

**Subtheme:** S13.1 Skills, knowledge and experience required for ....

**Title:** ‘Between a rock and a hard place’: Exploring societal responses to the managerial prerogative in entrepreneurial universities.

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**Title:** ‘Between a rock and a hard place’: Exploring societal responses to the managerial prerogative in entrepreneurial universities.

**Abstract:** Movement from the traditional university to the entrepreneurial university has been driven by societal expectations for an increasing role in setting the science agenda and a greater return on the public investment in science. Whilst the literature has explained how these changing expectations have shifted the norms that govern university managements’ and scientists’ behaviors, and the roles of university management and scientists in the innovation system, scholars have not paid attention to societal responses then those changing roles are employed. Using content analysis of media data we analyze public responses to university managements’ use of prerogative to discipline scientists in Denmark and New Zealand. We find a division of opinion regarding the use of managerial prerogative to sanctions scientists’ behaviors.

**Key works:** Entrepreneurial university, Public understanding of science, Research management, Entrepreneurial norms, Content analysis.

The development of the entrepreneurial university in which the quest for new knowledge production is combined with the capitalization of knowledge (H. Etzkowitz, A. Webster, C. Gebhardt, & B. Terra, 2000) has been understood as partly the result of expectations from society to secure the relevance of research undertaken for taxpayers money (Gulbrandsen & Smeby, 2005; Lehrer & Asakawa, 2004a). One way universities can respond to pressure from society to become more entrepreneurial is by introducing new management structures and mechanisms (Ern-Kjhlhede, Husted, Monsted, & Menneberg, 2001).

Managerial structures and mechanisms replace – and are often in direct conflict with – Mertonian norms that to a large extent have governed the behavior (or at least the behavioral ideology) of individual scientists so far (Ziman, 2000). As scientists through their education and peer pressure are socialized to subscribe to Mertonian behavior, it is not surprising that individuals who already well established in their careers tend to demonstrate some resistance towards the norms of entrepreneurial science (Etzkowitz, 1998) and Mode 2 research (Nowotny, Scott, & Gibbons, 2001a). This resistance is already well described in the literature.

What is less well understood, and what is the focus of the present paper, is the extent to which society is willing to accept the consequences that applying managerial prerogative and implementing new management structures have for individual scientists and science of universities. Whereas the pressure for entrepreneurial universities clearly demands new behaviors from research organizations, there might be less willingness to abandon the ideal of the independent scientists who is responsible towards Science first and foremost. This motivates the following research question: *How does society perceive and react to university research management that demands more corporate behavior from individual scientists?*

To examine this question, we study the media coverage of cases where individual scientists have been in conflict with their respective employing organizations. Using content analysis of print and electronic news we examine reports, editorials, letters to the editor, blog entries and blog comments as public statements about society's views on the relationship between university research management and individual scientists. Whereas media coverage is a particular form of public discourse, in the context of our paper it provides evidence of the kinds of public arguments and concerns which are relevant to understanding the societal expectations towards scientific organizations and individual scientists.

To address this question the paper begins to reviewing Mertonian and Entrepreneurial norms that govern scientists' behavior and outlining the managerial challenges to managing scientists that these differing norms pose. Next, we analyze public debate of universities' management of scientists in two countries over a five-year period. Finding variation in the use of Mertonian and Entrepreneurial principles to challenge or support universities' management of scientists, we discuss the differences in public view, we discuss the implications for management of the entrepreneurial university.

## **State of the art**

To understand the relationship between university and society, it is necessary to understand the development of the university from the traditional institution governed by CUDOS norms to the entrepreneurial institution governed by knowledge capitalism. In this section we review how the traditional university governed by CUDOS norms (Merton, 1973) and the entrepreneurial university governed by entrepreneurial norms (Etzkowitz, 1998) relate to society.

Traditional organization of universities was premised on a scientific ethos governed by norms of Communalism, Universalism, Disinterestedness, Originality and Skepticism, commonly termed as CUDOS norms (Merton, 1973). Communalism assumes the results of scientific work are the common property of the entire scientific community because they are public knowledge; Universalism assumes that all scientists can contribute to science; Disinterestedness assumes that scientists have an arms-length attitude towards their findings and withhold personal beliefs when presenting results; Originality assumes that scientific claims contribute something new in different forms, including new problems, approaches, data or theory; and, Skepticism assumes that all scientific claims are scrutinized before their acceptance.

In the traditional university there is limited role for university management because the CUDOS norms govern the actions the science community ensuring individual scientists behave according the expected standards of their peers. Furthermore, the training and socialization of new scientists is governed by the science community (Ziman, 2002). Therefore, in governing scientists there is limited role for university management.

The relationship between university management and society is also weak. In the traditional university, the institution is patronized the public and private funding because it is assumed that scientific knowledge is an ends in itself (Ziman, 2002). From this perspective the university management provides one-way communication to the society reporting on the outcomes of societal patronage. Similarly scientists have a one-way relationship with society; having received patronage from public and private funding their role is to uphold their “moral duty” to perform science according to the CUDO norms, which contributes new knowledge as a public good (Ziman, 2002, p. 51). However the traditional university governed by CUDOS has been criticized for concentrating on knowledge production only.

The criticism that the traditional university can contribute more to society through more strategic use of public and private patronage has lead to a number of calls for universities to focus on knowledge commercialization, as well as knowledge production (Etzkowitz & Leydesdorff, 2000; Leydesdorff & Meyer, 2006). Taking account of knowledge commercialization has challenged university governance by CUDOS norms, introducing new assumptions about entrepreneurial action. Whilst the speed of change from the traditional university to the entrepreneurial university has varied across countries (Lehrer & Asakawa, 2004b), a set of common assumptions govern the entrepreneurial university.

The entrepreneurial university is governed by the creation and commercialization of knowledge. Commercialization of science by universities is assumed to be a positive action that increases the contribution of science to society, demonstrating greater value of public and private patronage. Because entrepreneurial universities seek to make a great contribution to society, increased ties between universities and industry are assumed to enable universities to understand and respond to societal needs (Etzkowitz, 1998). Entrepreneurial norms impact the relationship between university and society through the role of university management and the role of scientists.

Entrepreneurial norms assume that universities make strategic decisions about their knowledge production and commercialization activities. These areas require governance mechanisms that are beyond the CUDOS norms. Furthermore, they require managerial prerogative to take decisions for each university and to make subsequent resource allocation decisions (Clark, 1998). This creates a strong role for university management in setting the vision and conditions for knowledge commercialization. At the same time university management face the ongoing challenge of balancing competing demands between knowledge production and knowledge commercialization (Ambos, Mäkelä, Birkinshaw, & D'Este, 2008; Tuunainen, 2005).

Entrepreneurial norms also influence the roles of scientists in the university. Increasingly scientists are expected to engage in knowledge commercialization, which operates under a different set of assumptions to the CUDOS norms that scientists are socialized into through their training (Tuunainen, 2005). In addition, Mode2 has expected scientists to develop relationships with other stakeholders, including industry and the general public, to inform their research activities (Gibbons et al., 1994; Nowotny, Scott, & Gibbons, 2001b; Zalewska-Kurek, Geurts, & Roosendaal, 2010).

Despite the ongoing attention to development of the entrepreneurial university and the effect that changing norms have on the role of university managements' and scientists' roles, these seem to be not attention paid to the role of society in this development. Given the increasing demand from society for a growing role in setting the direction of public sciences and increasing expectation for return on public investment in science, this is a surprising situation.

## **Method**

Public policy interest in the entrepreneurial university is a widespread phenomenon that has led to explicit policy-induced top-down changes in the many national innovation

system. We focussed on cases in Denmark and New Zealand as countries that have experienced these changes. Both countries, which are of similar geographic and population size and where universities are perceived by society as rather homogenous, have experienced public policy interventions to encourage the entrepreneurial university that were implemented around the same time. In Denmark a 2003 law change affected the governance of university research. By 2006 the new legislation was fully implemented across the Danish university system. In New Zealand, a growth and innovation framework was launched in 2002. Policy instruments to support the framework were introduced during the 2003-2006 period and affected the New Zealand, university system. As well as these similarities, there are some differences between the countries in regards to R&D investment and cultures of debate. Denmark has a strong industrial research tradition (1.9% of GDP) and a culture of open and consensus-seeking debate, whereas New Zealand has almost non-existent industrial R&D investment (0.4% of GDP) and a culture of conflict avoidance. Given that institutional changes take some three-to-five years to filter down and influence organizational practices, we focus on cases that were reported during the January, 2007-December, 2010 period.

### **Content Analysis**

One of the challenges to understanding how society views the development of the entrepreneurial university is to identify data that represents these views. We chose to use mass media data in the form of newspapers and electronic blogs because these are channels that society can read to inform their opinions and write to share their views (Berendt, nd). Furthermore, mass media data is used to understand a range of organizational issues including organizational legitimacy and reputation (Deephouse, 2000; Deephouse & Carter, 2005), the construction of leadership (Chen & Meindl, 1991; Fu & Tsui, 2003) and impression management (Dutton & Dukerich, 1991; Elsbach, 1994). Policy scholars have also applied content analysis to investigate a range of issues, such as policies associated with skilled human capital, particularly scientific and technical human capital (Davenport, 2004), explaining the differential information effects on the adoption of the competing technologies (Theoharakis, Vakratsas, & Wong, 2007), deducing various ways the openness concept has been conceptualized in the innovation literature (Dahlander & Gann, 2010), and, examination of the longitudinal shift of research from a public to private good (Toleubayev, Jansen, & van Huis, 2010)

### **Sampling: Step One**

Our sampling of news cases from Denmark and New Zealand involved a two step process. First, we used experts from Denmark and New Zealand to identify news stories where society has challenged a university's use of managerial prerogative to reproach the behavior of an individual scientist. Specifically by emailed we invited seven experts asking them to identify all cases related to university management of individual scientists reported in the media between January 1<sup>st</sup> 2006 and December 31<sup>st</sup> 2010. Of the seven experts five agreed to identify cases according to our instructions. The other two did not reply to our request. The five experts identified eight cases between them; five in Denmark and three in New Zealand.

### **Selecting data on the five cases: step two**

In the second step we systematically searched daily national newspapers and blog sites for materials written about the seven news stories. Searching and collecting this information enabled us to confirm that news stories identified by the experts were relevant to the research question and provided the data for content analysis. However, we starting reading about the cases, we realized that one case from Denmark and one case from New Zealand did not meet our criteria. This left us with five cases that represented all cases of university management of individual scientists reported in the media over the five-year period.

For the five cases we systemically searched the three main news papers in each country, using news reports, editorials and letters to the editor. We then searched GoogleBlogs, using blog entries and blog replies. Search in newspapers and blogs was undertaken using consistent search strings. Additional details about the search criteria are available in Figure 1 in the appendix.

### **Coding the data: step three**

Next data was coded for a number of variable. These included: Actor type, recognizing different actors in the Triple Helix with interests in university management; Number of actors, recognizing that multiple actors can be reported in newspapers and multiple actors can reply to blog entries; Nature of the claim made regarding the case, recognizing there is likely to be variation in support of the university management's actions; Substantiation of claims, recognizing that actors do not always justify their claims, and Content of the claim, recognizing that Mertonian or Entrepreneurial can be used to substantiate claims, as well

as other arguments, which might or might not be distinguished. As well as these central aspects we also coded for control variables, including; case number (ie. DK1, NZ1); data number for each newspaper and blog item; article title; and, year, month and day.

In the process of coding we identified a number of newspaper and blog items where the university management story was a peripheral issue. In these situations we omitted the items from the data. The total number of omitted items was three stories. We had 322 items, with 545 actors, which is the data we analyzed. Additional details about the coding are available in Figure 1 in the appendix.

### **Analysis technique**

Data was analyzed using a content analysis using the actor as the unit of analysis. Using actors as the unit of analysis allowed us to investigate when multiple actors were reported in news reports and blog entries, the nature of actors claims, whether claims were substantiated, and what principle were used in the justification. Content analysis in this way enabled us to investigate how different actors that make up society perceived and reacted to university research management that demands more corporate behavior from individual scientists.

### **Findings and interpretation**

Some clear patterns can be seen when the relationship between actors, the nature of their claims, whether claims are substantiated and how they are justified is investigated. Of the 545 actors, the majority of views are expressed by individual citizens (30%), followed by the central organizations in the stories (17%) and the central scientists in the stories (14%). Interestingly, 68% of individual citizens' views are blog replies, which present an interesting issue to scholars trying to understand societal views on universities management, as well as the university management itself.

Claims were substantiated by 478 of the 545 actors. We assumed that central organizations and the central scientists would substantiate their claims, so it is interesting to look at what actors were less likely to substantiate their claims. Individual citizens most commonly made unsubstantiated claims, although with only represented 0.30% or 16 of the 545 views.

The 545 actors have divided views about the nature of the issue in the stories. Overall, the majority of actors view the universities management of individual scientists as

a 'very or somewhat negative' issue, meaning they do not agree with the university managements' actions (See Figure 2 in the appendix). However, when nature of the issue is broken down by actor, there are clear differences of opinion. Whilst 70% of individual citizens made substantiated claims that the universities management action was 'very or somewhat negative', 17.5% of individual citizens made substantiated claims in favor of the action (See Figure 3 in the appendix). This suggests there are differing opinions about the university management in the Triple Helix that require closer attention from scholars investigating the movement towards entrepreneurial universities.

Analyzing the findings of actors' views on five stories where universities management of individual scientists has been public debated through newspapers and blogs in Denmark and New Zealand in the past five years, suggests there are differing views. Specifically, actors differs in the view on the universities management actions; while the actions were seen as predominantly negative with actors disagreeing with them, there is a minority who believed the universities management actions were right. In addition, actors used different principles to substantiate their arguments, with Entrepreneurial and Mertonian principles were evenly (see Figure 4 in the appendix).

## **Conclusion**

Movement of university governance from Mertonian norms towards Entrepreneurial norms that support knowledge capitalization has been occurring for some time now knowledge (H. Etzkowitz, A. Webster, C. Gebhardt, & B. R. C. Terra, 2000). In promoting knowledge capitalization, entrepreneurial norms have also influenced how universities manage their individual scientists (Hansson & Mønsted, 2008; Morris, 2002; Zalewska-Kurek, et al., 2010). However, what is less well understood is the extent to which society is willing to accept the consequences that Entrepreneurial norms have had applying managerial prerogative and implementing new management structures have for individual scientists and science of universities. This led us to ask the question. *How does society perceive and react to university research management that demands more corporate behavior from individual scientists?*

Analyzing the five stories where universities management of individual scientists has been publically debated in the media over the past five years, our content analysis shows there is a tension between society's support of university managements' treatment of

individual scientists, which have been associated with institutional and organizational changes toward the entrepreneurial university and expectations that individual scientists be treated as society's independent critics. This tension suggests the evolution from traditional to entrepreneurial university is not as clear-cut as is sometime suggested in the literature. Whilst society can be supportive towards commercialization and a Mode 2 research agenda, there are boundaries as to far those changes can be implemented. These cases suggest that parts of Danish and New Zealand societies retain Mertonian views regarding the behavior of individual scientists.

Whilst the cases were selected for theoretical reasons and cannot be generalized, the findings suggest the tension between society's competing expectations present important challenges for university research management. On the one hand society's expectations of change infer there is support for university management using managerial prerogative to set and guide the strategic direction of research. Yet, on the other hand, society's expectation of stability regarding the traditional role of the individual scientist as the public intellectual remains. This leads us to conclude that university research managers face a similar situation to the Greek myth of Scylla and Charybdis who found themselves 'between a rock and a hard place'. When it comes to societal expectations regarding research management, it is not clear how research managers can influence their organizations toward the entrepreneurial university without applying managerial prerogative to influence individual scientists' behavior.

Our analysis suggests that policy makers have to take into account that society is more than industry and students. There are other stakeholders, who can affect the research organizations' license to operate and it is pertinent that policymakers and research managers realize the legitimating of an entrepreneurial university is something that needs specific attention. Just like executives of private companies have had to evolve strategies for corporate communication, research managers also need specific competencies in this area. The 'no comments' strategy that is legally sustained, might not necessarily be enough to develop proper legitimacy around the use of managerial prerogative.

## Appendices

Figure 1: Search Guidelines and Coding Scheme.

Search string: Search the surname and the full name when the specific individual is known and the organisation where it occurred, limited to January 2006 - December 2010, e.g.:

- “scientist concerned full name” + “organisation’s name”
- “scientist concerned last name” + “organisation’s name”

Broaden search when the scientist’s name is not known by using a substitute search term based on the nature of the issue in question, e.g.:

- Sacking, termination, sacked for cases of employment dismissal

Manually sort through articles to include those related to the managerial action to give our sample (n). Once this is complete, count the total number of newspaper articles left. This will be our **n** of newspapers for that case.

*To search blogs*, search the Technorati website and Google blogs.

Search string: Search the surname and the full name, narrowing with relevant terms, or broadening by omitted first name

Manually sort through blog entries and responses to include those related to the managerial action to give our sample (n). Once this is complete, count the total number of blog entries and responses left. This will be our **n** of blogs for that case.

### CODING DATA

Code each piece of data according to the coding scheme (next page) using the Excel spreadsheet provided.

- Sometimes the cells are completed using the drop-down list
- Sometimes the cells are complete by typing or copy-and-paste into the cell

When you are unsure on how to code an article (or a category) please highlight the article (or the category) in the spreadsheet and make a note about your query.

Please note:

1. If Actor Type (G) is “Central scientist” or “Central organisation”, then Nature of claim (I) is not coded
2. Only code Pure Outside country (H) when Actor Type (G) is Pure Outside (otherwise leave blank)

Coding scheme

A	<b>The case</b>	NZ1 NZ2 NZ3 DK1 DK2
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		DK3 DK4 DK5
B	<b>Data number</b>	Give each piece of data a number that associates the individual data to the case, e.g.: NZ1-001 NZ1-002
C.	<b>Article title</b>	Copy and paste the article /blog entry name into the spreadsheet
D	<b>Time line</b>	Code date, month, year
	Year	
	Month	
	date	
E	<b>Type of article</b>	
	News report	
	Editorial	
	Letter to the editor	
	Blog entry	
	Reply to blog entry	
F	<b>Actor number</b>	Code every explicit actor. Number each actor within the article 001.1 If there is one actor in article 1 001.2 If there is two actors in article 1 <b>THIS MEANS THAT EACH ROW IN THE SPREAD SHEET REPRESENTS ONE ACTOR</b> (recognising there can be multiple actors in one article).
G	<b>Actor type</b>	Code all actors that can be identified specifically as individuals or organisations
	Professional body	Unions, Scientific Society, Royal Foundation etc.
	Stakeholder organisation	Other types of organisations with an interest, e.g.: Human Rights, NGOs, animal rights, indigenous groups/iwi (indigenous people)
	University	Spokesperson communicates on behalf of the university
	Research centre/Department	Spokesperson communicates on behalf of the centre/dept
	Public commentaries	Editors, public commentators who have regular columns or are used to give regular analysis on social issues
	Government ministry	Govt official or Minister speaking on behalf of govt (in the ruling party)
	Politicians in opposition	In the opposition party
	Individual scientist	When individual scientist gives view without associating her/him self with 2.1-2.4
	Individual citizen	When individual gives view without her/him self with 2.1-2.4
	No specified actors	STOP CODING THAT ARTICLE
	Central scientist who was central to the managerial action	Including their legal representation***
	Central organisation that was central to the managerial action	Including their legal representation***
	Other	Does not fit any of these categories
	Pure outsider	The actor is identified by him/her/themselves an outside of the country (ie: DK or NZ) OF THE COUNTRY, CODE e.g.; letter to editor "statements will be softened"
H	<b>-&gt; Pure outsider's country</b>	If pure outsider, insert country
I	<b>Nature of claim regarding managerial action/decision</b>	*** We assume the central organisation or the central scientist will support their position but we know they cannot directly comment on the case due to legal reasons. So we will code them and what they say to see if that is the case, but we don't code the strength of the claim.
	Very negative (wrong)	e.g. articles are 'another example of lunacy' 'bring back xxx xxx'

	Somewhat negative	e.g: the editor actor in ‘sacking of xxx a step too far’
	Neutral	
	Somewhat positive	
	Very positive (right)	
	No claim made	e.g. articles where actors say “I can’t talk about that”
J	<b>Claim</b>	
	Substantiated	
	Unsubstantiated	
K	<b>Content of claim</b>	When the actor is in favour of one of these norms. Only coded when the claim is substantiated. Only code for both if they are almost equal (eh: in ‘sacking raise competence issues’ code for merit norms)
	<i>Mertonian principle</i>	Simon – how society actually uses the CUDOS norms Scientists are best at governing scientists (self-governance, autonomy) Communalism common ownership of scientific discoveries, according to which scientists give up intellectual property in exchange for recognition and esteem. Universalism according to which claims to truth are evaluated in terms of universal or impersonal criteria, and not on the basis of race, class, gender, religion, or nationality Disinterestedness according to which scientists are rewarded for acting in ways that outwardly appear to be selfless (arms-length from the results) Organized scepticism all ideas must be tested and are subject to rigorous, structured community scrutiny
	<i>Entrepreneurial principle</i>	Etzkowitz 1998 the norms of entrepreneurial science R Policy Strategic priorities, strategic agenda, commercialisation Intellectual Property ownership Managerial prerogative Relevance. ‘human assets’ (human capital, social capital)
	<i>Other</i>	Other principle that does not fit with Entrepreneurial or Mertonian
	<i>Inconclusive</i>	Cannot be conclusive based on what is written

Figure 2: Type of Actors

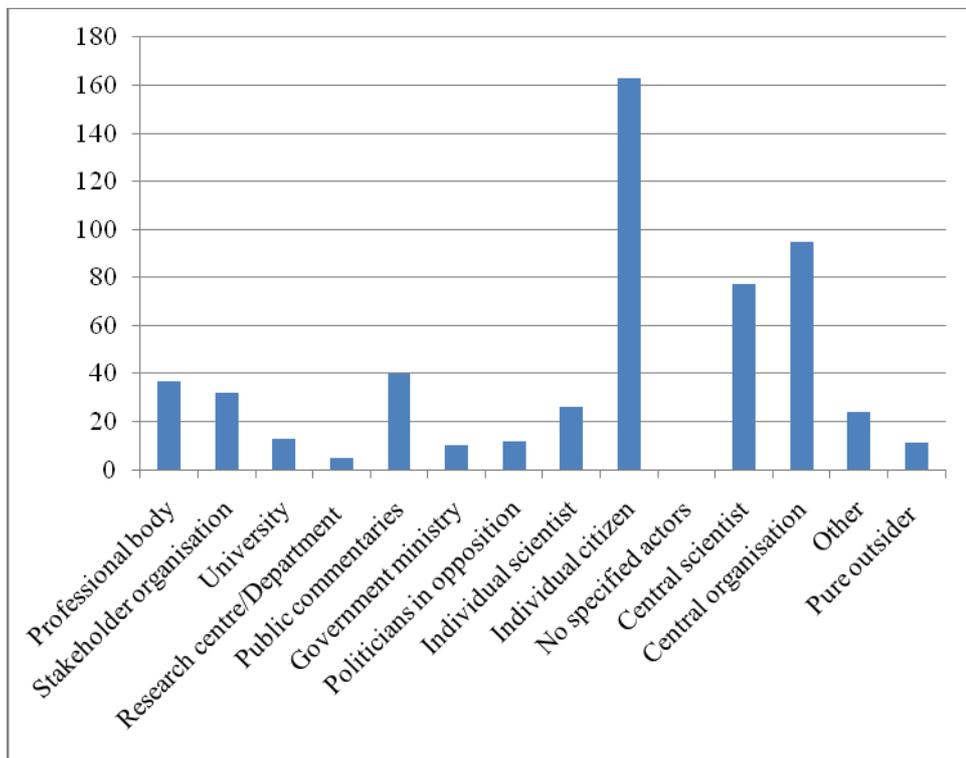


Figure 3: Actors your view of the story

<i>Actors with substantiated claims*</i>	<b>Very and somewhat negative</b>	<b>Neutral</b>	<b>Very and somewhat positive</b>
Professional body	26	4	1
Stakeholder organisation	24	3	0
University	4	1	1
Research centre/Department	4	0	0
Public commentaries	31	1	3
Government ministry	9	0	0
Politicians in opposition	7	0	2
No specified actors	0	0	0
Central scientist	8	0	0
Central organisation	4	0	28
Other	10	0	0
Pure outsider	11	0	0
<b>Total of substantiated claims</b>	<b>271</b>	<b>9</b>	<b>66</b>
<i>Actors with unsubstantiated</i>	<b>Very and</b>	<b>Neutral</b>	<b>Very and</b>

<i>claims*</i>	<b>somewhat negative</b>		<b>somewhat positive</b>
Professional body	0	0	0
Stakeholder organisation	2	0	0
University	0	0	1
Research centre/Department	0	0	0
Public commentaries	4	0	0
Government ministry	0	0	0
Politicians in opposition	1	0	0
Individual scientist	2	0	0
Individual citizen	15	0	1
No specified actors	0	0	0
Other	1	0	0
Pure outsider	0	0	0
<b>Total of unsubstantiated claims</b>	25	0	7

\* Central organizations and Central scientists are not reported here because we assume that they claim their actions are either very positive (central organizations) or very negative (central scientists).

Figure 4: Actors by Principle use in their claim

<b>Substantiated claims*</b>	Mertonian principle	Entrepreneurial principle	Other principle	Inconclusive
Professional body	17	12	1	1
Stakeholder organisation	14	11	1	3
University	5	2	1	1
Research centre/Department	2	1	0	0
Public commentaries	20	6	1	2
Government ministry	6	2	0	1
Politicians in opposition	7	1	0	7
Individual scientist	12	5	0	2
Individual citizen	72	61	2	7
No specified actors	0	0	0	0
Central scientist	34	27	1	4
Central organization	45	51	1	7
Other	6	5	2	3
Pure outsider	1	9	2	0
<b>Unsubstantiated claims*</b>	Mertonian principle	Entrepreneurial principle	Other	Inconclusive
Professional body	1	0	0	0
Stakeholder organisation	0	1	0	1
University	0	1	0	4
Research centre/Department	0	1	0	0
Public commentaries	1	0	0	2
Government ministry	0	0	0	1
Politicians in opposition	0	0	0	14
Individual scientist	1	0	0	2
Individual citizen	3	0	0	14
Central scientist	0	1	0	7
Central organization	3	5	1	7
No specified actors	0	0	0	0

Other	0	0	0	8
Pure outsider	0	0	0	0
	168	118	10	73

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