implementation of innovation policies. Historically, in Norway the implementation of public policy at the regional level has attracted less attention than at the national and local levels (Tranøy & Østerud, 2001). Kasa and Undertun (2010) point to the need for additional studies of innovation policies, and for studies focusing on how implementation policy and administrative policy are connected and how they influence each other (Olsen, 2006). This has led me to concentrate on implementation policy at the regional level.

There are different perceptions concerning which factors are pivotal in order to understand the relation between public policy and policy outcomes (Hill, 2011; Winter, 2003). The 'Top-Down' approach views implementation as a step-by-step process beginning with policy formulation, continuing to design, and then to implementation and, finally, results. Critical factors in this process include the capacity and competence of the implementing authorities, as well as the balance of strength between the two. According to this model, the degree of vagueness and conflict are also critical factors in the stages of policy formulation and policy design a (Van Meter & Van Horn, 1975; Pressman & Wildavsky, 1973). The 'Bottom-Up' approach puts more weight on the processual aspects of the implementation of public policies. In particular, this approach focuses on the importance of local problem solving and the tension, among "street-level bureaucrats" (who ultimately carry out policies), between central and local logics of action. In this portion of implementation studies, the focus is on implementation as adaptation through negotiations and compromise (Hill, 2011) The third approach is a synthesis of the two former

approaches, based on a pragmatic selection of the most promising variables from the central and most referred to implementation studies. Winter (2006; 2003), who is a recognized contributor to this approach, argues that we should be more concerned with what explains output, understood as performances of the specific implementation, than with a general theory of the implementation of public policies. There is a need, therefore, to look for specific theories which will shed light on aspects of the policy formulation, policy design, inter-organizational conditions and the behaviour of 'street-level bureaucrats' (Hill, 2011). The focus on the implementation of public innovation policies has been chosen because the need for improved knowledge about what characterizes the participants in the design and implementation of innovation policies has been pointed out in several contexts (Olsen, 2006; Edquist, 2001). Studies of innovation policies have demonstrated that the goals and measures of the policies are perceived to be somewhat diffuse and unclear (Høyer, 2009; Edquist, 2001). Sabatier (1986) indicates that "Bottom-Up" approaches, focusing on determining the characteristics of the behaviour of the officials carrying out the policies are particularly suitable when it comes to understanding the implementation of public-policy areas which can be characterized as having goals and measures which are somewhat diffuse and unclear. Studies of modern management systems show that such systems are characterized by different forms of regulations and administrative doctrines. It is, among other things, pointed out that important doctrines in contemporary management systems are doctrines for empowering citizens and for how public authorities are to be perceived as good and efficient resource managers (Jordana & Levi-Faur, 2004; Veggeland, 2010). Within Norwegian economic policy, the rule that limits use of oil revenues to four per cent of the size of the Oil Fund ('handlingsregelen') is an example of a specific doctrine. According to Hood and Jackson (1991), an administrative doctrine represents a construct of ideas regarding what, how, and by whom something should be done, within, for example, an administrative functional area.[1] The doctrines can vary in character, they can be rather general, but also concrete and action-oriented and influence the specific and daily behaviour of individual officials in the public administration (Hood & Jackson, 1991).

On the basis of the last of the above approaches to studies of implementation of public policy, I shall utilize what Peters (1999) refers to as New Institutional Theory in political science and organization theory. In addition, I shall use innovation theory, which is specifically concerned with understanding science and technology and

[1] Dusire (1973, p. 39) defines doctrine as '…a set of ideas that lies halfway between "theory" and "policy" – where "theory" means an attempt to explain some part of the environment'.

their relation to economy and society (Edquist, 2005). These theoretical contributions will be used to analyse the doctrines expressed through the interviews conducted with a selected group of bureaucrats whose main job it is to carry out national innovation policies on a regional level. On this foundation, the superordinate research question in this study is: *What characterizes the doctrines of a selected group of innovation bureaucrats, and how are these doctrines created?* The term 'characterizes' here refers to that which is typical of the content of the doctrines of the selected officials. Furthermore, the term 'created' refers to determining the things that influence the content of these doctrines.[2]

Studies of what is characteristic of the behaviour and mindset of employees in public organizations have generally shown that they to a large extent seem to be characterized by three kinds of factors of influence (Olsen, 2010; March, 2008). First of all, there are factors that stem from the formal tasks the organizations are obligated to carry out, and formal knowledge of the relationship between ends and means related to these tasks. These are factors that were born out of a classical instrumental understanding of organizations, where organizations are seen as formal instruments designed to reach goals that have already been defined. The actions and perceptions of the members of the organization will, with the limitations inherent in the norm of limited instrumental rationality, be characterized by being goal-oriented and coordinated, and in agreement with what is specified by the organization's formal structures. This behavioural logic can be described as an instrumental cost/benefit analysis (Scott, 2003).

The second category of influential factors stems from cultural and historical trademarks of the organizations, in addition to demographic characteristics of the officials, in this case educational background and gender (Egeberg, 2003). These factors are rooted in an organizational understanding that is often referred to as cultural-institutional. According to this understanding, organizations are seen as organisms that develop their distinctiveness as a consequence of people spending time together over longer periods of time. In addition to the formal characteristics, the organizations have distinctive features, with their own collections of more informal norms and values establishing themselves in the organization's culture, where the superordinate value is survival (Scott, 2003). This culture has a strict framework for the behavioural logic of the organization's members, which is characterized by being adapted to these informal values and

[2] The reasoning behind this is that an analysis of the specific content of the doctrines is necessary to be able to say something about what seems to have influenced them. Collectively this entails that the study both has an exploratory and an explanatory design.

norms, and can be described as 'the appropriate logic' (March & Olsen, 1995; Lægreid et al., 2009).

The third category of influential factors consists of the myths and fashions, existing in the organizations' surroundings, concerning what should characterize organizational behaviour. These factors are rooted in an understanding of organizations based on the belief that organizational behaviour is chiefly characterized by a desire, on the part of organizations, to achieve legitimacy and status in their surroundings, and that they therefore will do anything to please these surroundings (Meyer & Rowan, 1977). The actions and perceptions of the members of the organizations will thereby be characterized by being based on interpretations of reality and a behavioural logic that is characterized by what appears to be fashionable and modern in the environment outside the organization, in addition to more random and temporary points of reference in the organization's surroundings (DiMaggio & Powell, 1991; Røvik, 1998).

Against this background the general thesis statement is specified in three more theoretically founded sub-questions: Against this background, the general thesis statement is specified through the following theoretically founded sub-question: Which of the following statements characterizes the doctrines of the organizations most strongly? 1) They are a pure reflex of the organizations' formal tasks and the dominant knowledge status in the area of innovation. 2) They are characterized most strongly by the public officials' demographic characteristics and experience, in addition to the history and culture of the organization. 3) They are characterized most strongly by modern and more fashionable perceptions of the factors that condition innovation.

Focusing on these questions will also indicate whether or not there is a relationship between administrative policies, specifically the manner in which the public administration is organized and staffed and the execution of the innovation policies.

Delimitation of the research object

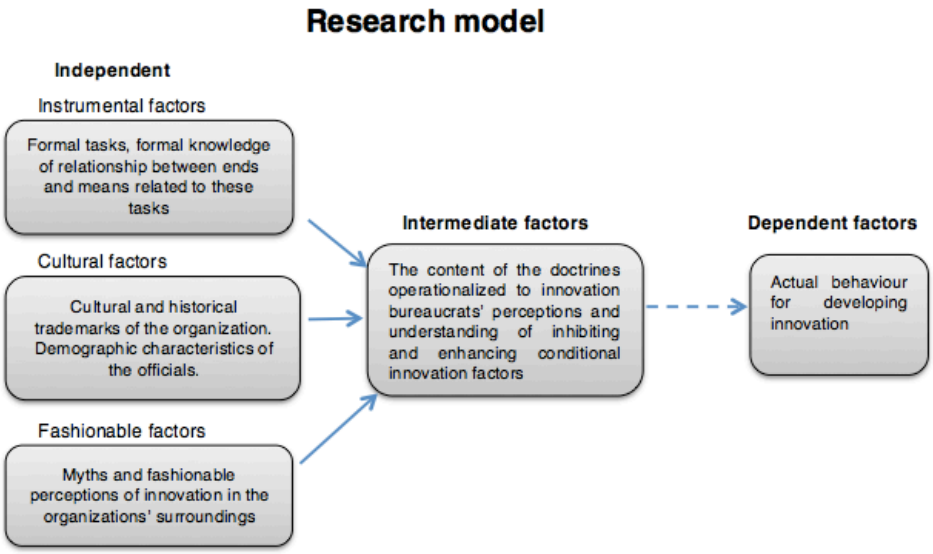
Norway's innovation policies have been viewed as an important part of regional politics by the Norwegian authorities (Higdem et al., 2011). There are a number of political actors involved in innovation at the regional level (Amdam & Bukve, 2004). I have chosen to delimit the selection of informants to employees in the County Governors' Agricultural Departments, the county administrations' Trade and Industry Departments and Innovation Norway's regional offices. The organizations have clear, formally defined tasks related to contributing to innovation within their own geographical areas. In general,

innovation and innovation politics have often been considered areas where the discussions can be characterized as strictly academic and objective (Hernes & Koefoed, 2007). At the same time, questions have been raised as to whether the subject area of innovation will come under pressure if it challenges other subject areas (Fagerberg, 2009). The selection of organizations is therefore related to the fact that the Agricultural Departments are very closely connected with the agricultural segment, traditionally seen as being one of the strongest and most dense, in its community of interest, of the industrial segments in Norway, while Innovation Norway and the Trade and Industry Departments are not connected in the same way with a specific segment with such a dense community of interest (Olsen, 1978). An underlying concern in this study will therefore be to examine whether this difference in connectivity to 'the segmented state' also influences the doctrines of the employees in the various types of enterprises (cf. also the research model below).

The study's research model and method

The model below, Figure 1, illustrates the research model of the study with dependent, intermediate and independent factors.

Figure 1. The research model.



The set of instrumental independent factors are operationalized into the following questions: To what degree do innovation bureaucrats see innovation as a separate field and themselves as professionals in such a field? To what degree are the bureaucrats' perceptions of what inhibits or promotes innovation a pure manifestation of accepted thought in the field and the guidelines that spring from the tasks they have been assigned? Can any possible dissimilarities in perception be caused by differences in the organizations' formal and instrumental characteristics?

The following operational questions are related to the cultural independent factors: To what degree are the perceptions of the innovation bureaucrats characterized by the organizations' histories and traditions, in addition to the demographic characteristics of the bureaucrats, and has this caused them to have different interpretations of the knowledge status? Can any possible dissimilarities in perceptions be related to the bureaucrats' demographic characteristics, or differences in the cultures and histories of the organizations to which they belong?

The fashionable independent factors are operationalized into the following questions: To what degree are the perceptions of what inhibits and what promotes innovation influenced by which recipe for innovation is 'in' at the moment, without this being linked to any particular academic standpoint? Further, can this result in doctrines that are primarily characterized by the bureaucrats' personal interests and practices and by not varying systematically based on instrumental or cultural factors?

In the research model it is presupposed that there is a relationship between doctrines of action and actual behaviour. This presupposition is supported by previous research showing that the significance of doctrines, in relation to actual behaviour, increases in accordance with increasing subject matter complexity (Hood & Jackson, 1991), and also by research showing that the area of innovation is characterized by this kind of complexity (Fagerberg, 2009).

The comparative logic that is applied in this model comes closest to 'the methods of differences', which assume that dissimilarities in the dependent variable are explained by dissimilarities in the independent variable (Denk, 2002). The study has a case design in which the previously mentioned institutions make up the case categories, each consisting of two cases. Qualitative in-depth interviews have been utilized because the purpose of the study is to illuminate the bureaucrats' more fundamental thoughts about and perceptions of certain phenomena. The empirical analyses are also primarily of a qualitative character and are principally combinations of what are

often referred to as narrative analysis and analysis of meaning (Thagaard, 1998). The interviews were carried out based on an interview guide that had been sent to the informants beforehand.

The data have been collected through qualitative in-depth interviews with some strategically chosen employees in the organizations in question. The interviewees are all responsible for supporting various kinds of initiatives intended to create innovation within a county. The strategy for selection consisted of choosing informants whose conceptions could be presumed to be typical of their unit. Studies show that the general influences on public servants' opinions are education, experience and gender (Christensen & Lægreid, 2009).

On this basis I chose to interview the leader of each unit, as well as employees who had both a certain length of service in the organization and demographic characteristics typical of their fellow employees.

Table 1 below presents the demographic characteristics of each organization, in the categories of gender, education and previous work experience of the employees. Table 1 shows that the employees have previous experience mainly from other public organizations, but also, to a lesser extent, from private enterprises. This makes it clear that innovation, and the regional innovation policies, are managed by bureaucrats with experience within management in general and must therefore be assumed to be well socialized into the administrative culture they are currently a part of. Close to 60 per cent of them have a long formal education of an economic, agricultural or social scientific character. The Agricultural Departments' innovation bureaucrats have a much more uniform agricultural educational background than the employees in the Trade and Industry Departments and the employees in the offices of Innovation Norway. Out of a concern for capacity, I chose to limit the analysis to a total of 21 employees, representing 32 per cent of those whose main task it is to work with innovation. Table 2 below presents the demographic characteristics of the selected informants.

Table 1: Gender, education, and work experience of the employees of the six organizations in numbers and percentages

	The County Administration		Innovation Norway		The County Governor's office		
	County A N = 8	County B N= 7	County A N= 11	County B N= 14	County A N= 9	County B N=10	In total N= 59
Number of women	5	2	5	8	5	4	29 49%
Number of men	3	5	6	6	4	6	30 51%
Number with economic education, in total	1	4	7	8	1	0	21 36%
Number with social scientific education, in total [a]	6	2	3	2	0	1	14 24%
Number with agricultural education, in total [b]	1	1	1	4 [c]	8	9	24 41%
Number with experience from public sector	7	5	11	11	7	8	49 83%
Number with experience from private sector	2	6	8	3	2	4	25 42%
Average number of years in current organization	12 [d]	7	11 [e]	15 [f]	10	10	11

Notes for Table 1. a) Includes education within tourism, pedagogy, planning, management and law; b) several of the employees with an agricultural education have also studied economy; c) includes one civil engineer; d) number of years in the county administration varies between 3 and 47; e) this number also includes the old SND; f) uncertain numbers here, also includes employment in the old SND.

Table 2: Gender, education and work experience of the informants

	The County Administration		Innovation Norway		The County Governor's office		
	Fylke A N = 8	Fylke B N= 7	Fylke A N= 11	Fylke B N= 14	Fylke A N= 9	Fylke B N=10	I alt N= 59
Total number of interviewees	4	4	3	3	4	4	21
Number of women	2	0	1	1	2	2	
Number of men	2	4	2	2	2	2	
Number with economic education, in total	1	2	2	2	0	0	
Number with social scientific education, in total [(a)]	3	2	0	1	0	1	
Number with agricultural education, in total [(b)]	0	0	1	0	4	3	
Number with experience from another public organization	4	3	2	3	4	3	
Number with experience from private enterprise	1	2	2	3	2	3	

Notes for Table 2. a) Includes education within tourism, pedagogy, planning, management and law; b) several of the employees with an agricultural education have also studied economy

Challenges regarding collection and analysis of data from the interviews

The reason for choosing a qualitative method of data collection and analysis is that it provides opportunities when it comes to bringing forth more fundamental and complete reasoning from the informants. However, this method also has several weaknesses. One weakness is that it will not be possible to make statistical generalizations of what the 59 employees of the institutions perceive to be conditions of innovation (Spector, 1981). On the other hand, I believe that there are ample opportunities to make what Esaiasson (2003) refers to as an analytic or logical generalization when it comes to characteristics of the doctrines in the selected units. On the condition that my chosen units are not fundamentally different from corresponding units in the other counties in Norway with respect to tasks and demographics, the study should also be able to indicate what is characteristic of the doctrines of action of innovation bureaucrats in these units

A different challenge when using this method of data collection is the possibility that the answers given by the informants in their interviews are influenced by different forms of a posteriori rationalizations (Repstad, 1993). Although this cannot be completely ruled out, it is difficult for me to see how the answers could be influenced by any form of bias weakening the validity in any decisive way.

The organizations' formal tasks

In the formal description of the tasks of the County Governor's office it says, among other things, that: 'The office of the County Governor will contribute to new business development in agriculture, based on farming, forestry, and related businesses. The County Governor administers rural development funds for exploratory and facilitative measures. The funds are to be used to promote profitable business development in the countryside and in relation to agriculture (from the website of the County Governor).'[3]

In the formal description of the function of the Trade and Industry Department in one of the counties it says: 'The unit will appear with a leading competence milieu within regional business development,

[3] The tasks and functions of the County Governor and the county administration within development in innovation and industrial development have been changed somewhat after Jan. 1, 2010. The descriptions given here are those that were in effect at the time of the qualitative interviews.

value creation, the environment and social planning. The unit will facilitate for those wanting to create and establish, to achieve increased value creation and adaptation'(from the website of the County).

In the formal description of the tasks of Innovation Norway and their offices it says: 'Innovation Norway will promote business and social economically profitable business development in the entire country and realize different districts' and regions' industrial opportunities through contributing to innovation, internationalization and visibility' (from the website of Innovation Norway).

How to create innovation – dominant knowledge status

Today innovation is seen as an independent field with its own definitions of innovation and theoretical models of inhibiting and promoting factors. The dominant perception of innovation is to regard it as a novelty with commercial benefit (Grodal et al., 2005; Rønning & Teigen, 2007). The dominant knowledge status, with regard to which factors inhibit and promote innovation, is characterized by two different innovation models. The oldest of these are the *linear models*. In these, *innovation* and *innovation processes* are perceived as rational, in the sense that they are characterized by being planned and carried out by actors with relatively clear perceptions of the relationship between ends and means. The model builds on an assumption that innovation processes also pass through different stages, from research, to development and, finally, production (Fagerberg, 2005; Spilling, 2007).

The model will also put more emphasis on the 'hard' factors of influence, like competence and financial resources, in addition to formal organization, as critical factors in the process of creating innovation. The newest and most modern models are the *interactive innovation models*. These models see the innovation process as both a technical and a social process that is non-linear and created through interaction between organizations and their environments, where the environments are often referred to as national or regional innovation systems (Smith, 1994). Innovation is created in a collective process, and these innovation processes are promoted, for example, by organizations working together and organizing themselves in geographical clusters or larger units advanced through centralized organizing (Porter, 2000). In this model of innovation we find that attitudes, traditions, culture and the more 'soft' and informal organizational conditions are important influential factors for creating innovation. This opens up possibilities for the idea that innovation processes may be influenced by historical ties through path dependency (Fagerberg, 2009). The interactive models also

presuppose that innovation can happen both as leaps and through obvious breaks with former development processes. These are the innovation models that have been popular and that have been referred to the most in recent years when it comes to examining correct and efficient ways of creating innovation (Rønning & Teigen, 2007; Fagerberg et al., 2009).

Analysis

Research question 1

The analysis will be based on the theoretically deduced research questions. In the first one, related to the independent instrumental factors, the focus was on to what extent the bureaucrats viewed innovation as a separate field and themselves as professionals in this field. There were also questions regarding whether or not the content of the doctrines, concerning what inhibits or promotes innovation, was a reflection of the knowledge status in the field of innovation and of the formal tasks the organizations have been entrusted with. And finally, there were questions regarding whether or not any differences in the bureaucrats' perceptions can be traced back to dissimilarities in the formal functions and tasks the organizations are required to perform.

The evidence shows that all the innovation bureaucrats' doctrines of action contain various inhibiting and promoting factors that to some extent can be placed on a macro-, meso- or individual level. In general, three groups of influential factors are highlighted: 1) resources (finances and competence), 2) structural and organizational factors, and 3) cultural factors and values. Table 3 below presents an overview of what a majority of the informants think inhibits and promotes innovation.

Table 3: The innovation bureaucrats' understanding of inhibiting and promoting factors

Factor	Level	Inhibit	Promote
Resources in the form of finances, knowledge, competence	Society	A generally low level of education and knowledge. Limited knowledge about what creates innovation. Limited access to capital in environment that can contribute with capital.	High level of education and sufficient knowledge about what creates innovation. Easy access to capital.
	Organization	Weak innovative milieus in the organizations. Organizations with poor finances and limited financial security.	Strong competence in the businesses and organizations. Solid finances with room for leeway.
	Individual	Weak competence among the individual employees.	Good competence among the individual employees.
Structural factors	Society	Weak market organization, far from market. Weak infrastructure. Limited competition.	Good market organization, close to market, globalization. Strong infrastructure. Strong competition.
	Organization	Poorly organized support functions for innovation. Bureaucratic hierarchical organization, NPM-based management systems. Power struggles about localizations, decision-making influenced by politics. Times with solid profits and financial leeway. Large units, separate research units.	Well-organized support functions for innovation. Cluster network organization, partnerships and flat structures. Crisis with focus on the need for action. Leeway in the organization. Small units.
	Individual	Limited authority and autonomy for the individual employee.	Greater degree of authority and autonomy for the individual employee.
Attitudinal and cultural factors	Society	'Inland culture' characterized by cautiousness and inertia. Politicized culture, egalitarian culture.	'West coast culture' characterized by willingness for risk-taking and a rapid life cycle.
	Organization	Bureaucratic culture, culture based on mistrust.	Non-bureaucratic culture with a large degree of trust and acceptance of mistakes.
	Individual	Fear of risk, innovation seen as something unattainable and big. Closed attitude toward environments and novelties.	Willingness to work hard and take risks for one's own ideas. Openness toward environments and novelties.

All the informants point to commercial market competition as the primary driving force for creating innovation in the world. Almost all of the innovation bureaucrats point explicitly to network building, partnerships, clusters and cooperation between different actors and environments as important to the creation of innovation. A majority of the innovation bureaucrats emphasize organizational culture and societal culture, in addition to attitudes and values of individuals, more than finances, formal organizational conditions and competence.

The innovation bureaucrats view the question of which factors influence innovation as both complex and complicated. To some extent the complexity revolves around the fact that there are many different factors that are relevant to the ability to innovate, and partly around the fact that some of the factors, in different given situations, can work either for or against innovation. Easy access to financial capital, for example, is in general seen as a factor that will influence innovation in a positive way, while limited access will have the opposite effect. A male informant with an education within social sciences says it like this: 'Especially here in the interior, capital is probably a limitation. It is important that we manage to find venture capital that can follow the good projects.' At the same time, times of crisis with weak access to capital in the market are described as conditions that can force innovation forward, while times of good capital flow may actually result in a standstill. A male informant from one of the offices of Innovation Norway, with an education in economics, says it in this way: 'Good times do not promote innovation – no one is under pressure or feels forced to do it.'

The complexity and ambiguity in the ways different factors influence innovation are also expressed when it comes to the importance of the market for innovation. Here, some of the informants point to the tension between the market's focus on resource utilization and the need for exploration.[4]

Table 4 below summarizes the complexity of the factors that influence innovation and how their content can be related to the dominant knowledge status.

[4] This is in line with March's classical statement of the difference between exploitation and exploration (March 2008).

Table 4: The content of the doctrines

	Conditions based on newer models of innovation		Conditions based on classical linear models of innovation	
	Inner organizational	**Outer environmental**	**Inner organizational**	**Outer environmental**
Unambiguously good conditions	Open and trusting organizational culture. Tradition for innovation.	'West coast culture' with high acceptance of risk taking.	Good competence. Flat and informal organizational structure.	Closeness to market.
Ambiguous conditions	Historical ties.		Poor economy. Crisis. Organizational size. Strong economy.	Strong competition. Localized in the in rural areas. 'Good times'
Unambiguously poor conditions	Bureaucratic organizational culture. Culture characterized by mistrust.	Inland culture focusing on egalitarianism – politicized culture.	Strongly formalized and hierarchical organizational structure. Weak competence.	Not close to the market.

The bureaucrats have different perceptions of themselves as professionals when it comes to innovation and whether or not innovation is an independent field. Those who are employed in the Trade and Industry Departments and the offices of Innovation Norway are all concerned with this, and several of them refer directly to Schumpeter or other theorists when reflecting on the concept. A male informant from one of the Trade and Industry Departments, with an education within economics, says it this way: 'I have drawn quite a lot upon Ola Spilling who has worked with classical theories concerning innovation, which again are based on other theorists.' These employees see innovation as an independent field, and themselves as professionals in that field. Among the informants in the Agricultural Departments, on the other hand, these perceptions are significantly weaker and nobody sees him or herself as a professional in the field

of innovation. One of the male informants, with an agricultural education, says it like this: 'The concept is somewhat academic and theoretical, far removed from my everyday life – and because of this I have never been concerned with the definition of innovation.' In general, for the agricultural bureaucrats it is far more important that it is their own experiences over time with working to achieve innovation that constitute the foundation of what they actually do.

There are also systematic differences regarding whether or not individual factors inhibit or promote the possibilities for innovation. The informants in Innovation Norway and the county administrations believe that a peripheral location, in terms of few people and few businesses – far away from the larger markets, will lessen the opportunities for innovation, while centrality and increased organizational size and strength will enhance such opportunities. A male informant from one of the Innovation Norway offices, with an education within economics, says the following: 'It is when many people are gathered that you frequently see new groupings of people with certain hobbies and interests that may turn out as purchasing power and a market for this and that. And that means that most of the innovation necessarily has to occur in large cities with several different kinds of people.'

In the Agricultural Departments, on the other hand, peripheral location is pointed out as something that can have a positive effect on the opportunities for innovation, and the idea that such opportunities are limited in the periphery is seen as a myth. In general, the perception of inhibiting and promoting factors is more uniform among the agricultural bureaucrats, and examples of what inhibits and promotes innovation are more specifically related to a sector (agriculture), than among the other informants. Collectively, two general sets of doctrines take shape: One that applies to employees in the Agricultural Departments and one applying to employees in the Innovation Norway offices and the Trade and Industry Departments.

Table 5: Typical doctrine of action in the Trade and Industry Departments and the Innovation Norway offices

Characteristics of those meant to contribute to/create innovation	Innovation is an independent field with a specific knowledge base, and we innovation bureaucrats are professionals in this field because we have acquired this knowledge.
What it takes to create innovation	Many factors influence innovation; individual, organizational and community-based. Their influence is complex. In general, factors like traditions, culture and historical experiences are more important than formal organization, finances and competition.
Where innovation is created	Innovation is more easily created in large environments and geographical centres very close to the market. Small and scattered units in the periphery inhibit the opportunities for innovation.

Table 6: Typical doctrine of action in the Agricultural Departments

Characteristics of those meant to contribute to/create innovation	Innovation is not an independent field and we innovation bureaucrats are not professionals when it comes to innovation. Our competence lies in using our experience as professionals in agriculture to think about innovation within our specific field.
What it takes to create innovation	Many factors influence innovation; individual, organizational and community-based. Their influence is complex. In general, factors like traditions, culture and historical experiences are more important than finances and competition.
Where innovation is created	Innovation can be created just as well in small environments localized in the periphery as in large environments localized centrally in the interior.

The evidence shows that the innovation bureaucrats clearly relate the question of what it takes to create innovation to finances, and that they all emphasize that the image of what inhibits and promotes innovation is complex. This complies well with the formal tasks of the organizations and the knowledge status in the field of innovation, cf. point 3.1. This indicates that the instrumental factors in general have had a clear influence on the content of the doctrines. The instrumental factors can also contribute to the explanation of the differences in the perceptions. The Agricultural Departments' formal tasks are much more sector-specific than those of the other departments, and this may explain the uniformity of the perceptions in the Agricultural Departments. The fact that the agricultural bureaucrats do not see themselves as professionals in the field of innovation or innovation as an independent field, and have opinions about inhibiting and promoting factors that intersect the knowledge status, may be explained by the fact that the function of the Agricultural Departments' instrumental set of tasks is to promote the interests of the periphery. It was mentioned in the introduction that the agricultural segment is one of the densest in its community of interest among the industrial segments in Norway. From this perspective, it will be difficult to unite these segmented interests with the dominant knowledge status, where it is pointed out that large units and different forms of centralized organization promote innovation while the opposite hinders it. It is difficult to evaluate whether this 'deacademization' has contributed to the fact that the perceptions are partly in conflict with the dominant knowledge status, or whether it is the conflict with the knowledge status that has led to the 'deacademization' with the agricultural bureaucrats. I shall return to this in the analysis of the importance of cultural factors for the doctrines of action.

Analysis relating to research question 2

In the second research question I focused on whether or not the perceptions were characterized by being interpretations of the knowledge status anchored in and adapted to more informal features of the organizations, like their culture and history and the individual bureaucrats' demographic characteristics. In this question there is an implicit expectation that any differences in perceptions may be traced back to differences in the organizations' histories and cultures, or to variations in the bureaucrats' demographic characteristics.

So far the analysis has shown that the content of the doctrines is well embedded in the knowledge status. The content is not, however, a pure reflection of the knowledge status. Few bureaucrats refer directly to the various models of innovation. The relationship is more indirectly expressed by referring to what innovation means to them, by using certain concepts and expressions, and by pointing out certain factors

and ways of reasoning which are in line with the various innovation models. Their understanding is therefore characterized more by being an interpretation of the knowledge status than a reflection of it.

The gender of the innovation bureaucrats seems to be relevant when it comes to which factors are emphasized. Seven out of the eight female interviewees emphasize 'soft' factors like culture, historical experiences and traditions the most. Consequently, the women constitute a majority in this group who emphasize `soft` factors, in spite of the fact that they are a clear minority in the total population of interviewees. Gender seems to have contributed to differentiating the content of the doctrines regarding which innovation factors appear to be the most important. The women's emphasis on cultural and more informal conditional factors is in accordance with other studies of administration policy, showing that hierarchical and formal organizational factors are better suited to a male form of logic, while flexible and informal factors are better suited to a female logic (Rothstein, 2001).

The systematic difference between the agricultural bureaucrats' doctrines and those of the other bureaucrats can, as mentioned above, be explained by this department's close relationship with the agricultural segment of the population and the strong interests this segment represents. An industrial segment does not only represent a set of interests, but also a historical lineage with a culture and a set of values (Olsen, 1978). The agricultural segment has, through its history, its culture and values probably been characterized by having a positive view of opportunities in the periphery. The knowledge status, with its emphasis on a certain organizational size and centralization as a promoting factor seems, then, to have been rejected because it is too far removed from what the Agricultural Departments represent historically and culturally. The consistent deviation in the agricultural bureaucrats' perceptions can in this way be explained by the fact that the offices of Innovation Norway and the county administrations' Trade and Industry Departments on one hand, and the Agricultural Departments on the other hand, place themselves differently in the centre – periphery dimension, which is one of the classical divides in Norwegian politics (Narud & Valen, 2007). As mentioned in the introduction, our selected Agricultural Departments also have employees with a much more uniform educational background than the employees in our Trade and Industry Departments and Innovation Norway offices. In my opinion, these observations support the image of the strong community of interest in the agricultural segment. It is therefore probable that the agricultural segment meets expectations that are both more unambiguous and somewhat different, in terms of values and attitudes, than the expectations other segments of business, for example industry or

service, meet. In my opinion this may have contributed to making the perceptions of the agricultural bureaucrats somewhat different, and more unequivocal, than those of the bureaucrats from Innovation Norway and the Trade and Industry Departments. Collectively, it appears as if there is an interaction between cultural and instrumental factors that have led to the fact that the doctrines of the agricultural bureaucrats clearly distinguish themselves from the doctrines of the employees in the Trade and Industry Departments and the offices of Innovation Norway. It is somewhat surprising to see that the educational background of the individual employees does not seem have an important impact on the content of the doctrines. Several other studies of public bureaucrats' behaviour have shown this kind of importance (Tranøy & Østerud, 2001). Based on this research it would be possible to expect that those with an education in the field of economics would view various significant conditional factors for innovation differently than those with, for example, an education in the social sciences. This is not the case. To the contrary, the evidence here shows that the only informant in the Agricultural Departments with an education in the social sciences has a doctrine typical of the agricultural informants, and different from the doctrines of action of the remaining informants educated in the social sciences. Likewise, the evidence shows that the only informant with an agricultural education in the offices of Innovation Norway has a doctrine in line with the doctrines of the other informants from Innovation Norway, and which therefore differs from the other informants with an agricultural education who are employed in the Agricultural Departments. Several studies have shown (see for example Tranøy & Østerud, 2001) that instrumental factors like formal belonging and instrumental interests have a very strong influence on public officials' behaviour and can override a potential influence through educational background. Likewise, my findings indicate the possibility that education first becomes strongly influential when it becomes collective in character. This is in line with later studies of how bureaucrats' education influences behaviour (Christensen & Lægreid, 2009).[5] In this case, this has contributed to strengthening the uniformity of the perceptions when they are typical of a strong segment like agriculture.

Analysis relating to research question 3

In the third question I focused on whether the content of the doctrines is primarily characterized by fashionable perceptions and myths regarding what inhibits and promotes innovation. Implicit in this question is an expectation that differences in perceptions will be more

[5] The findings may also indicate that the three types of education do not have a differentiating effect on perceptions having to do with the field of innovation.

random, and not vary with either formal or informal features of the bureaucrats' organizations or demographic characteristics such as education and gender.

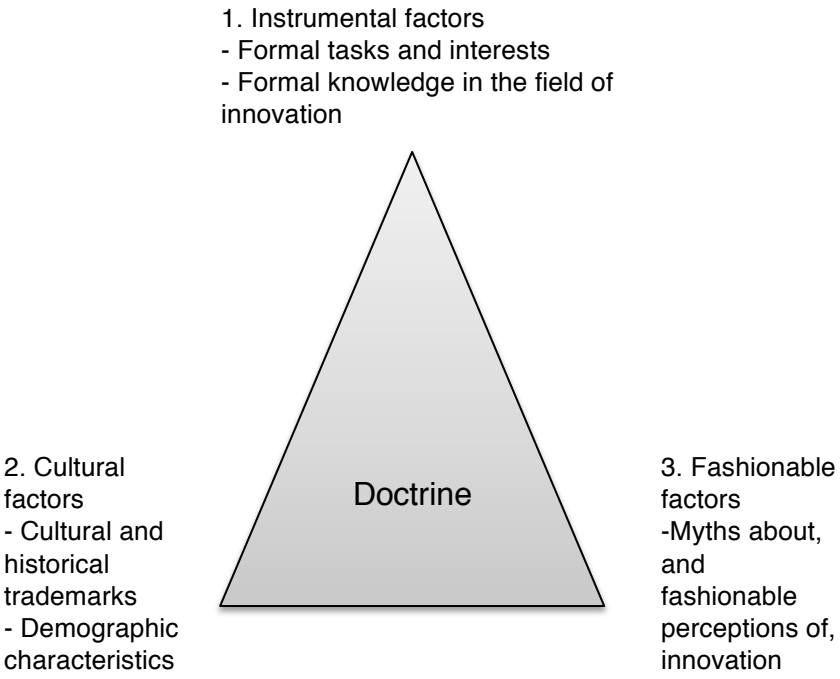
In the rhetoric used by the innovation bureaucrats themselves when they reflect on what creates innovation, concepts and expressions like 'knowledge clusters', 'clusters' and 'networking' appear more often than concepts and expressions like 'economic restrictions' and 'formal organization'. This leads us to the understanding that the innovation bureaucrats' perceptions of what inhibits and promotes innovation are more in line with the newest and most modern innovation models than with the classical models. It therefore appears that the innovation bureaucrats' own opinions about innovation are influenced by what is fashionable. The empirical findings also indicate that innovation bureaucrats perceive innovation as a fashionable trend that everybody must speak of in positive terms. One informant with a background from social science who works in one of the Trade and Industry and Trade Departments states that: 'It (innovation) is a modern concept – it is in. It's not legitimate to be non-innovative'.

If we look more collectively at the individual bureaucrats' reflections when it comes to what they see as conditions for innovation, we can also see that the perceptions seem to have a 'personal touch', only partly determined by formal structure, culture and demography. The individual informants' doctrines of action therefore have an individual touch causing them to vary independently both of the education and gender of the individual bureaucrat and independently of formal and informal features of the specific organization the bureaucrats belong to. This is precisely what the third research question expected to find.

Summarizing analysis

The content of the doctrines appears to be characterized by having three different foundations related to the study's three sets of independent factors. Figure 2 below illustrates this.

Figure 2: The three foundations of a doctrine.



The first foundation is the most obvious and the most consistent with the instrumental tasks assigned to the organization and the general knowledge status within the field of innovation. The knowledge status seems to contribute to the facts that the doctrines contain different kinds of factors that inhibit or promote innovation, and that the answer to the question of what it takes to create innovation is complex and complicated. The organizations' instrumental tasks, and the interests related to them, have contributed, among the agricultural bureaucrats, to doctrines that are more sector-specific, and also to the way that their doctrines, in some areas, contrast with the knowledge status. The factors in foundation 2 have contributed to the fact that the doctrines are not characterized by being pure reflections of the knowledge status, but are instead results of interpretations of the knowledge status along with the formal tasks assigned to the organizations. The breadth of the knowledge status and of the formal tasks, when it comes to innovation, have created a good scope of action for different interpretations, and have therefore offered good

conditions for the ability of foundations 2 and 3 to influence the content of the doctrines. The genders and individual experiences of the bureaucrats, in addition to the culture and history that they represent, constitute the most important bases for the interpretations. In the Agricultural Departments, culture and history have caused the knowledge status to be partially omitted from the interpretations, and that the doctrines are only partially related to the subject matter of innovation. Interaction between factors from foundations 1 and 2 has caused two sets of doctrines to develop, one for those working in the Trade and Industry Departments and Innovation Norway offices and one for those in the Agricultural Departments. Generally, education seems only to influence the doctrines when it is a part of a mutual cultural factor. Foundation 3 has contributed to both sets of doctrines having a 'personal touch', and also to the presence of more of the newest and most modern innovation models in the doctrines than of the older models. The doctrines prescribe relatively different 'cures' to create innovation, and it is therefore highly likely that the variance between the doctrines will be significant for the implementation of innovation policies. In general, the study also shows that there is a systematic difference between female and male innovation bureaucrats in the emphasis put on conditional factors for innovation, which indicates that gender is a relevant variable for studies of innovation – at least when assuming an administrative political perspective. The fact that the institutional influence is particularly clear when the bureaucrats belong to the County Governors' Agricultural Departments, can be interpreted as being an indication that the importance of institutional belonging increases when it represents strong, segmented interests. Other studies have shown that the municipalities have just as much trust in the County Governors Agricultural Departments as they have in the counties' Trade and Industry Departments when it comes to questions concerning support for innovation (Teigen et al., 2010). This can indicate that the less subject matter-oriented doctrines of the Agricultural Departments, regarding innovation, resonate well in the municipal innovation milieus, and that they are just as competent in inspiring confidence in the municipalities as the Trade and Industry Departments' more subject matter-oriented doctrines are.

Conclusion

On the basis of the research literature regarding what characterizes administrative behaviour, this study has assumed that administrative doctrines are characterized by instrumental, cultural and fashionable factors of influence. The study shows that the doctrines of the innovation bureaucrats are influenced by all three factors, but that particularly the instrumental and cultural factors have been important for the content of the doctrines. Interaction between the cultural and

institutional factors of influence has caused two sets of doctrines to develop, one in the Agricultural Departments and another in the Trade and Industry Departments and Innovation Norway offices. The two doctrines represent perceptions of innovation that fit both linear and interactive models of innovation, but, taken together, the doctrines more closely approximate the understanding of innovation put forth in the interactive models.

The differences between the two sets of doctrines are significant. In Marsh and Olsen's (1995) terminology, the two doctrines represent two types of 'appropriate logic' regarding what it takes to create innovation. Assuming that there is a correspondence between doctrines and actual behaviour, this implies considerable differences in the implementation of innovation policies. The reason for studying the doctrines in the chosen organizations was to examine whether the organizations' dissimilarities in interests and traditions they represent, would impact the doctrines. The study shows that dissimilarities in the relationship with industrial segments have significance for the doctrines. The importance of institutional belonging increases if it represents strong segmented interests. The doctrines are practically disconnected from the field of innovation when the doctrines comes into conflict with other policy areas that have been entrusted to those who carry out innovation. In all, the study shows that exercising the public regional innovation policies, at a public official's level, is primarily characterized by a mix of more or less subject matter-oriented perceptions, from the perspective of the individual official, about what creates innovation, and the specific interests to which the institutions set to implement the policies are historically attached. Concerning the implementation of the innovation policies, the following paraphrase of Rokkan's classical formulation may be suitable: *Academic knowledge matters, but interests and history decide*. The study therefore supports Olsen (2006), who calls for a greater focus on power and interests in studies of innovation. The findings imply that the way in which the public apparatus is functionally and demographically organized impacts the implementation of innovation policies on the regional level. In other words, it seems as if there is a relationship between administrative policies and innovation policies on the regional level. In this way the study indicates that the newly executed reform of government administration, where some of the functions within the regional innovation management have been moved from the County Governors to the counties, may have a greater significance than is claimed by some in the general debate about this administrative reform.

The perspective of this study has been Bottom-Up. Independent variables selected from organization research and theory give robust and relevant knowledge of what actually characterizes and influences

implementation of innovation policy at the regional level in Norway. The findings indicate that the lasting and stable action doctrines of the officials in charge of implementing the policies influence, and to some extent even transform, signals of general policy. The relationships of power and influence, that historically have characterized the policy areas that the implementing body is connected to in a more general way, influence these action doctrines in their turn.

The study thus supports other implementation studies that show the difficulty of distinguishing policy-making from policy implementation, as two separate phases (Lane, 2000). In addition, the findings support the implementation perspective that emphasizes relationships of power and influence in the study of how public policy is put into practice (Barrett & Fudge, 1981; Olsen, 2006)

For policy-makers, the study suggests that they should be concerned with what constitutes the doctrines of the officials charged with implementation of specific policies. The study also suggests that it is useful to have a pragmatic attitude to the kinds of variables defined as independent, when the goal is to investigate how public policy is actually implemented. Last but not least, the study indicates that the concept of doctrine of action may be relevant in this context

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