

Mutual Enhancement or Missed Understanding

Democratic Deliberation and Political Responses to Scientific
Arguments

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Abstract

The prominence of science in contemporary politics is remarkable. The prominence of science may however contradict democratic ideas since a potentially detrimental knowledge and power inequality exist between experts and non-experts. One suggested way of bridging the gap between the two groups is democratic deliberation which is an idea that will be considered in this study. Furthermore, scientific findings are frequently used in public policy-debates in democracies to support different positions. However, the politicians using the science presumably don't generally possess the knowledge necessary to fully understand the science. Apart from producing scientific arguments politicians must also confront arguments. Politicians must then respond to arguments they only partially understand. Against this background, possible political responses to scientific arguments are analysed. In this paper, a typology of possible responses to scientific arguments in public policy debates is developed, using theories about expert-knowledge in politics as well as political argumentation. The compatibility of these responses with democratic deliberation is then examined. The typology is reviewed against a debate regarding wolf politics in Sweden. Six types of response are identified. Their compatibility with democratic deliberation varies very much across the different types.

Key words: Typology, Democratic deliberation, Expertise, Political argumentation, Public debate

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1 Introduction

Today, politicians are heavily dependent on science (Fischer 2009 p. 3). A dependence that is seemingly incessantly growing in a process that may be referred to as a "scientization of politics" (Maasen and Weingart 2009 p. 4). This reliance may however entail consequences for the idea and system of democracy. Political equality is a cornerstone of democracy. Meanwhile, expertise stems in nature from a superior knowledge of certain issues. It is desirable to translate this knowledge into well-founded political action. But this is not entirely unproblematic in a democracy where political equality should prevail and where the power emanates from the people. When the inequality in knowledge is translated into an inequality in power, problems might ensue and this is, in a simplified sense, what Turner entitled liberalism's "last inequality" (Turner 2003 pp. 43-4).

This process has other implications for democracy as it affects another cornerstone of democracy, the public debate. In one central public debate, that between political representatives, science is used to support or oppose positions and proposed policies. However, it can be assumed that if an inequality exists, politicians will not possess this expert knowledge in many, predictably a majority of cases. Politicians must furthermore not only introduce scientific arguments, but since they are confronting an opposition, they must also confront the arguments of that opposition. Hence, a counterintuitive element emerges: Politicians must presumably confront arguments of which they don't possess full understanding.

1.1 Problem statement and research questions

Based on this counterintuitive suggestion, this paper will explore political debates where scientific arguments are common. There is already a literature addressing how science is used in political contexts (Boswell 2009). The issue of how expert-based arguments are confronted has not received as much attention.

Much effort has also been made to study how public deliberation may work to bridge the gap between experts and non-experts (Fischer 2009). A forum in which these issues counteract are public policy debates between politicians. Here, politicians must find ways to confront scientific arguments. Public policy debates are also one of the main forums for public deliberation. Public policy debates are thus an area that is suitable, not just for research about how scientific arguments are confronted in political debates, but also how this issue is related to that of public deliberation.

The purpose of this study is thus twofold. First, the aim is to clarify how politicians confront scientific arguments. This will be achieved by developing a typology of possible responses. Second, these responses will be discussed through a perspective of deliberative democracy. It should be stated that developing a typology of this kind is the main focus of the study. However, the second purpose should not be considered a secondary one. Because by exploring how the various responses relate to deliberation, this paper contributes to the study of the relationship between experts and democracy. While the typology need not exclusively be used for studies in this field; that is the intention here and the second issue is therefore essential.

Thus two questions based on the above discussion may be outlined:

- *How do politicians confront scientific arguments based on science?*
- *How compatible are those responses with a public debate conducted according to a deliberative logic?*

1.1.1 Relevance

Teorell and Svensson (2007 pp. 18-9) specify two demands that have to be met in order for a research problem to have relevance: the internal and the external criteria's. To meet the former the problem must be relevant within the scientific field. To satisfy the latter the study must hold relevance for society (ibid. 2007 p. 18-9).

Developing the typology is highly relevant since it would allow further studies in the field. A proper typology might, in addition to answer the questions posed here, allow a studies about, for instance, how opposition parties argue vis-à-vis government parties, or make studies about how responses differ in different policy areas possible.

The second question presented here is however relevant according to both criteria's. The paper is built on and contributes to existing theories about both deliberative democracy and the relationship between expertise and democracy. It thus constitutes a link in a cumulative effort. This is made possible because of the papers ambitious theoretical aim (ibid. pp. 281-2). The second question also fulfills the second criteria. The issue of democracy and its relationship with an ever more prominent usage of expertise is naturally interesting issues for democratic societies.

1.1.2 Definitions

There are some central concepts in need of definition. Two of the more prominent ones, typology and deliberative democracy, will be discussed more thoroughly later on and will therefore not be treated here. Instead, the two remaining central concepts, expertise and response, will be discussed in this paragraph.

In the research question expertise is to be understood solely as science. The first reason for this is that the counterintuitive element suggested above should be

most prominent in this form of expertise. As Turner points out (2003 p. 52), *scientific truth* is one of the main concepts that provide expert-claims with authority. Scientific truth denote “results accepted as scientifically true by the community of scientists or by all competent scientists speaking as scientists” (ibid. p. 52). This is an authority non-scientists can hardly obtain.

The other reason is more pragmatic. It could for instance be of interest to analyze different types of knowledge to gain understanding about how responses might differ when different types of expertise are used. However, the space provided here does not permit such an approach. A discussion about what should be treated as expertise would require some space, as entire studies have treated the issue (Collins and Evans 2004) without any consensus being reached (Rip 2003). Furthermore, differentiating between various forms of expertise is not central to the questions presented here but rather another problem-area this typology might facilitate studies of.

Moreover, in the research questions a discrepancy could be pointed out between the word ”confront” in the first question and the phrase ”response” in the second. These words are however to be understood as synonymous. To elaborate on concept of response some points regarding argumentation are adequate. Each argumentation contains one standpoint or in other words, a thesis (Björnsson et al. 1994 p. 19). This thesis is supported by arguments. A distinction should be made between pro- and contra-arguments. Standpoints and pro-arguments aren’t responses because both are stated in support rather than in response to a statement within the argumentation. This would leave contra-arguments as a simple definition of response.

This leaves two problems since a contra-argument presupposes a stated opposition. First, this would mean ignoring an argument falls outside of the definition. This is a distressing limitation. However, if a contra-argument can be imagined for every pro-argument, then ignoring an argument would mean that there still is an imagined empty counter-argument. And such a blank argument would indicate that the argument has been ignored. The opposite of such a blank argument would be a substantial argument where an actual reply is made. So a response can thus in this paper be defined as a contra-argument, substantial or empty, to a scientific argument. Within this framework a non-response is therefore not possible.

The second problem is that an acceptance of an argument certainly should constitute a response. Here a pragmatic path will be taken and the working definition of response will be: *a counter-argument, substantial or empty, to a scientific argument or an acceptance in relation to a scientific argument*. This is necessary since acceptance and opposition works according to two complete different logics. Scientific argument will simply be defined as an argument drawing support from science.

2 Methodology

This study has theory-developing aspirations. In order to succeed in such an endeavor previous theories have to work as a starting point even though no attempts to develop a typology of the kind suggested here have been made previously.¹ The alternative to using theory as a starting point would be an inductive method. This is not an appealing approach. This entails the usual problem of induction, that pure observation, which in practice never is all-encompassing, will be highly uncertain (Teorell and Svensson 2007 pp. 48-9).

The method employed here is instead a hypothetico-deductive model. According to this logic the process starts with the formulation of a hypothesis. A series of empirical consequences are then derived which should be observable if the hypothesis is correct. Empirical data is then reviewed and the hypothesis is confirmed, disproven or altered (ibid. p. 50). The development of the typology will be done partly according to this logic. First, after reviewing relevant literature a preliminary typology will be presented. Arguments from a policy debate will then be reviewed. The point of this empirical dimension is neither to confirm nor disprove the preliminary typology but rather to illustrate operational examples and to highlight strengths and weaknesses. Finally a refined typology will be discussed in a perspective of democratic deliberation.

The study is also descriptive in nature. Neither of the questions seeks causal explanations. It is tempting to speak of the *effects* of science on political debates in this context. However such an analysis demands a whole different set of criteria's (ibid. p. 64). For reasons stated above, the problem, as proposed here, is relevant as it is.

2.1 Theory and concepts

The majority of the paper will be devoted to theoretical discussions. Some implications of this fact will be treated here. Except for following a hypothetico-deductive logic the theoretical discussions must also be done in a way which facilitates intersubjectivity. In other words the research process must be transparent (Teorell and Svensson 2007 p. 280). Every section has to be presented in an explicit manner in order to enable reconstruction by readers (Lundquist 1993

¹ This is something I can't guarantee due to the practical impossibility of accessing literally all material published in the field. However, I have researched the issue to the best of my abilities and if there is such a typology, I have not found it.

p. 52). Lacking an existing typology and a definite starting-point, an emphasis on explicitly stated reasons behind every link in the research process is due.

2.1.1 Typology

Typologies have long been present in many scientific disciplines and political science is no exception. Their presence has also brought about a myriad of labels and terms. There is not therefore, somewhat ironically, any established categorization of ways of categorizing (Elman 2005 pp. 295-6). Marradi however, provides a useful distinction between intensional and extensional categorizations. In short, the former takes a conceptual starting-point, while the latter takes a more empirical approach by beginning with a distribution of entities and then a conceptualization of these groups follow (Marradi 1990 pp. 130-1). This study will be structured in an intensional manner. Apart from the benefits of a firm anchoring in existing theories as described above, there are practical difficulties in beginning with empirical observations. An extensional study demands known operational properties along which the cases can be divided prior to conceptualizing. Such properties are not available due to the wanting research of this problem area.

Marradi proceeds by introducing the concept "fundamentum divinionis". This is a property which varies across the different types in a typology. The entities are divided into classes along this property (Marradi 1990 p. 133). Marradi defines a typology as a classification where this division takes place across different dimension or in other words using several fundamentum divinionis (ibid. p. 134). That will be the approach in this paper. Multiple dimensions will be identified and responses will be classified into different types along these dimensions.

The classification should furthermore be both mutually exclusive and exhaustive. This ensures that every entity is "assigned to *one and only one* class" (ibid. p. 133).

Furthermore, it is important to, while pursuing the aims above, make sure that the concepts remain substantial and that the types does not become too wide and contain so much they stop having meaning. In other words, conceptual stretching should be avoided (Teorell and Svensson 2007 pp. 42, 273).

2.1.2 Operationalization

Some points regarding the validity in the operationalization is due since empirical material will be consulted later on. Good validity is obtained when there is a precise correspondence between theoretical concepts and their observable counterparts. In short, what is supposed to be studied is in fact what is studied (Teorell and Svensson 2007 pp. 55-9). However, validity need not be an insurmountable problem in this paper. The empirical material is not in itself central to the research question but serves as a case by which the typology can be

reviewed. The empirical dimension of the study therefore, not so much augments the puzzle of operationalization, but rather serves to resolve it.

2.1.3 Science theory

Since the paper primarily treats debate and exchanges of ideas, some prominence have to be attributed to ideas and the understanding of them. Indeed, deliberation presupposes some form of a subjectivist epistemology since the understanding of a debate may be educative and thus rewarding (see 3.1). Furthermore, typologies might be criticized from an objectivist approach for using theoretic types rather than more empirically oriented measurements (Marradi 1990 pp. 150-2). A discussion about this is not possible here, but it should be stated that this study is conducted under a degree of subjective epistemology. Furthermore, since the concept of science itself is not elaborated on and its authority is accepted, the study also presupposes a degree of ontological realism.

2.1.4 Material

For the theory-developing section, previous academic work treating expert-knowledge in politics and literature on political argumentation will be used. These theories will be discussed continuously throughout the paper. One major starting-point is Boswell's book *The political uses of expertise* (2009). This work will therefore receive a more thorough introduction (see 3.2).

2.2 Empirical observations

As mentioned, the study will have an empirical dimension. The case will, as pointed out above, not be central to the study. Rather it will serve to illustrate and review how the theoretical construction corresponds to empirical observations. The study has ambitious theoretical aims. Therefore a definite answer to the question posed might not be possible. The most pragmatic approach is therefore to simply take notice of the need to never ignore the uncertainty that political science as a whole is characterized by (Teorell and Svensson p. 280). The alternative path would be to lower the theoretical ambitions and rephrase the question in a more case-specific way. This would not however enable the construction of a typology of higher quality but rather the opposite.

2.2.1 Illustrative case

The empirical material will constitute an illustrative case. The case used will be the public debate over the wolf strain in Sweden to which substantial domestic

attention have been paid over the past few years. Although this is only an illustrative case, an introduction, if only brief, is appropriate.

In May 2009 a “proposition”² was put forth regarding predation politics in Sweden. It was proposed that the growth of the wolf strain in Sweden should be limited. This was deemed possible due to the fact that the wolf had gone from being nearly extinct to a quite substantial growth of 15% per year and a total population above 200 individuals (Miljödepartementet 2008/09:210 p. 10). In short the strain had to primarily be strengthened genetically and limited growth would be ensured through limited licensed hunting (ibid. p. 11). The above provisions were accepted in the Swedish Riksdag³ in October of the same year (RF 2009/10:MJU8). A heated debate ensued, and escalated as licensed hunting for a limited number of animals took place in January the following year and again in 2011. The wolf strain descends from just three individuals and is therefore inbred and genetically sick (SOU 2007:89 p. 41).

This case is well suited for a few reasons. First, since the debate is ongoing it is topical and many aspects of the issue remain unsolved. The uncertainty that surrounds problems of technical character is therefore present in the entire debate. Second, the debate displays several dimensions. Science has been given a prominent role. The scientific dimension is however accompanied by legal and democratic ones. Third, the debate has attracted nationwide attention which might increase the public nature of the debate.

2.2.2 Material

Public debates from the Swedish Riksdag will make up the material. Once again it should be pointed out that the purpose isn't to analyze this case but to review the typology against it. These debates are favorable to this study since it's a debate with continuous arguments and rebuttals and the format allows quite thorough points to be made. The material studied consists of all debates regarding the wolf strain from 21st October 2009, when the proposition was passed in the Riksdag, up until May 2011. In total the material consists of the debate about the proposition, three debates following ”interpellationer”⁴, one ”aktuell debatt”⁵ and five ”frågestunder”⁶. All however have not been referenced in this paper.

² A legislative bill proposed by the government in Sweden.

³ The Swedish legislature.

⁴ Questions from members of the legislature directed at department ministers.

⁵ A debate about a current issue, suggested by a party.

⁶ Scheduled question time where brief questions from members of the legislature are directed at one of five department ministers present that day.

3 Theory

To begin the theoretical discussion, an introduction to the two major theoretical aspects of the study, deliberative democracy and the typology, is useful. The logic of democratic deliberation will be introduced. Thenceforth, focus will be directed at the typology. In this chapter the theoretic starting point for the typology will be discussed and motivated. In the following chapters the typology will be discussed and then reassessed against empirical material. Thereafter democratic deliberation will be reintroduced and discussed in light of the refined typology.

3.1 Democratic deliberation

In a way a counter-reaction to perceived deficits in contemporary democracies, the model of deliberative democracy has received much attention over the last decades. One concern of this school of thought is that although the electorate have been expanded over time in democratic societies, there remain a malign disconnect between ruling elites and the masses (Held 1996 p. 234). The extended franchise and greater formal political equality have not been accompanied by reasonable politics that produce reasonable policies. Rather vote-seeking have produced an environment where personality and superficial rhetoric replaces substantial arguments and reason (ibid. pp. 232-34).

According to this school the cure is, in a general sense, a deliberative process. A wide public debate, where ideas are exchanged, justified and criticized can counteract self-interest as a basis for political behavior and enable a more holistic and reasonable approach to policies. At the same time deliberation is a learning process where the participants and audience continuously gets wiser (ibid. pp. 233, 237-38).

It should be noted that deliberative democratic theory have made a big impact on political science and Chambers points out that there is a near complete consensus among political scientists that some form of deliberation is desirable. What form of deliberative democracy is on the other hand is a question far from consensus (Chambers 2003 p. 308). Chambers provides a lengthy but useful general definition:

[...] deliberation is debate and discussion aimed at producing reasonable, well-informed opinions in which participants are willing to revise preferences in light of discussion, new information, and claims made by fellow participants. Although consensus need not be the ultimate aim of deliberation, and participants are expected to pursue their interests, an overarching interest in the legitimacy of

outcomes (understood as justification to all affected) ideally characterizes deliberation. (Chambers 2003 p. 309)

This is a somewhat moderate understanding, where ideals such as complete consensus aren't mandatory, but one that still covers many central points, such as pragmatism in discussions and wide-spread justification. Chambers goes on to point out (2003 p. 308) that most political scientists see deliberative democracy as more of an extension to representative democracy than a separate alternative.

Manin elaborates on the concept of legitimacy. He argues (1987 pp. 51-2) that the idea that legitimacy in democracies is derived simply from already determined individual wills is flawed. This is so because the idea of predetermination presupposes a complete understanding of issues that most, if not all, individuals do not possess (Manin 1987 pp. 351-52).

Manin continues by contending that deliberation have an educative function. When witnessing the exchange of information and ideas the witness is educated. Not just, or even predominantly, by beholding the motivated position of one side, but by accessing the discussion between sides of opposing conviction (ibid. p. 354). As the audience educate themselves their scrutiny of the debate become more thorough, and thus deliberation and education may be mutually enhancing. So instead of aggregate wills, the formation of opinion becomes central to the question of legitimacy and this formation is deliberation. Hence as Manin puts it: "We must affirm, at the risk of contradicting a long tradition, that legitimate law is the *result of general deliberation*, and not the *expression of the general will*" (Manin p. 352).

So far, some points have been made regarding what democratic deliberation can mean. Here a more general definition will suffice and Chambers provides a set of standards that ought to be fulfilled for a deliberative process to take place. Furthermore, keeping Manin's elaboration of the concept of legitimacy in mind, the educative function of deliberation is a useful insight. It can be concisely summarized in a quote by Wiklund: "At the core of the notion of deliberative politics is the understanding of the democratic process as a process of social learning through rational argumentation" (Wiklund 2002 s. 53).

It should now be pointed out that deliberation has a direct connection to the relationship between expertise and democracy. The need for a holistic approach is related to the view that experts seek to treat problems separately so as to make them manageable. However this leaves problems isolated from each other thus disabling a holistic approach aimed at solving social issues (Held 1996 pp. 235-36). This view is also evident in papers not mainly treating deliberation (Wynne 2003). Therefore some work has been made to study how deliberation can bridge the gap between experts and non-experts. Fischer for instance studies different forms of interaction between citizens and experts as possible forms of deliberation (Fischer 2009 pp. 77-103).

While this is a study of the expertise-democracy relationship, it is deliberation among politicians that is central to this study. As Karlsson points out (2003 p. 221), for a deliberation to be democratic, all actors affected by a collective decision must have a right to participate in the deliberation. This could be

interpreted either as a demand for participation between literally all actors or their political representatives (ibid. pp. 216, 221). The author elaborates on the democratic dimension of deliberation among representatives by putting forward three more criteria's: responsiveness towards the electorate, that the decision-makers are responsible towards the electorate and that the process should be transparent (ibid. p. 221). These demands concern input legitimacy more than output legitimacy which is central here. The criteria's concern democracy as a whole while the procedural aspects of deliberation are of greater importance for this study. However, by studying public discussions between representatives, the aspect of transparency is fulfilled and this should improve the status of the two remaining criteria's as well.

In conclusion, a public debate between representatives can constitute a form of democratic deliberation. Therefore the criteria's set out in Chambers definition is applicable. Since the debate is public it strengthens the democratic dimension of deliberation and most importantly, certainly have the potential to perform the educational function of deliberation which, as Manin pointed out, is central to the issue of legitimacy.

However, as Wiklund assert, for democratic deliberation to be possible, the debate needs to be carried out using a shared "natural language" (Wiklund 2002 p. 62). While Wiklund is accounting for a more ideal form of democratic deliberation (ibid. pp. 58-71) than the one adopted here, the question of natural language is an important one. The question of natural language is to a large extent at the center of the research-problem presented here.

Democratic deliberation will be reintroduced later on but the focus is now placed on the question of scientific arguments in public debates between representatives.

3.2 Starting points for typology-formation

The main theoretical starting-point for the typology-formation will be Boswell's discussion about science in political debates. The aim of Boswell's study differs from the one here in the sense that in her work the function of science and its usage is the primary focus (Boswell 2009) whereas here it is the response to this usage. But the topics are closely related and since the objects of study here are responses to the utilization of science, this should be a promising start.

There is one reason however why this should constitute a particularly fruitful starting point. Boswell's work builds to a large extent on a criticism of the existing literature on the utilization of science in politics (ibid.). The existing account, she contends, have been dominated by an instrumental approach that perceive science as solely a tool in problem-solving. Science's function, according to this perspective, is to improve output (Boswell 2009 pp. 29-32). Boswell moreover finds existing criticism of this account unsatisfactory (ibid. pp. 32-6).

Instead she proposes, drawing on theories from organizational sociology (ibid. pp. 40-60), that science carries symbolic functions *as well* as instrumental ones.

The position being that instrumental accounts are not wrong; they however provide too narrow an account since they will only be accurate in certain cases (ibid. pp. 53-5). Boswell proceeds by distinguishing two types of symbolic functions: a legitimizing and a substantiating function. The former denotes the need of political organizations to display that they can access and obtain scientific knowledge (ibid. pp. 65-72). The former designates the use of knowledge as a way of substantiating policy proposals. Expertise may provide justification for proposed actions and in contested areas it might strengthen the appeal of an action compared to another. The science is thus used for its symbolic rather than its instrumental value (ibid. pp. 72-81).

This distinction is potentially imperative when studying the use of science in policy debates. Because knowledge will, as Boswell goes on to point out, predominantly have a substantiating function in public debates. This is due to the heavy reliance on rhetoric rather than the content of an action in these debates (ibid. p. 89). For instance, Gusfield demonstrates how facts and scientific research on drinking-driving were given a different, both firmer and more dramatic, significance when they were used in debates by politicians (ibid. 1981 pp. 78-9). This has to do with the different arenas in which the results are first produced and then used. Science is based on neutrality and the target audience is nonpartisan. In politics however politicians faces a public demanding action and are presenting the facts in a competitive environment were facts hardly can be anything but undisputed (ibid. p. 80). "One must not look too closely at the referee while trying to punch the opponent" (Gusfield 1981 p. 80).

The main point here is that the use of science can take a number of forms and functions. This increases the uncertainty about the use of science. Boswell, for instance, additionally points out (2009 pp. 96-8) that it could be argued that values should take precedence over facts or simply that the research is not reliable.

4 Developing the typology

The typology-formation will begin with a search for fundamentum diviniionis. Once these have been established, a preliminary classification will be made.

4.1 Classification

Krebs and Jackson provide a helpful analytical tool in classifying responses. It should initially be pointed out that the author's purpose is different from the aim here (Krebs and Jackson 2007). Still, their model for possible responses remains relevant. Krebs and Jackson identify two main components of political arguments put forward: a frame and an implication. The former being a depiction of an issue and the latter the implications, or in policy debates desirable action, that follow from this depiction. The opposition then has the options to accept or reject one or both of the components. This generates four possible responses (ibid. p. 43).

This model is however not easily applied here for three reasons. First, the model presupposes that "[the opposition's] accession or resistance is critical to the outcome" (ibid. p. 43). The typology here is not developed under such a presumption. Second, the model deals with proposed policy changes and not scientific arguments for or against a policy. Third, the above model tries to explain outcome and is thus action-oriented. Here it is rather the responses rhetorical dimension and their status within the debate that is central. The first and second problems are related since both raises uncertainty about the applicability of the dimensions. The third will however be treated first since the discussion about the two former intricacies are more demanding.

The problem of rhetoric vis-à-vis action is solvable. Within a debate the options available would rather be to question or not to question. These are two basic ways of responding to an argument and every response must be one of the two. Therefore the third problem can be overcome by instead studying whether a statement becomes questioned or not. Accepting or rejecting is also the result of a debate rather than the content of the debate.

Now the attention can be turned to a discussion about the dimensions. There are reasons to keep both the dimensions despite diverging presumptions because these dimensions efficiently incorporate the basic parts of an argumentation. As pointed out earlier an argumentation must contain a thesis and an argument. The argument is a statement supporting or opposing a thesis. There is one further component though, namely a premise. This is a statement, often implicit, that determines the argument's relevance for the thesis (Björnsson et al. 1994 pp. 30-35). An example will further illustrate this point:

- Thesis: Sports-team x will do better this season.
- Argument: They have acquired player y during the off-season.
- Premise: Y is a good player.

The example, while trivial, demonstrates the completely indispensable role of the premise. If the premise wasn't accurate then the argument and the thesis breaks down. This is comparable with the important separation between a scrutiny of whether an account is true and an examination of what the logical implications of this account is (Beckman 2005 pp. 55-6).

When a *scientific* argument is presented, the argument *will* represent a depiction of reality. It also supports a political position. This support is dependent on a premise. If the scientific argument is synonymous with the dimension "framing" and the position supported is the "implication", then two preliminary dimensions could be established. If there is a framing-problem then the scientific depiction is questioned and if there is an implication-problem then the premise is questioned. The above dimensions then incorporate all components of an argument and seem useful in this study. This though, is unsatisfactory for reasons related to the premise in scientific arguments. This will be examined below.

4.1.1 Premises in scientific arguments

As mentioned, since science does not necessarily have an instrumental problem-solving function, misinterpretations or exaggerations of the facts may be common. Even highly accurate scientific findings do not rule out fallacies however. A fallacy occurs when the argument's premise is wrong. But there is reason to elaborate on this point. Boswell points out (2009 p. 92) that politicians are likely to use science in areas where "technocratic modes of settlement" are suitable. These are areas where expert knowledge will be an acceptable justification for action (ibid. p. 77). The mode of settlement might however be disputed.

Boswell largely bases her discussion about technocratic modes of settlement on Brain Barry's (1965) classification of procedures to reach social decisions. Barry identifies seven different forms of such procedures (Barry 1965 pp. 85-91). Boswell elaborates on two of these procedures: *discussion on merits* and *authoritative determination* (Boswell 2009 p. 75). In the former, the parties seek to reach an agreement that is satisfactory and beneficial to all parties; and morally correct (Barry 1965 p. 87). In the latter, the issue is submitted to an authoritative third party to solve the issue (ibid. p. 90-1). The last one isn't applicable in policy debates. Boswell's main point is that in these two procedures, technocratic modes of justification will be relevant.

There are two reasons why this has implications for the premises in scientific arguments. First, policy debates are a process of negotiation. Negotiation is in Barry's work an umbrella term for discussion on merits and *bargaining*. Bargaining is a procedure where the aim isn't to change preferences or reach a beneficial agreement but rather to reach an agreement out of necessity (Barry 1965 p. 86). Barry contends (1965 p. 87) that "many (perhaps nearly all) negotiations involve both bargaining *and* discussion on merits [...]". The point is

that both likely will be common in policy-debates and in bargaining, technocratic modes of settlement aren't likely.

Second, technocratic modes of settlements may not be acceptable in all discussions on merits. As pointed out earlier, politicians may argue that values should take precedence over technocratic reasons.

The main point here is that one premise for a scientific argument will always be that a technocratic mode of justification is acceptable, something that is not a given. This might be illustrated by Wynne who provides examples where disputes over framing were present (Wynne 2003). In the one case a proposed plutonium plant caused controversy in Great Britain. The scientific arguments supporting the proposition assessed the risk in this specific case. Critics argued among other things that this was too narrow an approach that ignored risks of, for instance, a terrorist attack (ibid. p. 406). It was, in part, a question of scientific framing.

So the first premise is that the scientific framing of the issue is correct, in the sense that science is not given too prominent of a role. This premise is in theory clearly distinguishable from other premises which logically connect the science to the implication. A problem might be correctly framed, both in terms of irrefutable scientific evidence and the issue may be properly framed as technical, and yet parties may disagree about the conclusions. Even this scenario does not rule out fallacies. Therefore, two premises in scientific arguments can be identified: *framing-premises* and *implicational premises*. The latter is recognized by an acceptance of the scientific framing of the problem, but a disagreement over the implications.

4.1.2 Fundamentum divinionis

Thus it is now possible to outline preliminary fundamentum divinionis (from this point these will be referred to as dimensions). The first dimension is *scientific framing*. This is a modified version of the dimension presented by Krebs and Jackson that is more specific to this paper. This dimension is a depiction of the given issue. The second is *implications* just like in Krebs and Jackson's study. This generates four cases.

Table 1

	Scientific framing		
	Questioned	Unquestioned	
Implications	Questioned	Case 1	Case 2
	Unquestioned	Case 3	Case 4

In the most unproblematic case, Case 4, the response may be to accept or to ignore the argument. This will be the case since a non-response is not possible under the framework in this paper. It is however precarious to have two complete opposite responses in the same category. Case 3 is also questionable. This category is similar to the case of accepted implications/rejected frame present in Krebs and Jackson's study. The authors suggest that an action may be accepted but on a different basis than the one suggested by the opposition. The authors suggest that an action could be accepted because of its economic benefits, while the opposition argued for the same action for environmental reasons (ibid. p. 43). It is though here once again not possible to tell if the implications were accepted or ignored.

In order to solve these shortcomings, a third dimension has to be introduced with respect to these two cases: endorsement. Was the implications endorsed or not? In Case 4 this would separate an *acceptance* from *ignoring*. In Case 3 it would clarify the attitude towards the implications. If the implications are endorsed, it's a *reserved acceptance*. If it is not, it can be assumed that the implications are implicitly questioned and that this would be a response belonging to Case 1. It could still be argued that an argument could be accepted without an explicit endorsement. This might very well be but within the context of a debate, there is no possible way to separate such a response from an ignoring.

To begin with the remaining two cases, in Case 1 the whole argument and the position that follows is questioned. The scientific framing is questioned and if the framing is wrong, then the facts are extraneous and the implications predictably unsustainable. The scientific framing can, in accordance with the reasoning in the previous section, be questioned on two bases. First, the scientific depiction may be wrong. Either the scientific findings are wrong or the interpretation presented by the politician is wrong. The *authority* of the science is thus questioned. Second, the framing-premise can be questioned. While the facts might be correct, the *framing*, as one where a technocratic mode of justification is pertinent, could be questioned. Thus a fourth dimension is due to separate the two within this case: fact-orientation. Is the questioning fact-oriented or not?

In Case 2 the implications are questioned while the framing is not. Therefore this implies criticism of the implicational premise. The response being that the framing doesn't lend support to the implication. A fair point is that the framing remains unquestioned, not accepted, and that the blurred distinction between acceptance and ignoring is once again present. This should however be inaccurate in this case. If the facts and the use of these facts remain unquestioned, then the only way that an implication can be questioned is by arguing that it cannot be derived from the framing.

The typology thus primarily consists of two dimensions which generates four areas of response. A third dimension is applied to two of the areas and a fourth to one area. This in total generates six possible replies: Ignoring, acceptance, reserved acceptance, questioned scientific authority, questioned framing-premise and questioned implication.

4.2 Identified types

Here, the types will be presented in a structured form. The above discussion has served to clarify some of the properties of each type. Comments concerning points already made will thus be brief. One type has so far received little attention, questioning authority. Therefore, this type will be explored more thoroughly.

4.2.1 Ignoring

A scientific argument is ignored when it is responded to by neither a substantial counter-argument nor an explicit endorsement. According to the framework here every scientific argument creates a space to be filled with a contra-argument. This is what was earlier called an imagined contra-argument. If no explicit response is made *in direct relation* to the original argument then it's an ignoring. "In direct relation" denotes the need for the argument to treat the scientific argument in a substantial fashion. As mentioned earlier, this type is inseparable from a silent acceptance. Within the context of a debate, this however seems inescapable.

4.2.2 Acceptance

A scientific argument is accepted when the opposition explicitly endorses it. This demands a need for an endorsement for the implications or both the implications and the framing. If the implications are endorsed without reservations, it can be assumed that the framing is accepted as well.

4.2.3 Reserved acceptance

A reserved acceptance occurs when the implications are endorsed while the framing is questioned. This might very well occur since parties have a need to use rhetoric suitable for their popular base. This might induce divergent framings for the same proposed action. It should be pointed out that when the implications are endorsed, the framing-premise will most likely be the part of the framing that is questioned. If the science is questioned then it is doubtful if the implications could still be endorsed.

4.2.4 Questioned authority

The authority of the science presented might be questioned. There are however two separable ways in which this can be done. First of all there is a tendency, as pointed out by Gusfield, among politicians to exaggerate scientific findings in order to get a firmer base for their position. Therefore a discrepancy between the

original scientific findings and the politician's presentation may be detectable. Therefore it is really the politician's depiction of the science, rather than the scientific depiction of reality that is questioned. Likewise it could be argued that the science isn't relevant. The science might not lend authority to the argument because it hasn't been used correctly.

Second, the actual science can be questioned. Some reflections regarding this point are needed since the study, as mentioned in the introduction, is partially based on the assumption that politicians in general will not have a thorough understanding of science. This is an empirical question not answered in this paper, but it does not necessarily affect the typology; except for this type. If politicians have a clear understanding then criticizing the science should be rather unproblematic. But as Boswell points out (2009 p. 80) "proxy indicators of quality" such as reputation might be questioned. Both criticism of the content of the science and of the scientists however works according to the logic of questioning the authority.

Lastly, both questioning the scientific findings or the way the science is used works according to the same logic, which is that the facts presented in the argument are flawed and the argument is thus invalid. The need to separate the two will predictably depend on the purpose of the study.

4.2.5 Questioned framing-premise

Questioned framing-premise indicates that the scientific argument is invalid because the issue at hand is not one where science should be given such a prominent role. Rather, it could be argued, a non-technical mode of justification, such as values or tradition, should take precedence.

4.2.6 Questioned implications

When the implications alone are questioned this is due to a disagreement over what the implications the framing entail. This would have to be the result of a perceived fallacy because the implications are the conclusion following the framing. If there is no errors in the arguments that supports the conclusion, then the support have to be flawed for the conclusion to be wrong.

5 Illustrative case

The preliminary typology will here be illustrated with, and reviewed against, empirical observations. The material consists of debates regarding the Swedish wolf strain. The case has been briefly introduced (see 2.2.1) and since it is not itself central to the thesis, no further presentation will be needed.

First, examples fitting the preliminary typology will be presented. Second, responses that represent apparent challenges to the typology will be treated. Finally, the typology will be reviewed against the points raised in this chapter.

5.1 Illustrations

First, *ignoring* is a type where the operationalization might entail some difficulties. The theoretical type however remains well-defined and obvious. The following example may serve as an example. It was said that several scientific institutions advise against starting a hunt for wolf (RP 2009/10:18 8 § address 46). This argument was largely ignored in the debate although there are some further points to be made in the next section about this. The opposition contended further on in the debate that there were scientific research supporting the hunt (RP 2009/10:88, 9 §, address 40). Such responses however constitute an ignoring, since the original argument is not substantially questioned. If the science had been used to display a lack of consensus within the scientific community, it would question the certainty and thus authority of the scientific argument. Here it is used to support the own argument and does not question the original argument.

Second, *acceptance* was fairly uncommon in the debate. However, there were some agreements and those were sometimes pointed out. The agreement among all the parties that wolves need to be imported into the Swedish wild to improve the wolves' genetics were, for instance, pointed out (2009/10:18 8 § address 46).

Third, no case of *reserved acceptance* was identified. This seems natural in a debate where there are more agreements about the framing than the implications.

Forth, several ways of *questioning scientific authority* were identified. The usage of science was questioned. For instance, one claim in the debate was that all animals killed in the licensed hunting were healthy which contradict the claim that hunting could be motivated by bad genetics (RP 2010/11:55 2 § address 55). The response was that all killed wolves were inbred and that visible damages aren't present in all animals with bad genetics (ibid. address 75).

The actual science was also questioned. It was asserted that the wolf politics, including the hunting, were supported by scientists (RP 2009/10:66 5 § address 21). One response was that there was only one scientific institution that supported

hunting and that other Swedish and international scientific findings contradicted the claim (ibid. address 28). The reputation or reliability of this institution and the scientific findings it produce were thus questioned.

Fifth, *questioned framing-premise* might be the most difficult type to operationalize (see 5.2). The following could however constitute a clear example. It was argued that it was important that the wolf strain reaches a viable preservation status and that more liberal rules regarding protective wolf-shootings therefore were unwanted (RP 2009/10:18 8 § address 39). The opponent first pointed out that the wolves have reached viable preservation status, but then pointed out that "I rather see it as a question of principal to strengthen the trust [...] in the conducted predation politics [...]" (my translation, ibid. address 40). Although it could be said that the original argument is only loosely scientific, the response clearly indicate that the mentioned law is a question of principal rather than science.

Sixth, the next example serves as an excellent illustration of *questioning the implications*. It was asserted that degeneration of genetics were so bad that it was that and not hunting that threatened the wolf strain (RP 2009/10:88 9 § address 40). The response was that bad genetics in no way gives support to hunting (ibid. address 41), which indicated a fallacy. Another, less obvious but equally fitting example is that it was argued that it was deemed scientifically possible to plant animals from zoos in the wild (RP 2010/11:41 12 § address 50). The response was that this was impossible due to practical reasons because "[w]hat zoo releases its puppies right into the hunter's line of fire?" (my translation, RP 2010/11:55 2 § address 57).

5.2 Challenging examples

First, one major problem was the distinction between ignoring and questioned framing-premise. As mentioned above, if an argument is not substantially questioned it must be classified as ignoring. However, questioning the framing-premise is often done implicitly. For example, as stated above it was argued that licensed hunting had little support among scientists. It was however commonly asserted that the hunting will increase the trust in predation politics and increase the acceptance of the wolf (RP 2009/10:66 5 § address 22). It was also argued that hunting wolves should be legal since hunting of other predators is legal (ibid. address 20). This was however done without actually questioning the original argument and without mentioning how this affects that argument and therefore it should constitute ignoring. In the example considered questioned framing-premise in the previous section, there was an explicit emphasis on principal vis-à-vis science. However it is somewhat clear that the framing-premise was indeed criticized in the cases presented here. A distinction between explicit and implicit questioning of the framing-premise may be needed. Still though, implicitly questioned framing-premise and ignoring remains two completely separate

categories. A decision simply has to be made, predictably on a case-to-case basis what constitutes a questioning.

Second, a point regarding questioned authority must be made. In the previous chapter it was stated that a distinction could be made between questioning the usage of science or the science itself. One scientific argument was though that an action was viable because expertise were to investigate the possibilities (RK 2009/10:18 8 § address 8). This was however disputed because there was no present science supporting the proposal (ibid. address 9). This constitutes questioned authority since the usage of science is questioned.

Third, an example might be appropriate to illustrate the difference between scientific framing and what generally might be called framing. Science was used to support the present wolf politics, both hunting and other actions regarding wolves, as a whole. It was argued that it had to be treated like a package (RP 2010/11:55 2 § address 53). One response was that the different actions were indeed separable and hunting could be criticized separately (ibid. address 57). Though the framing is questioned, the scientific framing is not, and the implication, that the science support hunting is what is really questioned.

Finally, responses might be used in connection. A newspaper article written by scientists was used to support the current predation politics (ibid. address 53). Another politician citing the same article then contended that "the international scientists says precisely what [...] we've been saying the whole time. More wolves are needed, not fewer [...]. Why would you then start by shooting the wolves?" (my translation, ibid. address 54). Though two types of responses were used in connection there is a clear distinction between the two types. The first sentences question the authority by arguing the scientific findings in the article was wrongly used.⁷ The last sentence questions the implications of the scientific support.

5.3 Summary

In conclusion the various types, in particular questioned framing-premise and questioned authority, may be in need of more in-depth analysis. It is particularly a matter of how to judge implicit questioning and this is perhaps best treated on a case-to-case basis. The six main types, all working according to different logics however remain. Although no instances of reserved acceptance were found it should not be dismissed since it theoretically remains a viable type. A few notes regarding the main criteria's for a typology, mutual exclusiveness and exhaustiveness, is due. The categories are mutually exclusive since they represent different and incompatible logics. As pointed out above even when they are used

⁷ Since the same source is pointed out the obvious statement is that the original argument is based on a misinterpretation or a misrepresentation of that source. Otherwise it had constituted an ignoring.

in connection they are separately distinguishable. The addition of an implicit dimension to questioned framing-premise does not change this, since an implicit questioning still remains incompatible with ignoring. What is added is instead the need for a complicated operationalization. In theory, they also seem exhaustive. It would however need to be empirically tested. The material introduced here are not enough, so further study is needed.

6 Democratic deliberation and scientific arguments

Reintroducing democratic deliberation into the analysis the typology will now be discussed in a context of democratic deliberation. The six major types will initially be treated separately. The identified variations within the types that have previously been pointed out will be accounted for. Then a discussion comparing the various types and their compatibility with democratic deliberation will ensue.

6.1 Identified types and democratic deliberation

First, ignoring is hardly compatible with democratic deliberation in any form. The most basic demand of deliberation is a discussion and a proper discussion cannot take place if the arguments are ignored. A deliberation should furthermore be an open-minded process where positions may alter. Ignoring arguments is of course the opposite way of pursuing a settlement. This said, positions do not have to alter, but an approach where arguments are thoroughly explored is needed. Indeed, without examination the discussion does not get the educative function that is central to the legitimacy of the final policy.

The fact that presenting further science without acknowledging the science of the opposition constitutes ignoring is here especially important to point out. Indeed, such an approach could freeze positions and the debate. Fischer points out (2009 pp. 130-1) while discussing democratic deliberation that such a development is disadvantageous to a viable debate.

Second, acceptance entails some of the same dangers because if an argument is accepted it is not debated. But acceptance is also central to deliberation since it displays the ability to agree. Therefore it is a somewhat complex type. The outcome will be decided by the nature of the endorsement. If it is a thoroughly explained acceptance then it's certainly compatible with deliberation since it explores the argument at hand. If it adversely is a casual reminder of similar positions then it is less accordant. While it may combat a hostile environment, an examination of the positions does not occur and the educative function remains wanting.

Third, reserved acceptance would in general be more compatible with deliberation than an acceptance. A reserved acceptance demands in theory a more substantially explained standpoint since both an endorsement of the implications and reservations regarding the framing are needed. The endorsement once again displays an ability to agree. Since various framings are offered, a more nuanced

view of the matter emerges. It also should entail an educative function since various framings are presented and a discussion regarding different modes of justification may take place. However, the same problem emerges here as in the discussion about framing-premise issues in the previous chapter. If there is no questioning of the opposition's framing then the type borders ignoring. While it need not constitute an ignoring it certainly may tangle the same problems. Arguments need to be explored in order for a deliberative process to occur.

Forth, questioned authority is very unevenly compatible with democratic deliberation. In order to question the *usage* of science some points need to be made regarding the facts presented. Since this response indicates a misrepresentation of scientific results, that misrepresentation would have to be pointed out. This is clearly a reasonable approach that very much has the educative function of deliberation since facts are explored. The same is true if used science is questioned based on its content.

However, the type is less reasonable in a deliberative sense if the science is deemed speculative. That is, if a policy proposal is supported on the basis that it will be delegated to expertise, as in the example in the previous chapter, and then criticized because such preemptive scientific support isn't reliable. Similarly, if the science itself is questioned based on proxy-factors, such as reputation, the deliberative nature of the argument is also in question. That is because in both of these cases it is a matter of reliability rather than content. Reliability is, unlike content, a matter of absolutes. Policies will predictably only be based on, at least seemingly completely reliable science. Since there is no middle ground there is really no room for compromise which is not a promising starting-point for deliberation. Moreover, since content is not debated, the informative nature of the debate is doubtful.

Fifth, questioned scientific framing-premise has already been mentioned. To begin with, questioned framing-premise is a highly attractive approach from a deliberative perspective. An explicit questioning of the framing-premise would require a form of in-depth analysis of the issue at hand. This could be a very educative debate about the function various modes of justifications can hold. By discussing various forms of framings a room for compromise would also emerge. However, if the framing-premise questioning is implicit, which might often be the case, this type approaches ignoring and the variety of problems described above. Implicit questioning might be appealing in this case compared to an explicit questioning. Since science is so influential in contemporary politics, questioning its importance will predictably be deemed inconvenient and unappealing.

Sixth, questioned implications are a less complex type. Questions regarding what conclusion can be drawn based on certain facts displays an ability to observe and understand the framing and the implications. It furthermore amounts to an educative process concerning what science can contribute with and what limitations the use of science has in the political arena. An exchange of ideas takes place and in that exchange, rewarding conclusions may transpire.

6.2 Compatibilities and incompatibilities

Following the analysis above, the responses can be assembled in three broad groups: responses that hinder debate, responses that advance a debate but aren't compatible with democratic deliberation and responses that are compatible with deliberation.

The first group contains ignoring, casual acceptance, reserved acceptance with implicitly questioned framing-premise and implicitly questioned framing-premise. The problem in all cases is the lack of a substantial response to the scientific argument. Scientific findings are a very authoritative source and the knowledge is esoteric. Therefore it might be appealing to rely on and present science supporting the own position rather than questioning the contradictive findings. This development is however detrimental to a deliberative process. Similarly, questioning the scientific framing-premise might be unappealing since the knowledge is perceived to be authoritative. A tendency to rely heavily on science supporting one's own position while neglecting the opposing findings is thus inimical to deliberation. Even a casual acceptance should be placed in this group. If the acceptance isn't thoroughly explained then scientific arguments aren't explored.

In the second group questioned authority by claims of reliability is situated. Here a debate takes place but hardly one that is favorable to deliberation. As mentioned it is a zero-sum game which does not allow much constructive debate. Furthermore the response does not contain informative points about content or what this content would indicate. These responses could firstly be invited by the fact that, lacking scientific knowledge, suggesting that the findings are unreliable can do as a satisfactory second alternative. Second, they may be invited by the usage of de facto unreliable science.

In the third group, explained acceptance, reserved acceptance with explicitly questioned framing-premise, questioned authority by content, explicitly questioned framing-premise and questioned implications are located. In all but one of these responses, explicit questioning of either the content of the framing, the framing-premise or the implications is produced. Thus an informative exchange of ideas may ensue. Arguments are scrutinized and explored so people may educate themselves by witnessing this exchange. Every response points to an important aspect of the scientific argument as explained in the previous section. Lastly, an explained acceptance is beneficial to the debate since the argument is examined and reasons are given that may have an educational function.

7 Conclusion

In conclusion, political representative's responses can be divided into six broad types: ignoring, acceptance, reserved acceptance, questioned authority, questioned framing-premise and questioned implications. Ignoring and questioned implications are quite easily defined types. Significant variations may however be present within the other four types.

Acceptance may be done, in theory, either in a casual manner or in an explained manner. In the former acceptance may be a simple reminder of common points. In the second it is a thoroughly explained acceptance of an argument.

The framing-premise is explicitly or implicitly questioned within reserved acceptance and questioned framing-premise. How to separate the two will need to be decided. Implicit questioning and ignoring also needs to be separated.

Questioning authority is a complex type since there are many variations within this response. The responses can first be divided in questioning of the science itself and questioning of the use of the science. One more division can be made between those responses that concern content and those concerning reliability. Together the dimensions produce four different ways of questioning the authority.

The need to separate responses within the six types will predictably vary dependent on the purpose of the study and should be determined on a case-to-case basis. The main point is that the further divisions do not affect the mutual exclusiveness since the six types are theoretically distinct. These may then be further divided into mutual exclusive types. In theory the types are exhaustive as well. This will however have to be determined after empirical testing.

The responses are furthermore to different degrees compatible with democratic deliberation. In general the responses that rely on ignoring, implicit questioning and casual acceptance are incompatible with deliberation since no real exchange of ideas ensues. Not only is understanding for both the scientific knowledge and the opposition's position missing, but the opportunity to carry out an educative discussion is also missed. Questioned authority may benefit deliberation if they are informative content-questioning responses. If they however are reliability-oriented they are unfavorable to a debate aimed at compromise and the proposed policy is not really examined. If responses however question the implications, the content of the framing or the framing-premise in an explicit manner the issue is debated and an informative exchange may ensue. Similarly, an explained acceptance is grounded in the same exchange and displays open-mindedness about oppositional positions.

Which responses are given more prominent roles in debates is furthermore an empirical question. The answer to that question may entail significant implications for the condition of democratic deliberation.

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