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AGENCY AND CLIMATE CHANGE

A quantitative-structuralist approach to the assignment of moral agency in mitigation

by Erik Thorstensen

This article uses the IPCC Working Group III's latest report on mitigation of climate change as its material. The ambition is to investigate how the IPCC assigns moral agency to non-experts. For this, the article analyzes whether the terms "citizens", "stakeholders", "the public" and "laypeople" are presented as barriers to, drivers of or neutral towards mitigation measures. The "public" stand out in the IPCC report as a much larger barrier to mitigation than the other groups. This article relates these finding to work conducted by Brian Wynne (1991[r]) and Mike Michael (2009[r]) regarding perception of the public by scientific assessments. This article documents that the IPCC Working Group III tends to replicate stereotypes of the public from such scientific assessments.

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Introduction

Many love and value the stories of Alice in Wonderland by Lewis Carroll. Of particular interest for those of us with a penchant towards meaning and language, we hold the meeting with Humpty Dumpty in *Through the Looking-Glass* as one of the acmes.

> *"I don't know what you mean by 'glory'" Alice said.*
>
> *Humpty Dumpty smiled contemptuously. "Of course you don't - till I tell you. I meant 'there's a nice knock-down argument for you!'"*
>
> *"But 'glory' doesn't mean 'a nice knock-down argument,'" Alice objected.*
>
> *"When I use a word," Humpty Dumpty said in a rather scornful tone, "it means just what I choose it to mean - neither more nor less."*
>
> *"The question is," said Alice, "whether you can make words mean so many different things."*
>
> *"The question is," said Humpty Dumpty, "which is to be master - that's all."*

(Carroll 1893[r], 181–182)

Without consenting to Humpty Dumpty's general position towards language, I wish in this paper to explore how the terms "citizens", "stakeholders", "the public" and "laypeople" are used in the last report by IPCC's Working Group III, *Mitigation* 2014, as barriers to or resources for mitigation. The IPCC Working Group III provides an overview of mitigation options. These options will then be considered by political institutions that can position themselves towards the different suggestions, and then decide on a course of action. I will argue that the usage gives meaning to the words and that this is relevant because the IPCC has a powerful position and its findings are widely communicated and the meaning given by the IPCC to these terms taps into a tradition of practice when giving content to these terms. I try to understand if the IPCC WG III has a world-view – and how this world-view conceives "citizens", "stakeholders", "the public" and "laypeople". This is important because the IPCC WGs all provide input to politicians and policymakers.

Theoretical considerations

Bruno Latour (2005[r], 53) differentiates between the linguistic expression of agency and actual agency. The linguistic expression, the *figuration* of agency, is that which "is always provided in the account with some flesh and features that make them have some form or shape, no matter how vague" (2005[r], 53). Latour draws upon the notion of *actants* in the texts. These actants "operate on the level of function, rather than content" (Hawkes 2003[r], 70–71) and "the deep structure of the narrative generates and defines its actants at a level beyond that of the story's surface content" (Hawkes 2003[r], 71).

According to the insights provided by Vladimir Propp (1968[r]; 1984[r]) and elaborated by Algirdas Greimas (1966a[r], 1966b[r]), there can be said to be a finite number of possible elements present in narratives – and the combination of these makes the text into stories. Greimas studied the oppositional pairs between actants. In texts, all actants are present as actors that fulfill the functions of actants (Budniakiewicz 1992[r]). He saw three sets of oppositions as then revealing the deeper structure. The three sets are:

1) Subject vs. Object
2) Sender vs. Receiver
3) Helper vs. Opponent

According to Greimas (1966b[r]), there is no need for these actants to be physical persons, but they can take on the shape of more abstract forces. In this article, I will see if it makes sense to analyze how "citizens", "stakeholders", "the public" and "laypeople" function as Helper vs. Opponent in the IPCC WG III Mitigation 2014. In the Greimasian textual universe, the Helper is the one – or the ones – who facilitate and aid the Subject in reaching its goal, whereas the Opponent is the one obstructing this quest. The Subject consequently has a project or a task to fulfill – and this task constitutes the Object. On a superior level, Greimas postulates that there is a Sender, whose function is to see to it that the Subject reaches its Object, and a Receiver, who is the one to benefit from the Object and keeps the Object in its possession.

According to the political analysis done by Jorge Palma, it is in the third oppositional pair we can see an "axis of power" (1990[r], 19). Palma sees the opponent as everyone opposing the Subject's power – and through this the Opponent becomes the anti-Subject. Here, we again encounter Humpty Dumpty's assertion "The question is which is to be master – that's all."

As an illustration, I can show how Greimas applies his structural text analysis on Marxist philosophy history. Here, the actor Man fulfills the actant function Subject who is striving to reach the Object, which in Marxist thinking is Classless society, on behalf of Humanity in order to fulfill the destiny of History. The Subject's Helper is the Working Class and Man's efforts are hindered by the Bourgeoisie:

Subject	.....	Man
Object	.....	Classless society
Sender	.....	History
Receiver	.....	Humanity
Helper	.....	Working class
Opponent	.....	Bourgeoisie

***Table 1**: from (Greimas 1966b[r], 181)*

In line with Palma's reading of Greimas, we can see how the Bourgeoisie becomes "anti-humanity" in Marxist thought. I am quite uncertain how to configure this table when it comes to the IPCC. I would believe that the subject is "the climate", the object could be "sustainability", the sender is "science" and the receiver is "humanity".

Subject	.....	Climate
Object	.....	Sustainability
Sender	.....	Science
Receiver	.....	Humanity
Helper	.....	Knowledge
Opponent	.....	Ignorance

***Table 2**: A Greimasian heuristics for the structure of climate science, based on (Greimas 1966b[r], 181)*

In line with these theoretical insights, I will suggest that through the application of narrative theories, it might be possible to shed more light on the fundamental structures of my materials.

The choice of Greimas as a theoretical foundation for a paper might seem outdated. The structural study of stories and myths had its zenith in the 1960s and the 1970s. The IPCC has the mandate "to provide policy relevant but not policy prescriptive information on key aspects of climate change" (2010[r], 1). This mandate might be interpreted to give open passage to scientism (Wynne 2010[r]), where "scientific evidence is the only authority suitable to justify policy action" (Beck 2012[r], 166). The formulation of the mandate remains close to an ideal of value-free science where the distinction between facts and values – and Science and Politics – is clear-cut (Latour 2015[r]). This form of "strategic positivism", which is the label Bruno Latour (2015[r]) places on the IPCC approach, he sees as failing in convincing the public of its conclusions. In order to shed more light on how the IPCC takes into account the people affected by its proposals, I propose – as a pragmatic and heuristic approach – to use Greimas' actantial model in order "to go looking for invisible entities and appellants" (Latour 2004[r], 162), and to see how the actors "public", "citizen", "stakeholders", and "laypeople" are framed in the IPCC report on mitigation of climate change. The application of Greimas is then a pragmatic choice: I want to see what kind of results it yields – if any – and to use theoretical insights from the studies of the intersection between policy and science to make sense of the outcomes.

The use of Greimas does not imply that I see his theoretical insights as flawless. The form of structuralism Greimas presents builds on a range of collected examples from which he entangled some categories. The relations between these categories are then described as "structures" – hence "structuralism". These relations are subsequently turned into transcendent agents that cause some event in the world. Criticisms also point to the rationalist, mentalist and abstraction-orientated character of structuralism and structuralist readings (Otto & Bubandt 2010[r]). The structuralist interpretative position is further criticized for being random in relation to its object (Derrida 2001[r]) – or for disguising a power position (Foucault 2001[r]).

My approach here should be complemented by thicker studies of views of non-experts and participants from outside of science and/or policy (see e.g. Geertz 1973[r]; Welsh & Wynne 2013[r]); as suggested by Linda Soneryd in her remark that "[i]maginaries that policy-makers use to frame publics can be powerful, but they are also context specific, intrinsically embedded in the history and practice of particular organizations" (2015[r], 20). However, any approach using notions of social imaginaries should be aware of possible conservative or conservatory bias since these approaches might lay a strong emphasis on the past as a source for moral beliefs (van der Burg 2016[r]).

Climate Change and Ethics

IPCC WG III defines mitigation as "a human intervention to reduce the sources or enhance the sinks of greenhouse gases" (2014[r], 4). The Third Working Group has the task to assess highly technical forms of intervention, such as carbon capture and storage or solar radiation management, to more infrastructural or biological considerations related to agriculture and land-use-change, over carbon trading schemes to different types of international agreements and legal instruments. IPCC WG III's Mitigation 2014 writing team consisted of 271 authors, editors, and reviewers (Thorstensen 2015[r]). Since the IPCC does not perform research, but systematizes research findings and relate them to mitigation issues, this article studies the compilations of research results.

Climate change is an ethical issue with several different underlying and interwoven issues as nature and ecosystem conservation, distributive justice and poverty elimination, and social and economic development (Hulme 2009[r]). The solutions to the problems and consequences of climate change are defined as mitigation, but even this choice of words and strategy indicate, according to Stephen Gardiner (2011[r]), an ethical choice since it would be possible – in an analytical sense – to use *prevention, acceptance, avoidance, preparation, coping* and *endurance* of or with climate change. Each of these terms could then be prescriptive for a course of action. The present article investigates all the situations in which "public", "citizen", "stakeholders", and "laypeople" are mentioned in the latest WG III report, and in 2/3 of the mentions they are presented in relation to being barriers or resources to mitigation strategies. Such strategies are targeted to reach a goal, as presented in the following quote:

> The stringent mitigation scenarios discussed in Section 10.10.1 envisage emission intensity reductions, in particular due to

> deployment of CCS. However, public acceptance of widespread diffusion of CCS might hinder the realization of such scenarios. (IPCC 2014[r], 779)

In this randomly selected example an agent ("public acceptance") is set in a relation ("might hinder") to a mitigation goal ("such scenarios of widespread diffusion of CCS"). The report writers see the goal as desirable and as having value in the given context, but there is one important obstacle. This and other cases where non-experts enter into a relation with achieving a desirable state of affairs should be understood as ethical issues since they point towards a society where the right solutions would become part of the forms of life (Hegel 1991[r]).

My object of study is how the IPCC WG III presents the people as helpers or opponents to the process of mitigation. I relate this report to the notion of moral agency, the power to do good things and refrain from doing bad things (Bandura 2002[r], 111). Consequently, those who oppose mitigation are doing bad things and those who promote mitigation are doing good things – and there should also be a neutral zone where people neither oppose nor promote mitigation.

Intension and extension of terms

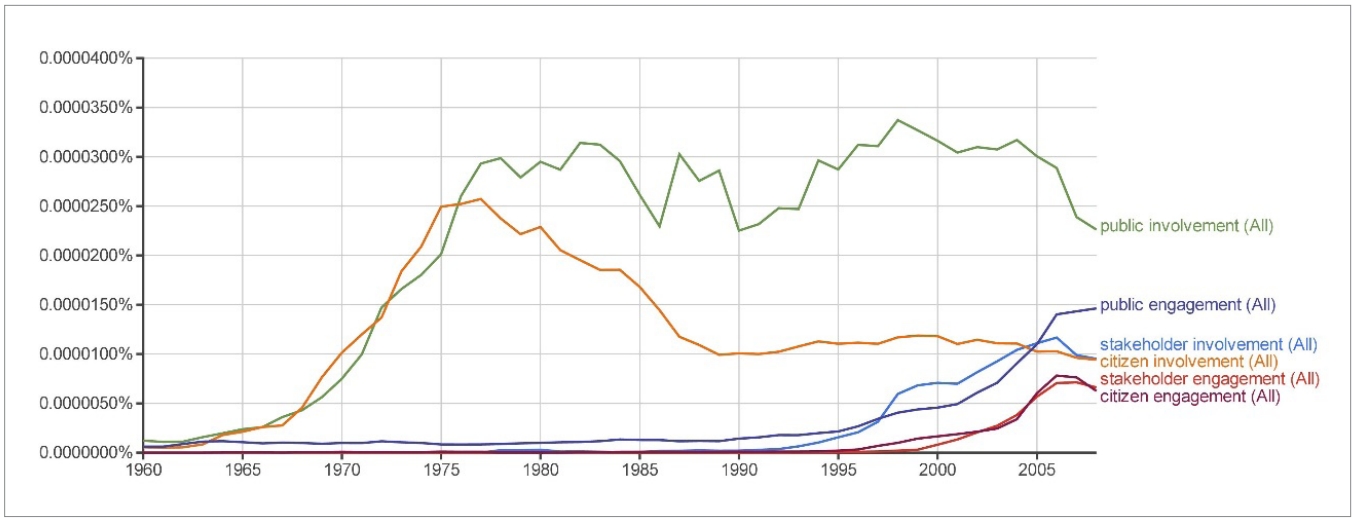
The United Nations Framework Convention on Climate Change (UNFCCC), defines stakeholders under the Clean Development Mechanism as "the public, including individuals, groups or communities affected, or likely to be affected, by the proposed clean development mechanism project activity" (UNFCCC 2005[r], 11; Schneider 2007[r], 51). Such a wide definition suggests that in the case of climate change, the notion of a "stakeholder" must be used to include everyone affected by climate change or mitigation measures. Since climate change is a global phenomenon that will increase in severity in the future, everyone is a stakeholder, the public is global, citizens must encompass even those without voting rights at present, and laypeople are everyone that does not formally decide on the actions against climate change and its consequences. Hence, "public", "citizen", "stakeholders", and "laypeople" are the same in this respect – they share extensionality in the setting of mitigating climate change. Since these textual actors share extensionality, it could reasonably be expected that they fulfill the same functions in the IPCC text as helpers or opponents of mitigation efforts; they should have the same value in their actantial function.

It could have been possible to include other terms, such as "consumer", "politician", "society" and/or "culture". The problem with the term "consumer" is that it relates to the issue of acquiring and using services, goods or ideas – and only this. The framing of people as consumers will then remain limited to "consumerism" (IPCC 2014[r], 304) and behavioural economics (IPCC 2014[r], 252). The inclusion of "politicians" would have yielded very few occurrences, and the four occurrences in Mitigation 2014 are already included in "public". Of course, it is noteworthy that such central actors as the politicians are absent from the text, even though they seem to be alluded to through the adjective and adverb "political(ly)". Analysis of the occurrences of "society" shows that there are many occurrences such as "Because the use of improved and new technologies is an inherent element of society's transformation required for climate change mitigation, technological and societal changes necessarily interact." (IPCC 2014[r], 466) of "the energy audit program by the Energy Conservation Centre of Japan (ECCJ), was found to provide positive net benefits for society" (IPCC 2014[r], 782). These do not add much to the overall picture. The difficulty with including "culture", consists in differentiating between the "culture" that should be preserved in mitigation strategies and the "culture" causing climate change: "research is now available on the importance of behaviour, lifestyles, and culture, and their relationship to over-consumption" (IPCC 2014[r], 290). To include "culture" would have required a different methodology.

It is not customary to treat "public", "citizen", "stakeholders", and "laypeople" as synonymous in other sociotechnical arrangements since stakeholders are often differentiated from other non-experts, when assessing technologies (Forsberg et al. 201[r]). Regarding the identification of stakeholders in climate policy issues, Fenton et al. observe that "the main challenge for coordinators is not identifying who is a stakeholder, but rather determining who is not" (2014[r], 275). Furthermore, when it comes to describing non-experts other than stakeholders, there are different traditions. In the different forms of Technology Assessment, there seems to be an early emphasis on the notion of "citizen" (Schot & Rip 1997[r]), whereas in ethical assessments, one can encounter the notion of "laypeople" (Kaiser et al. 2007[r]). The notion of the "public" is prevalent in larger initiatives, such as the UK "GM Nation?" (Gaskell 2004[r]). Since these terms are the most common ones in different assessment traditions where non-experts are included and since the Fifth Assessment Report is an assessment, I have included these four terms.[1]

"Public", "citizen", "stakeholders", and "laypeople" do not share intension since they cannot be used interchangeably in every context (Kemp 2013[r]), but they could be seen to have more or less the same extensionality, i.e. they refer to the same set of individuals in the setting of climate change. This is the reason why I selected these terms rather than including others.

1 However, the legitimacy of the views from such different "assessment regimes" (Kaiser 2010[r]), vary between political cultures (Nielsen et al. 2007[r]). This variation has been summed up by Sheila Jasanoff in the concept of "civic epistemologies" (Jasanoff 2005[r]).



***Picture 1**: Ngram from books.google.com/ngrams, search conducted 24/04/2016, in the corpus of English books (1960–2008).*

There is a certain development in the use of terms and terminology in the literature, as the Ngram shows. An Ngram shows the occurrence of terms in a corpus of books over time.

The graph shows, not surprisingly, that the usage of the notions of "citizen involvement" and "public involvement" took off in the 1970s, but whereas the "citizen involvement" dwindled "public involvement" stayed on a stable level. "Stakeholders" were to some extent discovered in the 1990s, and the notions of "engagement" gained traction in the late 1990s.

The following argumentation and documentation will try to convince readers that words matter. I will show how the different notions "public", "citizen", "stakeholders", and "laypeople" are in presented in relation to mitigation of climate change as either barriers or resources for mitigation efforts, and there are significant variations. Furthermore, if one agrees with one basic premise, that mitigation efforts are aimed at limiting damages to humans and human society in a wide sense (as in opposition to geology), then it would be expected that notions "public", "citizen", "stakeholders", and "laypeople" should be seen as equals and treated in the same manner also textually.

The current study should be read as simultaneously an input to the discourse internally in the IPCC and as an analysis of the construction of "public", "citizen", "stakeholders", and "laypeople" as agents in mitigation. Following Elizabeth Malone (2009[r], 3), I would state that my interest here is to investigate "how *we talk to each other* about each of these issues and many other issues bound up in climate change" (my italics). I will not suggest that it is possible to draw a clear-cut image of either of these agents, but refer to the polyphonic character of language in climate discourse since climate change reports find themselves in between the political and the scientific (Fløttum 2010[r]). The study takes as a point of departure a view of the IPCC document as a social discourse that both represent and create the world, and that this social discourse represents both social practices and points to social structures (Fairclough 1992[r]).

Material and methods

The textual corpus for this article is the Fifth Assessment Report from Working Group III: Mitigation of Climate Change. Working Group III's task is to "assesses all relevant options for mitigating climate change through limiting or preventing greenhouse gas emissions and enhancing activities that remove them from the atmosphere."[2].

The process from the WG III suggestions via an implemented policy and to successful mitigation depends on a series of factors. Some of these factors can aid mitigation and some hinder mitigation.

Method

Reading and researching the *Mitigation of Climate Change* has constituted the basic method for this research. Since the work commenced before the final report was published, I have relied on the final draft available on http://mitigation2014.org/, while correcting the references with respect to the final print edition (IPCC 2014[r]). The report has been searched for the strings "public", "stakeholder", "citizen" and "laype" in Adobe Acrobat. The findings were listed after each other in an Excel spreadsheet. Through a close reading I deleted the fixed phrases as "public transport", "public

2 http://www.ipcc-wg3.de/

health" and "private-public partnership" since these refer to other phenomenon than "the public". I also deleted findings occurring amongst the references and words like "publication". This resulted in 154 occurrences. Reading the actual sections, I tried to ascertain whether the actual actor was a presented as a barrier or a resource for mitigation, or if the mention was neutral.

The empirical work, numbers

The method described above did not lead to an absolutely clear and concise picture. However, there were interesting patterns that I will present in what follows. The distribution of the mentions is as follows:

	Percentage
Public	57,1 %
Stakeholder	31,2 %
Citizen	10,4 %
Laypeople	1,3 %

***Table 3**: Mentions of public, stakeholders, citizens and laypeople in IPCC 2014 (N=154).*

The occurrences of "laypeople" is so low, that this word will be omitted from much of the later analysis. There is a clear concern in the report with the public and stakeholders, but the occurrences of "citizen" might be too few to draw any conclusions as to the employment of the term.

When it comes to if these four terms are connected to barriers or resources, the next table shows that 40 % of the occurrences are connected to expressing all of these terms as barriers while 25 % see these actors as resources for mitigation.

	Percentage
No mention	34,4 %
Barrier	40,3 %
Resource	25,3 %

Table 4: Public, stakeholders, citizens and laypeople as barriers, resources or no mention to mitigation in IPCC 2014 (N=154).

Examples of what I see to be textual incidences of "No mention", "Barrier" and "Resource" can be exemplified with the quotes below:

"No mention":

> Outside economics, those who study decision sciences emphasize the importance of facing difficult value-based trade-offs across objectives, and the relevance of various techniques to help stakeholders address trade-offs (IPCC 2014[r], 239)

"Barrier":

> the voting public in some countries may have a wait-and-see attitude toward climate change, leading their governments to postpone mitigation measures designed to meet specified climate targets (IPCC 2014[r], 155)

"Resource":

> Musall and Kuik (2011) compared two wind projects, where residents feared negative visual impacts. They found that their fear diminished, and public support for the projects increased when there was co-ownership of the development by the local community. (IPCC 2014[r], 188)

In the first example, stakeholders are mentioned as someone who can be helped in doing a calculation. They can be regarded as one example amongst many that can be assisted in mitigating climate change, but it is the authors who have knowledge of how to involve such assistance. In the case of the barrier example, the authors present an active opposition, while in the resource example, the public is declared to be catalysts for mitigation projects, in this case wind energy.

The distribution, however, differs when the different terms are analyzed separately. Here, the public seems to be presented more frequently as a barrier with 53,4 % of the occurrences of public being in relation to barriers to mitigation efforts and with the lowest frequency for being a resource with 21,6 %.

	No mention	Barrier	Resource	
Public	25,0 %	53,4 %	21,6 %	100 %
Stakeholder	45,8 %	22,9 %	31,3 %	100 %
Citizen	56,3 %	12,5 %	31,3 %	100 %

***Table 5**: Public, stakeholders and citizens as barriers, resources or no mention to mitigation in IPCC 2014 (N=152).*

Stakeholders and citizens are much less frequently presented as barriers and more often presented as resources. The largest difference is the "Neutral" for citizens. I should add here that I have not found any statistical correlations between any of the variables.

When I select only the occurrences of "barriers" in the data from the report, it becomes clear that the majority of barriers in the report, as regards the public, stakeholders or citizens.

	Barriers
Public	75,8 %
Stakeholder	17,7 %
Citizen	3,2 %
Laypeople	3,2 %

***Table 6**: Barriers to mitigation: Public, stakeholders and citizens as barriers to mitigation in IPCC 2014 (N=62).*

Of the 62 mentions of barriers to mitigation efforts amongst unorganized civil society, 75, 8 % of the occurrences relate to the public.

	Resources
Public	48,7 %
Stakeholder	38,5 %
Citizen	12,8 %
Laypeople	

Table 7: Resources for mitigation: Public, stakeholders and citizens as resources mitigation in IPCC 2014 (N=39).

48,7% of the occurrences relate to the public as a resource. Stakeholders have twice as large odds for being presented as resources rather than as barriers to mitigation (table 5) and citizens are four times likely to be seen as a resource than as a barrier.

When it comes to the numbers for neutral mentions, these are close to the values given for "resources" (table 7).

	No mention
Public	41,5 %
Stakeholder	41,5 %
Citizen	17,0 %
Laypeople	

Table 8: Neutral to mitigation: Public, stakeholders and citizens an no mention as role to mitigation in IPCC 2014 (N=53).

It can be argued that the IPCC WG III is divided in three parts: one social, one technical, and one on finance and policy. The Distributions of the occurrences of the actors and their roles in these different parts can provide some further insights into the different disciplines thinking about the public, stakeholders and citizens.

	Social	Technical	Policy & finance	Total report
Public	54,1	69,2	28,6	(57,1)
Stakeholder	29,5	26,9	50,0	(31,2)
Citizen	13,1	3,8	21,4	(10,4)
Laypeople	2,3			(1,3)
No mention	39,3	34,6	32,1	(34,4)
Barrier	39,3	44,2	21,4	(40,3)
Resource	21,3	21,2	46,4	(25,3)

Table 9: The public, stakeholders, citizens and laypeople – as well as as barriers and resources – divided by sections in IPCC 2014

These numbers further suggest that there are differences, but that the differences rather are between the last part on policy and finance, where stakeholders are an important term, and the remaining parts. The impression from these number further calls for an exploration of the presentation of stakeholders.

As is also illustrated in the examples of barriers and resources, there is an overwhelming presentation of the public, stakeholders and citizens as a collective. Only in three instances (1.9%) do the authors reflect on the diversity of the public and other social phenomena that might cause influence on the public, stakeholders or citizens as actors in climate mitigation.

Closer investigation of how the different actors are presented might provide some answers as to how to interpret the seemingly unreflective usage of the terms in the WG III report. A further question is then to see how the notions of stakeholders and the public are presented. These terms are not in any way defined in a meaningful manner, which of course is understandable given the huge task of the IPCC WG III to deliver global policy advice. Nevertheless, given the wickedness of the problem (Lazarus 2009[r]), clear concepts would be preferable. The question of future generations as stakeholders is treated in Chapter 3 "Social, Economic and Ethical Concepts and Methods", as well as mentioned in other parts of the chapters assessing social issues. However, the question is not included in the other two parts that address technology and industry and policy and finance – even though these last two parts draw heavily upon assessment models based on a cost-benefit structure (Edmonds et al. 2012[r]).

Discussions

The findings above will now be analyzed according to two different strands. I have chosen here to conduct a deeper study of the largest groups of occurrences in the text: "public" and "stakeholders". First, I will investigate if the IPCC WG III refers to shareholders when they write "stakeholders" (Smith 2003[r]). Then I will investigate if the "public" are seen as the kind of change-resistant and non-rational entity that Brian Wynne (1991[r]) has presented in his "deficit model of public understanding of science".

The stakeholders' interests

To reduce the concept of "stakeholders" to those having a financial or business interest in the mitigation measures, could be a possible interpretation of the numbers listed earlier. This is known as the "shareholders vs. stakeholders debate" where a shareholder view of a situation leads to the conclusion that a business has only obligations towards its shareholders, while the stakeholder view claims that a company has wider social obligations (Smith 2003[r]).

However, upon reading through the passages, it is only in the cases where stakeholders are seen as barriers to mitigation that such an understanding of stakeholders as shareholders seems high, but not even here are stakeholders mainly connected to business.

STAKEHOLDERS	interest or finance	not interest or finance
Barriers	44,4 %	55,6 %
Resource	15,4 %	84,6 %
Neutral	27,8 %	72,2 %
sum	27,5 %	72,5 %

***Table 10**: Presentation of "stakeholders" in relation to finance or business interests – as well as as barriers and resources in IPCC 2014*

In several of the occurrences, NGOs are presented as stakeholders. This, of course, reduces the percentage of stakeholders connected to finance.

The public perception/accept

It is of interest to see if the issue of public acceptance or public perception dominates when it comes to their representations in the text. Wynne (2003[r], 20) writes that "it is now accepted that trust and credibility are major contextual factors influencing the uptake and understanding of scientific messages". To omit issues of trust and credibility while focusing on acceptance and perceptions could indicate a version of the "deficit model of public understanding of science". According to Brian Wynne (1991[r]) such a "deficit model" consists of two features: the naturalness of scientific understanding of the world and the view that the lack of such understanding indicates a deficit of democratic capabilities.

PUBLIC	public perception	public acceptance	not perception / acceptance	Total public perception / acceptance
barriers	26,8 %	43,9 %	29,3 %	70,7 %
resource	35,7 %	42,9 %	21,4 %	78,6 %
neutral	21,1 %	21,1 %	57,9 %	42,1 %
Sum	27,0 %	37,8 %	35,1 %	64,9 %

***Table 11**: Presentation of "the public" in relation to public perception or public accept – as well as barriers and resources in IPCC 2014*

In table 9, the numbers point towards a presentation of the public as being a resource or a barrier depending on their perception or accept of policies seems to be very clear. However, the neutral mentions of the public departs rather markedly from this tendency. Some places in the IPCC report (2014[r], 255 & 319), the report draws on issues of trust, but in general there are indications of a deficit understanding of the public in the chapters of the IPCC WG III report.

Problems with a normative deficit model

Brian Wynne and others' reasoning on a cognitive deficit model has as its core a view from "science" that "the public" do not understand science and this leads to the wrong choices. Currently, another model is gaining ground that explains us how people (in some cases "the public") disagree with the policies proposed to mitigate climate change because these conflict with other preferences (on taxation), which in its turn leads to opposition to the scientific explanation of climate change (Klein 2014[r]). Without any kind of judgment as to the veracity, usefulness or preciseness of this explanatory model, I wish to call it "the normative deficit model of public understanding of science". Here it is the naturalness of a specific political and/or normative position that is given authority, and deviations from this is then used by pundits to explain the consequent cognitive judgement that climate change is either not real or not a very important problem compared to other more pressing issues. This normative deficit model can be phrased in different conditionals: If you deny climate change, then you disagree with government-imposed restrictions; or: If you oppose government-imposed restrictions, then you deny climate change. These two different conditionals also refer to different understandings of the (legitimate) relation between science and politics.— In the first position, it is the stance that science controls what is politically legitimate, and the second position suggests that it is up to politics – or another normative instance – to give science its mandate. Oreskes and Conway (2010[r]) use the latter position in *The Merchants of Doubt*. It might also be given a looser formulation, but then the insight loses some of its saliency: there is a (strong) correlation between denial of climate change and opposition to government-imposed restrictions. Dan Sarewitz (2004[r], 83) can be one example of such a position when he writes, "the politics behind environmentalism was probably more important for furthering the science than the science was for advancing the politics".

Problems with a static and one-dimensional view of the public

The prevalent understanding in the IPCC WG III that the public is a homogenous group that has common perceptions and accept or reject technological solutions might be an unfortunate carrier of sweeping generalizations that might hinder successful mitigation. There are indications to the contrary, namely that the public needs to see the solutions as just or trust the messenger presenting new solutions. Far from claiming that the public has all the solutions to climate change, I will nevertheless just briefly touch upon the issue of giving policy advice based on static views of the public. Primarily, values and interests as well as first and second order preferences might create perceptions of what constitutes a good solution. One example can be seen in Germany where there has been a rejection of one technology proposed by the IPCC WG III, namely carbon capture and storage (CCS) – as well as the more well-known plan to phase out all nuclear power plants. CCS is a technology cluster that might reduce the carbon dioxide emission significantly. The German rejection based on a preference for other technologies than those based on fossil fuels – as well as concerns over the storage of carbon dioxide underground on-shore (Dütschke 2011[r]). It is then reasonable to deduce that the preference of avoiding fossil fuels altogether is stronger than the preference to clean fossil fuels or that the risks of storing carbon were compared to the risks

of storing nuclear waste, and the alternatives of wind and other renewables seemed more preferable – or what Gardiner (2011[r]) would refer to as *prevention* rather than *mitigation* as a strategy for solving the challenges of climate change. Of course, this touches upon acceptance, but not of a general acceptance or rejection of mitigation technologies, but rather an informed judgment on technological pathways – and possibly with a dash of nimby-ism.

The Public – Principled or General?

Mike Michael (2009[r]) advances an analysis where he contrasts the representation of the public in two rhetorical categories: Publics-in-General (PiGs) and Publics-in-Particular (PiPs). A simplified version of Michael's dichotomy could read as that PiPs are the publics that are involved in or have a stake in the technology under development or in some way are affected by its impacts. Useful illustrations can be the involvement of cancer patients in the development of new testing and treatment or engagement with the local population in the planning and building of a new carbon capture and storage facility. PiGs are the generalized total public, the one that is constructed through phrases as "the general public" or "the taxpayers" – and their equivalent. Michael has obviously worked structurally, to some extent like this paper, in establishing the dichotomy since he ends of listing how the PiPs and the PiGs are contrasted through different oppositional pairs, where he lists among others:

- Instrumental (means-oriented)/Substantive (ends-oriented)
- Interested/Disinterested/Uninterested
- Authentic/Inauthentic
- Self-interested/Oriented to broader interests
- Decided/Undecided (Certain/Uncertain)
- Cooperative/Obstreperous
- Democratic/Anti-democratic (Michael 2009[r], 627)

Based on Michael's model, one would expect that the few places that the public are seen as a resource to and for mitigation, they would be presented as PiPs while where they are barriers, they would consequently be presented as PiGs. This hypothesis constitutes reversing Michael's findings in the sense that he worked inductively while the current paper takes his categorization as a basis for a taxonomic endeavor.

Now, there are only 19 instances where the public is seen as a resource, while there are 47 where they are seen as barriers. I will illustrate the findings of PiPs and PiGs and their relation to barriers and resources for mitigation, in the IPCC WG III (2014[r]), in Table 10. It is not unproblematic to move from Michael's thick interpretations to numbers. Take for example the following quote:

> public support for the projects increased when there was co-ownership of the development by the local community [...] Hence, there was greater support of CCS when its promoters were perceived to be acting in the public interest rather than purely for profit. Those opposing CCS were less likely to succeed when they were perceived to be acting to protect their own economic interests, such as property values, rather than focusing on environmental quality and the public good. (IPCC 2014[r], 188)

In the first instance, it is a PiP, but in the second instance "public" is used to indicate a general interest, ergo a PiG. Furthermore, when reading the occurrences of the public as barrier or resource for mitigation, it is only in the cases where the public is presented as a barrier that the report writes "the general public" or equivalent phrases.

	Barriers	Neutral	Resources
PiGs	47	22	18
PiPs	0	0	1

***Table 12**: Presentation of "the public" as PiP or PiG (Michael 2009) according to whether they are represented as barriers for, neutral to or resources for mitigation in IPCC 2014.*

In several places in the WG III Mitigation 2014, the authors write on a general level about the need for local knowledge, engagement, activities and other factors, but they rarely illustrate what this means and how it should be done – that is they never illustrate PiGs as including PiPs. This very abstract and impersonalized form is further strengthened by the complete absence of pictures of real places in WG III Mitigation 2014's 1436 pages, which is a notable change from the two pictures in the Fourth Assessment report's 863 pages (IPCC 2007[r], 270 & 610). Such editorial choices should be further scrutinized when it is well established that climate science is a highly medialized field (Tøsse 2013[r]), which also contributes to its political relevance (Peters et al. 2008[r]). It is further established in the study of how the public engages with science, that they tend to focus on the social contexts (Pigdon et al. 2014[r]). Sheila Jasanoff (2010[r]) sees that the IPCC tends to separate knowledge from meaning.

The following quote might serve as an example on the level of abstractions concerning the public: "RE [renewable energy] and energy-efficiency programmes will continue to face public acceptability problems. Indeed, attitudes towards RE in addition to rationality are driven by emotions and psychological issues" (IPCC 2014[r], 552). However, the analysed IPCC report does not seem to support my hypothesis that one would find Michael's (2009[r]) PiPs as resources and PiGs as barriers. Nevertheless, there is the trend that the authors always refer to barriers when they mention "the general public".

Integrated research projects

The IPCC Working Group III is composed of social scientists, legal scholars, economists, humanists, and political scientists and other academics from the subjects that are part of the umbrella called Ethical, Legal and Social Aspects (Implications) of New Technologies (ELSA) (Nydal et al. 2015[r]). According to the reasoning and the numbers presented in this article, it seems that the researchers from the ELSA field on climate science share the same deficit view

of the public as many natural scientific climate scientists (Tøsse 2013[r]; Thorstensen 2014[r]; Heidenreich 2015[r]).

"Integrated projects" are research projects where researchers from the ELSA field enter into co-operation with natural scientists in order to create reflection, or reflexive practices, during and in the research and development process of new technologies (Forsberg 2014). However, as the analysis in this paper indicates, it might be neither sufficient nor necessary just to include researchers from the ELSA fields into (climate) science if these researchers do not add or create reflection on one of the very basic questions of the scientific endeavor: "how can this research bring the world in the right direction?". Michael (2009[r]) notes how all the different models of publics and science construct them as oppositions.

Contribution of Greimasian analysis

Did the method I applied then contribute to anything that we did not know before – or that have not been put together earlier? Is this method at all suitable for analyzing big corpora of text? That the IPCC WG III uses and repeats the same formulations as are found in all forms of research articles on the relations between science, policy and the public –as well as between facts and values – is hardly surprising. However, the tendency to see "citizens" in a better light than the "public" depended on a bird's-eye view of the text. The method further complements Mike Michael's findings. The weaker elements of this method is that it becomes unclear what kind of public or what kind of stakeholders the text refers to – and what are the contextual factors for the conclusion included by the IPCC WG III.

Conclusions

Through an analysis of some actors as actants in Mitigation 2014, I have aimed at contributing to giving them "flesh and features that make them have some form or shape, no matter how vague" (Latour 2005[r], 53). Where Mike Michael (2009[r]) illustrates how different sets or types of "public" are rhetorically produced in the literature and practice of relating those from outside the science and technology field to those inside these fields, I have shown how barriers to and resources for are rhetorically produced through choices of extensionally equal terms. Of course, there are some differences between the words "citizen", "stakeholder" and "public", but in the setting of the IPCC and the UNFCCC they are synonymous. Outside of this setting, I can only speculate on how a convener of an arrangement would decide upon the choice of words, and how this would affect the selection of participants and the possible impacts.

When defining a term one typically has the choice between an extensional and an intensional definition strategy: The extensional – or denotative – strategy is based on pointing to the elements that together constitute the class denoted by the term. The intensional – or connotative – strategy lists the different qualities indicated by the term. The analysis above suggests that the IPCC WG III report presents "the public" as being more troublesome and a greater obstacle to mitigation than "citizens" and "stakeholders", even though these terms share extensionality in the UNFCCC official documents (UNFCCC 2005[r]). The public is very close to become the anti-Subject in the Greimasian actant model. Through applying Palma's notions of the opponent as anti-Subject, the public becomes anti-Climate. The *figuration* of agency is then founded in a "public" who are to a large extent portrayed in a non-relational way as "perceiving" or "accepting" new solutions and not interacting or producing.

According to Klaus Theweleit (1987[r]), the transforming elite must deploy their energies in overcoming and destroying what they perceive as barriers to the order. In the present theoretical context where the IPCC discourse points to social structures and practices, the use of words and terminology then also tends to show (as opposed to tell) towards the proposed political solutions. Far from suggesting that one can conclude with a vulgar reading of Ferdinand de Saussure, that the sign is arbitrary in the meaning that a word or a phrase could mean anything and that this randomness is similar to talking to Humpty-Dumpty in *Alice in Wonderland*, I will rather underline the essence of a Saussurian reading that the signs are independent from the meaning but that these meanings are created by humans (Saussure 1995[r]). One danger associated with presenting the public as a barrier to the mitigation of climate change while presenting citizens and stakeholders in a more positive light, is that such an image corresponds all too well with important European social stories about the threat from the masses. This understanding of "the crowd" as an element to fear and strive to control can be traced back to Gustave Le Bon (1899[r]) that has had followers in the social sciences throughout the 20th century (McPhail 1991[r]) and used to deride the tastes, values and preferences of the people (Ryan 2012[r]). The re-actualization of a strong cultural stereotype, the crowd, runs the danger of excluding the public, or citizens or stakeholders, from informed and cooperative climate change mitigation.

The ethics of climate change does not need scapegoats. In the analysed IPCC WG III report, the public fares much worse than their extensional equals do. The notions of a public that can be found through simple analysis of yes or no to a technologically founded mitigation option, as opposed to the more rational and responsible citizens and stakeholders, does not take the struggle against anthropogenic climate change any further. Ordinary people will carry the main burdens of future mitigation measures. Therefore, the success or failure of such measures depend to a large degree that they correspond to the values and / or preferences of ordinary people. Texts with policy relevance should reflect this simple fact.

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