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'FOLLOWING THE SCIENCE'. SCIENCE* AS A SOCIOPOLITICAL KEYWORD DURING THE PANDEMIC

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ABSTRACT

During the pandemic, the meaning of the term 'science' became the site of a more or less explicit struggle, as experts and politicians engaged in a debate to determine what it rightfully encompasses. In doing so, they (de)legitimized realities and hierarchized them as holding a greater or lower political relevance for the crisis decision-making process. In this respect, 'science' may be considered to have functioned as a sociopolitical keyword. This paper examines the meaning and argumentative functions of the use of 'science' by Dutch- and French-speaking Belgian politicians and experts on Twitter (Jan. 2020 – Dec. 2021). Using a combination of corpus-assisted methods and qualitative data analysis, the study identifies three primary meanings for the term: 'science' as a status, as a product of scientific endeavor, and as embodying specific qualities such as neutrality and rationality. Additionally, the analysis reveals eleven distinct argumentative patterns through which 'science' was used to legitimize, delegitimize, or question various policy decisions and actors. The findings underscore how the semantic struggle deriving from the polysemic nature of 'science' was used to defend distinct argumentative purposes in the public debate during the pandemic.

KEYWORDS

experts ; politics ; covid-19 ; argumentation

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'Following the science'. Science* as a sociopolitical keyword during the pandemic

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1. Introduction

The relevance of the questions tackled by this paper struck me during a public lecture I gave in January 2024 on the role of experts in politics. Most irritated, a member of the audience argued that using 'science' to refer to ongoing research or evolving evidence, in other words realities that were not, or not yet, part of a body of fixed knowledge, was very misleading in the public communication of the pandemic. Knowledge of the virus or solutions to curb its spread were at the time 'in the making' and therefore should not have been labelled 'science', he added.

There are two points to be drawn from this comment. On the one hand, the use of 'science' during the crisis indeed went beyond designating what is part of the established body of scientific knowledge. While this trend is not exclusive to either public communication or the pandemic, it may however have been particularly salient in the context of the health crisis. Used by many heads of state to describe their crisis management strategy, the formula 'following the science', for instance, did not imply adherence to the scientific canon, but rather an alignment with the advice of experts. Or could it be that 'science' in this context was actually pointing to available preliminary findings or raw data? This mere expression shows that the meaning of 'science' is far from clear. On the other hand, the concern that 'science' may encompass certain types of realities underscores, above all, the rhetorical stakes involved in its use. The issue that the audience member sought to raise, I would argue, was not so much the semantic accuracy of 'science' as the implications of this word for socio-political debates. More specifically, it concerns the ability of 'science' to shield realities that are successfully associated with it (e.g. 'science-based policies') from criticism or questioning, for any attempt to do so runs the risk of being seen as irrational. The crux of the matter, then, is that the qualification of a reality as scientific influences how this reality is perceived and considered.

Starting from these two observations, the paper seeks to unveil how 'science' (as well as its derivatives such as 'scientific', 'scientist', 'scientifically'; henceforth science*) acted as a sociopolitical keyword during the health crisis. Taking the management of the pandemic in Belgium as a focal case-study, it analyzes the discourse of two prominent types of actors, experts and policymakers, in order to identify the different uses and argumentative functions of science* in the Belgian public discourse at the time. Accordingly, the aim of the paper is twofold. Firstly, it sheds a light on the meanings that were (not) associated to science* in the discussion on the management of the crisis. This involves examining the various ways in which science* is used by the actors to uncover the distinct semantic dimensions and connotations that it embodied in the context of the pandemic.

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Secondly, the analysis unravels the argumentative functions of science* by investigating how the actors use it to categorize, distinguish and hierarchize realities over others as well as the consequences of this process. To achieve these goals, the study combines corpus-assisted techniques (Schröter & Veniard, 2016) with a qualitative analysis (Hambye and Rondiat, 2024) on a dataset of 1.129 tweets posted by Belgian experts and politicians between January 2020 and December 2021.

2. Science as a sociopolitical keyword

The pandemic presented governments worldwide with unparalleled challenges, to the extent that the decision-making at the time could aptly be characterized as a 'fuzzy gambling' (Boin & Lodge, 2021) in which policymakers were compelled to make critical choices without a clear understanding of the potential outcomes. As governments increasingly depended on established or ad hoc groups of experts designed to inform their responses to the virus outbreak with the most recent and relevant knowledge (Battiston et al., 2021; Camporesi et al., 2022; Martin et al., 2020), scientific expertise was thrusted into the limelight as never before (Leidecker-Sandmann et al., 2022). With this close collaboration between experts and politicians, lively debates unfolded on their respective roles, the potential discrepancies and tradeoffs between their own objectives, along with the quality and integration of evidence in decision-making (Williams et al., 2020). These discussions fueled a vast array of public discourse, with politicians (Musolff et al., 2022; Wahnich, 2022) and experts (Negura et al., 2021) alike voicing their opinion on how the crisis should be managed, which measures should (not) be implemented, and who behaved sensibly (or not).

Belgium was no exception: over the course of the crisis, experts and politicians engaged in intense discussions on the 'scientificity' of evidence and the pivotal role of science in guiding policy decisions (Easton et al., 2022). A focal point in these discussions, science* became the site of a meaning struggle between politicians and experts, with each group vying to establish what or who could rightfully be labeled 'scientific'. The struggle, however, was not merely semantic. To be recognized as 'based on science' can significantly smooth the path for a policy's acceptance and implementation; conversely, proposals that are criticized as 'going against science' face steeper challenges to acceptance. This means that the process of qualifying a reality as 'scientific', as well as denying that characterization, deeply affects the relevance of that reality to the decision-making process. The stakes behind the meaning struggle were thus, in fact, highly political. This underscores a paradox: despite being commonly considered unaffected by political interests, science is therefore definitely a matter of political interest (C. Boswell, 2008; Brown, 2009; Crease & Selinger, 2006; Weingart et al., 2022).

These characteristics, namely its salience and pivotal role in the public debate, made science* a sociopolitical keyword (SPKW) during the pandemic. SPKWs have already been explored through various lenses and terminologies across the literature —keyword in Evans & Jeffries 2015, DKW in Schröter & Storjohann 2015, among others. Without necessarily being the most frequent terms of a set of discourse, contrary to the frequency-

based definition of 'keyword' in computational linguistics (Baker, 2004), SPKWs embody the prevailing ideologies, cultural norms and sociopolitical debates of a given time. Consequently, they are characterized by their functioning as semantic nodes ideologically loaded that index a diverse, even concurrent, set of meanings (Jeffries, 2003; Stubbs, 2001, 2010). The relevance of SPKWs for discourse studies lies in this semantic struggle as well as in their ability to influence perceptions, categorize realities, and drive public debate.

To date, the use of science* by politicians or experts in sociopolitical debates remain underexplored. The language of politicians has been the object of a heightened focus in discourse studies through works analyzing their argumentative strategies (Fairclough, 1995; van Dijk, 1998; Wodak, 2016), lexical choices (Savoy, 2010), or crisis communication practices (Billig & Marinho, 2023; Collins & Koller, 2024; Musolff et al., 2022; Wodak, 2021). Though less extensively, the discourse of experts has also been examined, with analyses ranging from semantic and argumentative approaches (Cussó & Gobin, 2008; Manyweathers et al., 2020) to pandemic discourse specifics (De Cock & van Laar, 2024; Negura et al., 2021). However, little research explored the shared lexicon of these critical figures (Augé, 2023). Likewise, despite an extensive literature on the use of scientific evidences and arguments in policymaking from both empirical and normative standpoints (e.g. J. Boswell, 2014; Douglas, 2006), there are no studies dedicated to understanding how scientific realities are discursively constructed and the discursive effects of these constructions.

3. Data and method

3.1. Method

The paper explores the meanings and the argumentative functions of science* by combining a quantitative study of collocates (Schröter & Storjohann, 2015) and a qualitative approach to sociopolitical keywords (Hambye and Rondiat, 2024). The principal aim of the quantitative analysis is to unearth recurring lexical fields by focusing on the most commonly associated collocates of science*. Nominal, adjectival, adverbial and verbal collocates were analyzed in the concordance lines using the collocate tools available on SketchEngine (Kilgarriff et al., 2014).

While collocates are indicative of semantic and thematic formations (Schröter & Storjohann, 2015), which makes a quantitative analysis of sociopolitical keywords a relevant approach, meaning and function are also enacted pragmatically. Therefore, unraveling the meanings and, even more so, the argumentative functions of science* requires a fine-grained analysis that can only be achieved through a qualitative focus. In line with the principles of qualitative data analysis (QDA), this analysis employs a qualitative categorization of the data to identify recurring and predominant types of objects (e.g. types of meanings, functions, or argumentative patterns) (see Hambye and Rondiat, 2024). While the categorization itself is qualitative, the primary objective of the analysis is to quantify trends within the corpus rather than to offer a qualitative interpretation of the content.

The categorization process is guided by a coding scheme inspired by the framework proposed by Hambye and Rondiat (2024). This framework aims to enhance the qualitative analysis of SPKWs by introducing categories of analysis that are both systematic and flexible enough to accommodate the diversity of SPKWs. Each instance of science* has been coded according to the categories presented below. Grounded in a meticulous analysis of textual cues, the coding process also relies on a thoughtful examination of implicatures (Grice, 1975)—meanings or inferences not explicitly stated but implied by the context or common sense. To fully capture this contextual dimension, each tweet was thoroughly contextualized by considering both its immediate surroundings (e.g., the tweets it responds to or those that reply to it) and the broader context of the pandemic at the time (e.g., the pandemic stage when the tweet was posted and the specific decisions it references or addresses). The coding process is illustrated through the analysis of the following tweet:

> (1) Georges-Louis Bouchez (chairman of the MR, francophone liberal party), 2021-03-24: Il faut établir des mesures NÉCESSAIRES et EFFICACES. Pas un bricolage. Il faut une pédagogie qui ramène de l'adhésion. Là est la clé. Nous avons donc plus besoin de véritables études scientifiques que d'interviews anxiogènes. On parle de la vie de millions de personnes #begov BE.
> ('NECESSARY and EFFECTIVE measures must be established. Not a bricolage. We need an educational approach that gets people on board. That is the key. We therefore need real scientific studies rather than anxiety-inducing interviews. We're talking about the lives of millions of people #begov BE.')

- **Contextualization**: the chairman of the MR (*Mouvement Réformateur,* French-speaking right-wing party) reacts to the media releases of several government-appointed experts that call for more stringent measures.
- **Referent**: specifies the reality qualified by science* to which the features associated with science* are thus ascribed. The referent is often, though not invariably, a collocate of science*.
    - coded 'studies' in (1)
- **Type of referent**: specifies the meta-category that encompasses the referent. These meta-categories are determined inductively, based on what is encoded in 'referent'.
    - coded 'scientific product' in (1)
- **Referent in contrast (RC)**: encompasses the realities that are opposed to science* or deprived from being characterized as science* in the tweet.
    - coded 'anxiety-provoking interviews [from experts]' in (1)
- **Type of referent in contrast**: idem as type of referent, but applied to what is coded in 'referent in contrast'.
    - coded 'actions / facts' in (1)

- **Conceptual category:** aims to uncover the meaning associated with science*. This meaning is determined by examining other terms present in the tweet, such as collocations, the referent that science* characterizes, or terms that are opposed to science*. The conceptual categories are derived inductively from these textual elements and are not mutually exclusive, meaning that a single occurrence of science* can be classified into several conceptual categories. They enable to explore which defining features of science* are emphasized or backgrounded in the dataset.
    - coded 'data / products' in (1)
- **Conceptual category in contrast:** reveals what the meaning of science* is not, or what kind of realities lack features needed to qualify as science*. For instance, in (1), 'real scientific studies' suggests that the scientific studies conducted at the time by experts were not genuinely scientific. Thus, the meaning of science* is not contingent upon a status: one can be an expert and yet produce objects that are not really science*.
    - coded 'Status' in (1)
- **Reasoning:** when science* assumes an argumentative role (see 4.2.), the reasoning in which it is embedded is reconstructed to identify its components. Premise 1 always includes the referent or, in instances lacking a referent, the referent in contrast. O denotes elements of the reasoning that are objects, S subjects.
    - In (1), Premise 1 since studies (O) should be scientific
      Premise 2 and experts (S) don't do such studies
      Conclusion then experts (S) are not legitimate
- **Argumentative scheme:** presents a schematization of the interpretation made in the 'reasoning' category. The argumentative scheme is reconstructed according to the model presented in Table 1, where

O	an object
S	a subject
O'	another object
S'	another subject
=	equates
≠	does not equate
?	is maybe
x	favors / supports
/	does not favor / support

∈ belongs to / comes from

∉ does not belong to / does not come from

Reasoning stage			Scheme
Premise 1	*since*	if declarative:	[O or S] [= or ≠ or ? or x or /] science*
		if conditional:	[O or S] should [= or ≠ or ? or x or /] science*
Premise 2	*and*		[this O or S] [∈ or ∉ or = or ≠] [O or S or O' or S']
Conclusion	*then*		[O or O' or S or S'] [= or ≠ or ?] legit.
Premise 2 bis* (optional)	*and since*		[O or O' or S or S'] [= or ≠ or ∈ or ∉] [O' or S']
Conclusion bis (optional)	*then*		[O or O' or S or S'] [= or ≠ or ?] legit.

Table 1 Argumentative schemes coding grid

- In (1), Premise 1 since O should = science*
  Premise 2 and O ∉ S
  Conclusion then S ≠ legit.

- **Argumentative effect**: based on the argumentative scheme, the effect produced by the use of science* and its discursive construction are described
  - In (1), Delegitimization of someone (i.e., the experts) through their dissociation from something science* (i.e., studies).

3.2. Data

I used the Twitter API to retrieve tweets published by Belgian politicians and experts in 2020 and 2021 which include the French and Dutch equivalents of science, scientist, scientific and scientifically (see Table 2).

Dutch	French	English	Grammatical category
Wetenschap	Science	Science	Noun
Wetenschapper / wetenschapster	Scientifique	Scientist	Noun
Wetenschappelijk / wetenschaps*	Scientifique	Scientific	Adjective
Wetenschappelijk	Scientifiquement	Scientifically	Adverb

*Table 2 Forms of science**

The search of these terms was conducted on all the tweets from a selection of 21 politicians and 17 experts who embody different political views and have held a variety of positions during the pandemic (see Appendix 1). This resulted in a thematically consistent 'purpose-built' dataset (Schröter & Storjohann, 2015) for which science* is both the common denominator as well as the object of investigation. In total, the dataset consists of 882 tweets with 1,129 occurrences of science*. Notably, the number of occurrences is rather unevenly distributed, with a clear imbalance against the (Dutch-speaking) politicians' category (see Figure 1[1]). Despite this skew, the dataset comprises every instance of science* by key actors over two years and thus offers a solid snapshot of the use of science* in the Belgian public discourse.

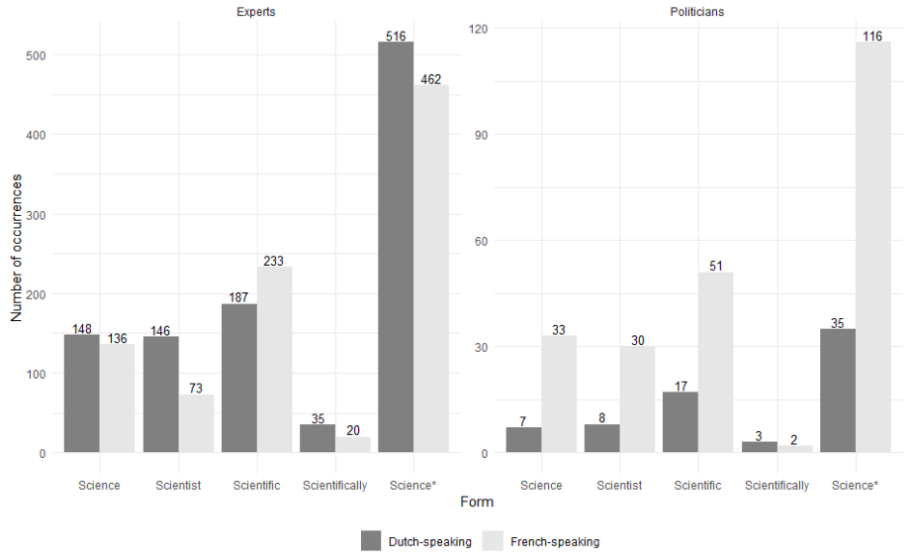

Figure 1 Number of occurrences of science in the tweets of Dutch and French-speaking politicians and experts*

While the analysis includes quantitative elements, it is important to clarify that the paper's main objective is not to produce universal findings, but rather to observe the specificity of the use of science* by some actors in a given context. Therefore, a focused qualitative analysis has been performed on a sub-corpus of 80 randomly selected tweets, which collectively include 92 occurrences of science* (see Figure 2). The selection process, while random, followed two primary criteria: (i) an equivalent number of tweets (20) has been selected for the four categories of actors (i.e., Dutch-speaking politicians, French-speaking politicians, Dutch-speaking experts, French-speaking experts); (ii) the qualitative corpus comprises at least one tweet of each individual actor.

1 When needed (i.e., for *wetenschappelijk* in Dutch and *scientifique* in French), the grammatical classification made by SketchEngine was vetted manually to ensure its validity.

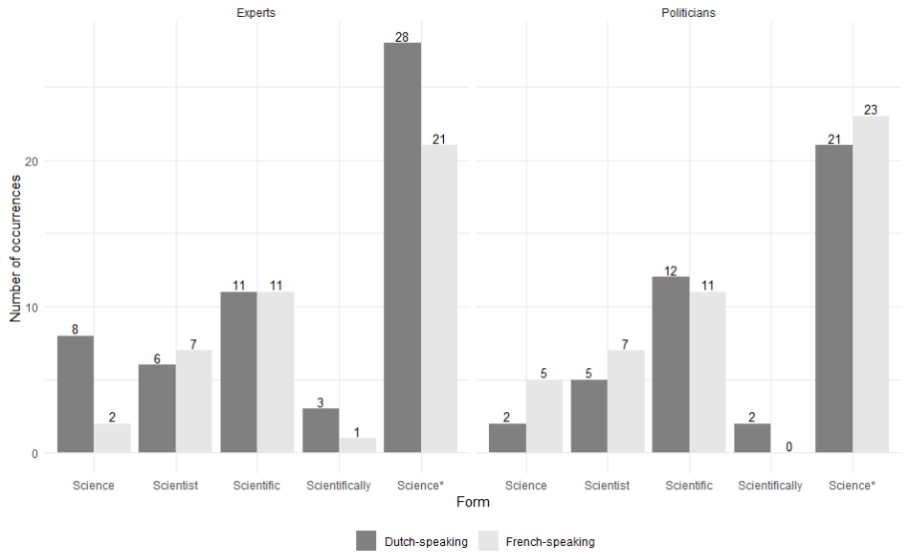

Figure 2 Number of occurrences of science in the qualitative dataset (random selection process)*

4. The meaning of science*

The following section examines the meaning of science* from both a quantitative and qualitative perspective. First, it discusses the collocation profile of science* as identified on SketchEngine. Second, it presents findings from the meaning reconstruction of science*, obtained using the coding grid presented earlier.

4.1. Collocation profiles

Appendix 2 presents the collocates most frequently associated with science* in the discourse of Dutch- and French-speaking experts and politicians. The presentation of the results is limited to collocation with a logDice score ≥ 7,5, a metric available on SketchEngine that shows the typicality of the collocation independently of the size of the corpus (Rychlý, 2008). Each collocation was attributed to an emergent thematic category established through the examination of the concordance lines on SketchEngine. While, in theory, the table also could have been further broken down by type of actors (politicians / experts), the reduced number of occurrences of science* produced by Dutch-speaking experts (n=35) hinders drawing conclusions of comparable solidity to those of the other subsets. With the most frequent (absolute frequency) collocations having only 3 occurrences, the collocation profile of the Dutch-speaking politicians' subset mostly consists of terms with one or two occurrences. Such a low threshold of salience thus makes it hard to conclusively establish that the semantic patterns are significant.

The table thus offers insights into the semantics of science* in Dutch and French. These results suggest that the collocation patterns of science* are partially consistent across languages, with some notable differences revealing distinct linguistic and thematic orientations in how science* was contextualized in the discourse about the pandemic. In Dutch-speaking tweets, science* mainly collocates with policy-oriented terms, such as *on-*

derbouwen ('to substantiate'), *advies* ('advice'), and *baseren* ('to base'), indicative of a strong inclination towards using science as a foundation for policymaking and advisory processes. Additionally, the presence of terms related to debate (*debat* 'debate', *consensus* 'consensus', *stem* 'voice') and rationality (*geloof* 'belief'[2], *juist* 'correct') points towards patterns where science is central to argumentation, consensus-building and rational justification.

In contrast, French-speaking tweets show a higher tendency to associate science* with product-related terms such as *recherche* ('research'), *données* ('data'), and étude ('study'). This suggests a focus on the outputs of scientific activities, emphasizing the tangible contributions of science to knowledge about the virus. The category 'community', with terms like *communauté* ('community') and *chercheur* ('researcher') frames science within a communal context that emphasizes the institutionalized side of science. The tweets also include policy-driven terms (*politique* 'politics', *public* 'public'), but with less frequency compared to Dutch. This first examination thus underscores some nuances between Dutch- and French-speaking tweets, with the former emphasizing the advisory and substantiating role of science in policy and debate while the latter highlight the outputs and collective aspects of scientific endeavors.

One fairly recurring problem of corpus approaches is the quasi exclusive focus on what is present at the expense of what is underrepresented or outright absent, as pinpointed by Schröter and Storjohann (2015). Yet, a thorough analysis should consider that discourse producers actively select specific linguistic options from the array available within a language (Baker et al., 2008). For the study of SPKW, this implies acknowledging that discourse not only foregrounds but also backgrounds semantic features of such words, which shapes their meaning. In the case of science*, some of the categories of collocations may have been expected but others are noticeably absent or underrepresented. Firstly, it can be noted that terms related to specific scientific fields (e.g. epidemiology, virology, bioscience, microbiology for the most represented in the crisis) are not listed. The absence of such collocations may indicate a focus on the broader concept of science rather than on its sub-disciplines. Likewise, as the dataset spans the pandemic period, there seems to be a lack of specific collocations related to health, or the pandemic-specific context (e.g. vaccine, public health). Considering the significant role of science in shaping policy response during the crisis, other patterns might also have included collocations with terms related to legal aspects (e.g. law, constitution, compliance, legal). Lastly, although *ethisch* ('ethic') appears in the Dutch-speaking list, a broader representation of terms related to the ethical implication of some controversial decisions proposed in the name of science (e.g. moral, duty) could also have been expected.

4.2. Evidences from the qualitative analysis

While collocations are a valuable starting point for understanding the meaning of a SPKW, they provide no insight into how the latter relates to its collocates. For instance, Appendix 2 shows that 'debate' is often part of the science* collocation environment. As it stands, the relation between the two words remains however inaccessible: is the debate

2 "Belief" has been classified in the category "rationality" because this term is regularly contrasted with science* in discourse to indicate that science is precisely not a matter of belief, but of rationality.

scientifically grounded? or rather not scientifically grounded? alternatively, is it science that is the subject of debate?

(2) Tom Van Grieken (chairman of the Vlaams Belang, Flemish nationalist party), 2021-11-12 [RT]: Twee experten, twee meningen. Echt wetenschappelijk zijn ze dan niet bezig volgens mij. ('Two experts, two opinions. Then they are not really being scientific in my opinion.')

In (2), the relation between 'expert' and 'scientific' departs from what might be expected while still providing valuable information about the meaning of 'scientific'. Since two experts can be unscientific, being science* is not tied to a status or institutional affiliation, but rather to a form of objectivity or factuality that implies a strict convergence between individuals. This mere example shows that a quantitative approach to SPKW should be complemented by a qualitative focus on how the meaning is constructed pragmatically, something to which the remainder of the paper is devoted.

The systematic coding of science*'s referents unveils the concrete realities to which science* alludes. In most cases (n=35) science refers to a component of scientific endeavor; either data (n=2), process / approach (n=6), products (n=11), or cases where it remains unspecified (n=16), as in excerpt (3) where the Chairman of the Flemish liberal right-wing party refers to 'the correct scientific basis' without specifying the nature of this base. This ambiguity arises from the vagueness of referents like base or *onderbouw* ('basis') (n=9) that complexifies the interpretation of what constitutes a 'scientific basis' for policy —studies? raw data? The recurrent appeal to 'scientific basis' might actually serve a strategic ambiguity, allowing policymakers to claim that their decisions are science-based even in cases where they may not fully concur with expert advice. Essentially, this ambiguity provides a way to endorse policy measures by cloaking them in scientific authority without explicitly stating what kind of scientific knowledge they are based on or the extent to which they follow such scientific evidence.

(3) Egbert Lachaert (Chairman of the Open VLD, Flemish liberal right-wing party), 2021-12-02: Zomaar één sector viseren zonder de correcte wetenschappelijke *onderbouw* en zonder eerst die sector te consulteren, dat is de verkeerde aanpak. We hebben ook lokaal nog de mogelijkheid om bij evenementen in te grijpen, wanneer dat nodig is. ('Just targeting one sector without the correct scientific *basis* and without consulting that sector first, that is the wrong approach. We also still have the possibility locally to intervene at events when necessary.')

A second type of referent gathers instances where science* refers to a collective, often broad and vague like 'the scientific community' or 'the scientists' (n=33), as in (4) where the use of 'scientific and academic circles' creates a monolithic representation of scientists as if they were at the time speaking with one voice. This comes as a surprise considering that the 'community' category emerged from the collocation profiles of science, but without being the most frequent. Although such references might have been expected to primarily come from policymakers pointing to those who advised them during the crisis, the majority of the instances were actually produced by experts (n=20 vs 13) in tweets pushing for policy actions.

(4) Bernard Rentier (expert), 2020-03-25 [RT]: La colère monte dans les *milieux* scientifiques et universitaires, (y compris chez des gens aux premières loges dans la gestion de la crise du

Coronavirus)... sur les données très précises/précieuses que collecte @sciensano mais sans les partager!! ('Anger is mounting in scientific and academic *circles*, (including among people who had a front row seat in the management of the Coronavirus crisis)... on the very precise/precious data collected by @sciensano, but without sharing it!!')

Another sign of the importance of the status-related aspect of science* is that some tweets (n=15) tend to qualify an action, such as a gesture or statement (e.g., *wetenschappelijk commentaar* 'scientific comment', *communication scientifique* 'scientific communication', *wetenschappelijk debat* 'scientific debate'), as scientific primarily because the authors of the action are themselves members of the scientific community. Consequently, while these instances feature non-animated objects as referent of science*, their scientific characterization is linked to their synecdochic relationship with a scientist.

Much less frequently (n=6), science* refers specifically to individuals in order to contrast their attitudes with those of other actors. The individualization strategy is thus used not only to express who is scientific, but also who is not —mostly policymakers. Though more rarely, this strategy also targets scientists, to question or deny their scientificity, either directly, or by opposing them to a cohesive scientific community from which they are ostensibly excluded, as evidenced in (5) where some experts are singled out because of their divergent behavior. The remaining occurrences do not provide a clear referent for science (n=3).

(5) Marius Gilbert (expert), 2020-10-20: Il s'est passé exactement la même chose, les données montraient une augmentation rapide des cas, et certains, très minoritaires dans la *communauté* scientifique, ont été accueilli sur les plateaux pour dire que ce n'était rien, et ils s'appelaient Toussaint ou Toubiana. ('Exactly the same thing happened, the data showed a rapid increase in cases, and some people, very much in the minority in the scientific *community*, were welcomed on TV to say it was nothing, and their names were Toussaint or Toubiana [i.e., French experts who went against the majority of their peers on how to handle the pandemic at the time.].')

This examination of the referents of science* unveils a part of its meaning. Yet, to fully grasp what science* means in each utterance, every discursive cue that constitutes a layer of meaning should be considered. Conceptual categories were thus assigned to each occurrence of science* based on the systematic coding of such discursive element. As a result, a single occurrence might fall into multiple conceptual categories, depending on its discursive environment, as seen in (6). Here, the meaning attributed to science* encompasses both institutional and quality-related aspects: scientific refers to a status shared by a group of people (coded institution / status) and these people are expected to uphold neutrality (coded quality neutrality).

(6) Tijl De Bie (expert), 2021-05-30: Ik denk dat daar de rol van wetenschappers eindigt: het schetsen van scenario's, en die communiceren naar publiek en politiek. Maar ze hebben geen morele autoriteit noch mandaat om te oordelen over de wenselijkheid van maatregelen, iig niet meer dan andere burgers. ('I think that is where the role of scientists ends: outlining scenarios, and communicating them to the public and politicians. But, they have no moral authority nor mandate to judge the desirability of measures, at least no more than other citizens.')

Three main conceptual categories where inductively established, which suggests that the meaning of science* has been negotiated around three distinct poles. 'Institution / status' (excerpt (4)) connects science* to aspects of institution affiliation or status: the referent is science* due to its institutional anchoring or its status. 'Quality' associates science* with specific behaviors or ways of being: the referent is science* because it embodies qualities such as rationality, neutrality, or exhaustiveness, like in (6) where the role of scientists is described as requiring neutrality vis-à-vis to the policies. Lastly, 'practices / products' ties science* to the practice of science and its outcomes: the referent is science* when it is part of, or derives from, scientific endeavor, as in excerpt (3) where the chairman of the Open VLD refers to the 'scientific basis' that should underpin a policy. The coding reveals that the 'institution' aspect of science is involved in 48 out 92 instances — and is the only conceptual category for 31 of them. Being science* is then linked to the possession of a quality in 37 instances —with 17 where it is the only conceptual category. Notably, in a significant proportion of these cases (n=26), science* is related to rationality. This tendency is closely followed by a set of 35 instances according to which science is equated to practices or products, including 12 for which it is the only conceptual category identified.

Although these findings are drawn from a qualitative subset representing barely 7% of the entire dataset, they permit several insights. Notably, the meaning science*=status is equally used by politicians (n=22) and experts (n=25), whereas science*=quality and science*=practices/products are more frequently associated with experts (n=26 vs n=11) and politicians (n=21 vs n=11), respectively. Applied to this limited sample, the coding therefore suggests that experts tend to have a more substantial understanding of what science* is than politicians, who more readily refer to the processual aspects of science*. This can be explained as politicians may hold a more performative and utilitarian vision of science. In contrast, experts, drawing from their first-hand experience, may be more eager to engage in thoughtful discussions about what science is / should be in essence. Cross-linguistically, as indicated by the collocation profiles, the meaning of science as a quality is mostly evidenced in Dutch-speaking tweets (n= 23 vs 14).

Science* can also acquire a layer of meaning by contrast, when its definition is derived from its opposition to other lexical elements in the sentence. This manifests in two ways. In certain tweets, (being) science* *does not involve* some features, as exemplified in (7). Here, 'science' is contrasted with 'certainty' and associated with 'probabilities' and 'trade-offs', which implies that it should be understood as a process of (co-)constructing facts rather than an activity revealing 'the truth'.

(7) Tijl De Bie (expert), 2021-05-01: Vaccinontwikkeling is iets anders dan distributie. Bovendien is vragen stellen bij de snelheid van de ontwikkeling (die wat mij betreft afdoende zijn beantwoord) niet hetzelfde als kritiek geven. *Zekerheid* bestaat niet in een empirische wetenschap, enkel kansen en afwegingen. ('Vaccine development is different from distribution. Moreover, questioning the speed of development (which have been adequately answered as far as I am concerned) is not the same as criticizing. *Certainty* does not exist in an empirical science, only probabilities and trade-offs.')

Alternatively, in other instances, there is no strict incompatibility between these features and science*; instead they are deemed *not sufficient* to characterize the reality to which they refer as science*. This is evidenced in (8), where the ironic tone suggests that the status 'expert' alone is not enough to be considered scientific, so that there is no evident connection between this institutional position and the production of scientific knowledge.

(8) Pierre Schaus (expert), 2021-11-16: Aujourd'hui c'est le festival des experts, et autant dire que vu l'étalage de ScienceTM de bonne qualitay© qu'ils nous proposent, on n'a qu'une envie c'est de les écouter davantage et de suivre leurs recommandations avisées, comme ils nous le suggèrent bruyemment. ('Today is the festival of *experts*, and it's fair to say that given the display of good-quality ScienceTM© they offer, all we want to do is listen to them more and follow their wise recommendations, as they loudly suggest.')

While only a few cases exhibit such contrastive patterns (n= 11/92), it is noteworthy that most of them (n=8) precisely contrast science* with the feature 'institution/status', a tendency that is to be interpreted in the light of both the author of the tweet and its target. Considering these parameters discloses that this specific use is consistently adopted either by politicians or by members of expert think tanks critical of crisis management in order to criticize, more or less directly, government-appointed experts. One technique for targeting experts, whose role and influence in decision-making was often questioned, has therefore been to dissociate their status from what that status is commonly assumed to imply, i.e., being or doing science*.

Given that the insights derived from these findings were not evident through the quantitative analysis of collocations, it becomes apparent that understanding the meanings attributed to SPKWs requires a qualitative approach that considers a multitude of textual cues. Only such a comprehensive approach can fully grasp the layers of meaning embedded in the use of these words, while at the same time identifying the (types of) actors who either foreground or background specific interpretations of the word, as shown for the distinction between being or doing science* and holding an expert status. A more nuanced analysis is therefore crucial to gaining deeper insights into the semantic struggle surrounding the use of science*, and SPKW in general.

5. Argumentative patterns

The paper proceeds from the hypothesis that, as a SPKW, science* has an effect on how the realities it refers to are perceived. More precisely, science* would serve as an argumentative pivot in discourse. To verify this assumption, I distinguished utterances where science* has an argumentative role in the tweet, as in (4), from those in which science* serves merely to identify what is being discussed, as in (6). In (6), 'scientist' simply refers to what is being talked about: the role not of just anyone, but of scientists. In excerpt (4), the term 'scientific' not only identifies which group is expressing anger, but also serves as a foundation for a distinct legitimizing effect. This effect becomes clear when analyzing the logic behind the tweet: a group is qualified as part of the scientific community (S = science*) > the concerns and frustrations expressed by this group about the data policy of

Sciensano (the National Institute of Public Health) (O ∈ S) are thus legitimate (O = legitimate) and should be considered, because they are voiced by scientific circles. In contrast, if another group were to raise similar concerns, these claims would not carry the same legitimacy, precisely because they do not originate from scientists. When unpacked in argumentative schemes, excerpt (4) thus yields the following reasoning, where S = circles; O = anger.

since S = science*
and O ∈ S
then O = legit.

Indicative of the difference between argumentative and strictly identifying roles of science*, such type of reasoning, however, does not apply to (6). In total, science* assumes an argumentative role in 78 out of 92 occurrences, which extensively confirms the hypothesis behind the paper.

The argumentative effects of science* are of three kinds (Table 3). As exemplified in (4), the use of science* can lead to the legitimization of a reality. Mirroring this first possible outcome, science* can also delegitimize a reality. Alternatively, casting doubt upon the scientificity of a reality can also lead to questioning its legitimacy. The trends that emerge from the qualitative coding show that science* is used slightly more often to delegitimize than to legitimize, while questioning the legitimacy of a reality is much less common.

Effect	Target of the effect	Effect / Conclusion	Effect bis / Conclusion bis	Total
Legitimization	Object	14	0	30
	Incl. referent	4	0	
	Subject	2	0	
	Incl. referent	2	0	
	Object'	10	4	
Delegitimization	Object	10	0	39
	Incl. referent	6	0	
	Subject	8	0	
	Incl. referent	2	0	
	Object'	7	3	
	Subject'	5	6	
Questioning	Object	4	0	9
	Incl. referent	2	0	
	Subject	4	0	
	Incl. referent	3	0	
	Object'	1	0	

*Table 3 Effects of science**

As shown in Table 3, the most frequent argumentative effect is the legitimization of an object (O) (n=14), followed by the legitimization of an object (n=10) and the delegitimization of another object (O') (n=10). Thus, not only does science* refer mostly to objects (n=53), but its argumentative effect is also directed toward objects (n=53) rather than subjects (n=25). Among other things, Table 3 further evidences that, in most cases, the referent is not the target of the argumentative effect of science*. For a majority of cases, the argumentative scheme is hence not as simple as

since O or S = science*
then O or S = legit.

This raises the question of the dominant argumentative schemes. Through the coding process, no less than 11 patterns of argumentation have been identified, including 29 different argumentative schemes in total. The findings, as detailed below, show in particular that legitimization patterns are much more consistent than those of delegitimization, the latter being characterized by a significant diversity of argumentative schemes. The remainder of the section details and exemplifies the argumentative patterns and schemes that result in legitimizing (4.2.1.) and delegitimizing (4.2.2.) effects.

5.1. Legitimization

Legitimization effects can be broken down into 4 distinct patterns comprising 8 different argumentative schemes.

1. Legitimization through characterization as science* (n= 4): in some instances, science* not only grants legitimacy to something or someone, but also characterizes it. What is legitimized is therefore exclusively the referent of science*. In the dataset used for the analysis, pattern 1 comprises three distinct schemes:

    - S = science*; S = legit. [a subject is science*; so, this subject is legitimate]
    - O = science*; O = legit. [an object is science*; so, this object is legitimate]
    - O ∈ science*; O = legit. [an object belongs to / comes from science*; so, this object is legitimate]

The statement of the Minister-President of the French-speaking community in excerpt (9) is an example of how the scheme 'O ∈ science*; O = legit.' can be formalized in discourse. Here, the Minister-President begins by arguing in favor of the vaccine, before concluding his argument with "we must trust science". The quality science* is thus implicitly attributed to "vaccine", based on the following reasoning: we must trust science > the vaccine is a product of science (O ∈ science*) > we should therefore use the vaccine (O = legitimate).

(9) Pierre-Yves Jeholet (Minister-President of the French-speaking Community), 2021-01-05: Se faire vacciner, c'est se protéger mais c'est aussi protéger les autres et sauver des vies. *Le #vaccin* (**O**) contribuera aussi à un retour progressif à la vie normale. Je le ferai dès que j'en aurai la

possibilité. On doit avoir confiance en la recherche, la science et la médecine. ('Getting vaccinated means protecting yourself, but it also means protecting others and saving lives. *The #vaccine* **(O)** will also contribute to a gradual return to normal life. I'll do it as soon as I can. We must trust research, science and medicine.')

2. Legitimization through association with an object or subject that is science* (n=19): Most legitimization instances rely on argumentative schemes connecting the referent to another entity, using either synecdoche or establishing a looser relationship between the referent and the target of the legitimization. This pattern includes the most frequent argumentative scheme of the whole dataset, i.e., S = science*; S ∈ O; O= legit. (n= 10). These instances typically involve legitimizing policies, statements or requests via the authority of experts, as exemplified in the analysis of excerpt (4) (already discussed above). This pattern includes two schemes:

    - O = science*; O' ∈ O; O'= legit. [an object is science*; another object comes from / belongs to this object; so, this another object is legitimate]
    - S = science*; O ∈ S; O= legit.[a subject is science*; an object comes from / belongs to this subject; so, this object is legitimate]

3. Legitimization through association with an object or subject that has already been legitimized through a previous reasoning (n=5): two different realities are legitimized, with one being legitimized through its association with the other. In total, pattern 3 comprises two different schemes:

    - S = science*; O ∈ S; O= legit.; O = O'; O'=legit. [a subject is science*; an object comes from / belongs to this subject; this object is legitimate; another object equates this object; the other object is thus legitimate]
    - S = science*; O ∈ S; O= legit.; O' ∈ O; O'=legit. [a subject is science*; an object comes from / belongs to this subject; this object is legitimate; another object comes from / belongs to this object; the other object is thus legitimate]

In excerpt (10), the Prime Minister legitimizes the handling of the crisis as follows: the group advising the government is science* (S=science*); the analysis they produce (O ∈ S) is thus legitimate; since the recommendations of the of the National Safety Council rely on this analysis (O ∈ O'), the recommendations are also legitimate.

(10) Sophie Wilmès (Prime Minister), 2020-03-11: Les *recommandations qui découlent du Conseil National de Sécurité, leur nature et leur timing* (**O'**) reposent sur *l'analyse* (**O**) des experts et des *scientifiques* (**S**). Tout est mis en œuvre pour éviter le pic épidémique et une situation hors de contrôle. ('The nature and timing of the *recommendations issued by the National Safety Council* [i.e.,

crisis decision-making council] (**O'**) are based on the *analysis* (**O**) of experts and <u>*scientists*</u> (**S**). Everything is being done to avoid an epidemic peak and an out-of-control situation.')

4. Legitimization through dissociation from an object / subject that is not science* (n=2): the legitimization effect is achieved through a dissociation from the referent in contrast. In the dataset of the study, pattern 4 only includes this scheme.

    - O ≠ science*; O ≠ O'; O' = legit. [an object is not science*; this object does not equate / is opposed to another object; the other object is thus legitimate]

This scheme is illustrated in (7), where an expert justifies his questioning of the vaccine development process using the following argumentative scheme: Certainty is not equivalent to science (O ≠ science*). Therefore, questioning (O')—which opposes holding preconceived certainties (O ≠ O')—is a legitimate approach (O' = legit.).

5.2. Delegitimization

Delegitimizing effects can be categorized into 5 patterns comprising 17 argumentative schemes, twice the variety of schemes as for legitimizing effects. This diversity suggests that practices of delegitimization are more fragmented than those of legitimization.

5. Delegitimization through characterization as non-science* (n=7): the reality (referent in contrast) labeled as non-scientific is the only target of delegitimization. The pattern can be found in excerpt (2), where experts (S) are deprived from being scientific (S ≠ Science*) and are thus delegitimized (S ≠ legit). Pattern 5 include the following schemes:

    - S ≠ science*; S ≠ legit. [a subject is not science*; this subject is thus not legitimate]
    - O ≠ science*; O ≠ legit. [an object is not science*; this object is thus not legitimate]
    - O ∉ science*; O ≠ legit. [an object doesn't support science*; this object is thus not legitimate]

6. Delegitimization through dissociation with an object / subject science* (n=21): a reality is delegitimized following its misalignment with the referent. This pattern is the most common one across the dataset and contains the largest number of different schemes:

    - O = science*; O ∉ S ; S ≠ legit. [an object is science*; this object doesn't come from / belong to a subject; this subject is thus illegitimate]

- O = science*; O' / O; O' ≠ legit. [an object is science*; a second object doesn't support this object; this second object is thus illegitimate]
- O = science*; O ≠ O'; O' ≠ legit. [an object is science*; a second object doesn't equate this object; this second object is thus illegitimate]
- S = science*; O ∉ S ; O ≠ legit. [a subject is science*; an object doesn't come from / belong to this subject; this object is thus illegitimate]
- S = science*; O / S; O ≠ legit. [a subject is science*; an object doesn't support this subject; this object is thus illegitimate]
- S = science*; S ≠ S'; S' ≠ legit. [a subject is science*; a second subject doesn't equate this subject; this second subject is thus illegitimate]
- S x science*; S ≠ S'; S' ≠ legit. [a subject supports science*; a second subject doesn't equate this subject; this second subject is thus illegitimate]

Example (5), where Marius Gilbert blames the mediatization of overly reassuring experts, illustrates this pattern. The tweet states that experts like Toussaint and Toubiana (S') took a stance that was contrary to the majority of the scientific community (S). This divergence (S' ≠ S) led to their behavior being considered illegitimate (S' ≠ legit). Examples 1 and 3 (see above) also fall into this category.

7. Delegitimization through association with an object that is not science* (n=5): in an inverse logic to that presented just above, a reality is delegitimized when it is associated with the referent in contrast (12). Pattern 7 comprises 5 schemes:

- O / science*; O ∈ S; S ≠ legit. [an object doesn't support science*; this object comes from / belongs to a subject; this subject is thus illegitimate]
- O ≠ science*; S x O; S ≠ legit. [an object is not science*; a subject supports this object; this subject is thus illegitimate]
- O ≠ science*; O' x O ; O' ≠ legit. [an object is not science*; another object supports this object; this other object is thus illegitimate]
- 0 ∉ science*; O ∈ S; S ≠ legit [an object doesn't come from / belong to science*; this object comes from / belongs to a subject; this subject is thus illegitimate]
- S / science*; O ∈ S; O' ≠ legit. [a subject doesn't support science*; an object comes from / belongs to this subject; this object is thus illegitimate]

Excerpt (11) exemplifies the scheme 'O ≠ science*; S x O; S ≠ legit.': since fake news are not scientific (O ≠ science*), and the Twitter user to whom Marc Van Ranst is replying is disseminating these fake news (S X O), the Twitter user is therefore deemed illegitimate (S ≠ legit).

(11) Marc Van Ranst (expert), 2020-02-14: Wat wel populistisch en ronduit gevaarlijk is, is dat *jij* (**S**) onwetenschappelijke *fake news* (**O**) verzinsels poogt te verspreiden.Elke epidemie kent angstverspreidertjes zoals jij. Je bent vanaf nu geblokkeerd. ('What is populist and downright dangerous is that *you* [i.e., a Twitter user] **(S)** try to spread unscientific *fake news* **(O)**. Every epidemic has fear-mongers like you. You are blocked as of now.)'

8. Delegitimization through dissociation from an object / subject that has already been legitimized through a previous reasoning (n=3): most of these cases actually involve an opposition between experts/scientists (legitimized) and politicians (delegitimized). This pattern includes only one scheme:

    - O = science*; O ∈ S; S = legit.; S ≠ S'; S' ≠ legit. [an object is science*; this object comes from / belongs to a subject; this subject is legitimate; this subject doesn't equate another subject; this other subject is illegitimate]

In excerpt (12), the expert delegitimizes a politician through the following reasoning: Scientific questions (O = science*) are posed by an academic (O ∈ S); the academic is thus legitimate (S = legit.). When a politician attacks this academic (S ≠ S'), the politician, is therefore illegitimate (S' ≠ legit.).

(12) Raphaël Jungers (expert), 2021-12-27 [RT]: *Un homme politique @egbertlachaert* (**S'**) tente d'intimider tranquillou un *académique* (**S**) qui lui pose des *questions* scientifiques *légitimes* (**O**) ('*A politician @egbertlachaert* (**S'**) tries to intimidate an *academic* **(S)** who asks him *legitimate* scientific *questions* **(O)**.')

9. Delegitimization through association with an object / subject that has already been delegitimized through a previous reasoning (n=3): a variant of the previous pattern, this one delegitimizes a reality through a contiguity relationship with an element already deemed illegitimate. The two schemes comprised in this pattern are:

    - O ≠ science*; O ∈ S; S ≠ legit.; O' ∈ S; O' ≠ legit. [an object is not science*; this object comes from / belongs to a subject; this subject is illegitimate; another object comes from / belongs to this subject; this other object is illegitimate]

    - O = science*; O' / O; O' ≠ legit; O' ∈ S; S ≠ legit. [an object is science*; this object doesn't support another object; this other object is illegitimate; this other object comes from / belongs to a subject; this subject is illegitimate]

For instance, in (8), an expert delegitimizes the experts appointed by the government by implying, through irony, that their statements are not scientific [display of good-qual-

ity ScienceTM©] (O ≠ science*). As a consequence, the experts responsible for these statements (O ∈ S) are deemed illegitimate (S ≠ legit.), along with the political recommendations they produce (O' ∈ S; O'≠ legit.).

5.3. Questioning the legitimacy

Few cases do not produce legitimizing nor delegitimizing effects, but rather question the legitimacy of realities.

10. Questioning the legitimacy through casting doubt upon scientificity (n=7): the scientific character of the referent is questioned —and so is its legitimacy. This pattern includes the two following schemes:

    - S? science*; S? legit. [a subject is maybe science*; this subject is maybe legitimate]
    - O?science*; O?legit. [an object is maybe science*; this object is maybe legitimate]

In excerpt (13), an expert challenges the scientific validity of a graph by characterizing it as a 'poor scientific justification'. While this critique does not directly deny the scientific quality of the graph, it implicitly questions whether the graph can truly be considered scientific, since it is of poor quality.

(13) Pierre Schaus (expert), 2021-03-27: Ce *graphique* (**O**) est une mauvaise justification scientifique, qui plus est culpabilisante et semant une peur démesurée des enfants. ('This *graph* (**O**) is a poor scientific justification, which is moreover guilt-inducing and sows an inordinate fear of children')

11. Questioning the legitimacy through association with an object / subject whose scientificity is questioned (n=2): similarly, when the scientificity of a referent is questioned, the realities linked with the referent also face questioning regarding their legitimacy. Two schemes are part of this pattern:

    - O? science*; O x O'; O'? legit. [an object is maybe science*; this object supports another object; this other object is maybe legitimate]
    - O? science*; O ∈ S; S? legit. [an object is maybe science*; this object comes from / belongs to a subject; this subject is maybe legitimate]

Excerpt (14) challenges the legitimacy of the government's decisions by questioning the scientific basis on which they are made. It raises doubts about whether the grounds for decision (O) are truly scientific (O ? science*). Since the decision is made on these very grounds (O X O'), the uncertainty about their scientific nature casts doubt on the legitimacy of the decisions (O ? legit.).

(14) François De Smet (Chairman of DéFI, French-speaking social-liberal party), 2020-12-02 [RT]: [...] Il fustige les comportements ""électoralistes"" des présidents du PS et du MR ou du

ministre Clarinval et trouve dommage qu'il y ait peu de transparence sur le ""pourquoi"" (scientifique) (**O**) des décisions (**O'**). ('He criticizes the ""electoral"" behavior of the presidents of the PS and MR or Minister Clarinval and finds it unfortunate that there is little transparency on the (scientific) ""why"" (**O**) of the decisions (**O'**).')

6. Making sense of sociopolitical keywords: final remarks on the meaning and argumentative patterns of science*

With two exceptions, the distribution of the argumentative patterns between experts and politicians is relatively balanced. The two cases of imbalance concern patterns 3, 'association with an object or subject that has already been legitimized through a previous reasoning', and 10 'casting doubt upon scientificity'. Pattern 3 appears to be mostly used by politicians (n=4 vs. 1). The first observation might be indicative of a broader propensity among politicians towards using complex argumentative schemes, capable of legitimizing or delegitimizing multiple realities simultaneously. Such tendency might reflect one aspect of the nature of political discourse, which often aims to both bolster its own stances and undermine (those of) its opponents (Chilton, 2008). Even more compelling is the exclusive use of pattern 10 'casting doubt upon scientificity' by experts (n= 7 vs 0). This actually underscores the critical stance of experts from think-tanks set up to protest against the crisis management. Only these actors engage in questioning—rather than outright denying or affirming—the scientific quality of referents. This finding is congruent with the intuition that politicians generally avoid directly questioning the scientific validity of an object, as science is outside of their 'expertise' domain. Instead, they tend to invoke the scientificity of an object to lend legitimacy to other (political) objects. Based on this, it would be expected that politicians would rarely use arguments with O ∉ science* (an object doesn't come from / belong to science*) or O ≠ science* (an object is not science*) as premise. While these scenarios are less frequent (n=4), they do occur, but only when the subject is a political object, as seen in example (15) belonging to pattern 5. In this excerpt, it is argued that the health pass, which restricts access to certain places to individuals who are vaccinated, have recovered from infection within the last months, or have recently tested negative, lacks a scientific basis (O ∉ science*) and, as a result, is not legitimate (O ≠ legit.). In no case, however, are such premises used to delegitimize an expert or a scientific product.

(15) Tom Van Grieken (Chairman of the Vlaams Belang, Flemish nationalist party), 2021-10-26: Onvoorstelbaar! 👿 Geen wetenschappelijke grond voor een #*coronapas* (**O**) met zo een hoge vaccinatiegraad! ('Incredible! 👿 No scientific basis for a #*passcorona* [i.e., health pass] (**O**) with such a high vaccination rate!)

By synthesizing the findings from both the meaning and argumentative analyses, we can gain a deeper understanding of how science* operates as a SPKW across different discourses. Table 4[3], which categorizes science into the three main conceptual categories

3 As mentioned above (4.1.2.), a single occurrence of science* can fall into several conceptual categories. This explains why, for example, the sum of status, products, and quality for pattern 1 is 6, even though

—status, products, and quality—across various argumentative patterns, serves as a foundation for concluding remarks.

Pattern	Conceptual category		
	Status	**Products**	**Quality**
1: characterization as science*	1	3	2
2: association with sth/sb science*	15	6	0
3: association with sth/sb that has already been legitimated through a previous reasoning	5	0	0
4: dissociation with something not science*	0	0	2
Total legitimization	21	9	4
5: characterization as non-science*	1	1	6
6: dissociation with sth/sb science*	10	13	5
7: association with sth/sb not science*	1	0	4
8: dissociation with sth/sb that has already been legitimated through a previous reasoning	1	0	2
9: association with sth/sb that has already been delegitimated through a previous reasoning	1	2	2
Total delegitimization	14	16	19
10: casting doubt upon scientificity	3	3	6
11: association with sth/sb whose scientificity is questioned	1	1	0
Total questioning	4	4	6
Grand Total	39	29	29

Table 4 Conceptual categories of science in argumentative patterns*

Legitimization through status or products over quality: pattern 2 predominantly includes instances where science* is interpreted through an institutional lens, mainly because referents of science* are mostly researchers. The authoritative figure of researchers is the source of legitimization of two main types of realities: either policies they endorse (see excerpt (10)) or their own claims (see excerpt (4)). This observation highlights researchers' pivotal role in legitimization processes and extends into pattern 3, where all the argumentative schemes rely on researchers to both legitimize the reports or advices they issued and, on this basis, subsequently legitimize policy decisions that are in line with these reports or advices (excerpt (10)). Further examination of Pattern 2 reveals that the presence of the 'products' category is explained by another prevalent trend: the use of scientific outcomes to legitimize policy decisions. Legitimization of decisions thus primarily flows through individuals' status or products it is based on, not through qualities they rely on. While it could have been expected that they would be directly presented as rational or factual, they thus rather base their legitimacy on objects or subjects which,

there are only four occurrences of science* in this pattern (see 4.2.1.).

presumably, embody such qualities. A reflective examination of Pattern 6, a mirror of Pattern 2, reveals similar tendencies: political strategies, but also politicians themselves, are delegitimized through their disassociation from researchers or their research outputs. These observations underscore that the legitimacy of policies or politicians is thus intricately tied to their alignment with the scientific community and its contributions.

Delegitimization through substance: Looking at table 4, it becomes clear that, whereas the institutional meaning prevails in legitimization patterns, qualitative meaning (quality) is mostly employed to delegitimize or question a reality. Pattern 5 reveals how some discourses aim to disqualify realities, often policy measures, by emphasizing their irrationality or disregard for the facts. An example can be found in (15) or, even more notably, in excerpt (16), where an expert argues that it is not scientific to 'blindly follow' other countries (O ≠ science*). By this, he means making decisions without considering Belgium's own situation, thus without basing the decision on factual information. The contrast is stark when compared to the legitimization of policy decisions, which, as previously discussed, seldom rely on their substantial rationality. This semantic shift highlights how the meaning of science* can fluctuate depending on the argumentative purpose it serves. More broadly, it is strikingly indicative of the overarching semantic struggle surrounding SPKW and the stakes such struggle represents for the speakers, since the ability of science* to either legitimize or delegitimize certain realities depends critically on which of its meanings is foregrounded.

(16) Tijl De Bie (expert), 2021-11-18: Het *blind volgen v wat andere landen of organisaties doen of adviseren* (**O**) kan je bezwaarlijk wetenschappelijk noemen. En het precautionary principle (wat betekent dat eigenlijk?) is evenzeer v toepassing op de mogelijke negatieve gevolgen v mondmaskers op ontwikkeling van kinderen. ('*Blindly following what other countries or organizations do or advise* (**O**) can hardly be called scientific, and the precautionary principle (what does that even mean?) is equally applicable to the possible negative effects of mouth masks on child development.')

Indirect pathways to delegitimize experts: Patterns 6, 7, 8 and 9 show, among other things, a general inclination to delegitimize experts. Yet, rather than directly depriving them from being scientific, which might be harmful for the speakers' ethos since experts embody institutional characteristics that play a crucial role in legitimizing other realities, the preferred strategies consists in either qualifying an object as science* and then establishing a negative relationship between this object and the experts (pattern 6, schema O = science*; O ∉ S; S ≠ legit.), or the opposite —labelling an object not science* and then establishing a positive relation between it and experts (pattern 7, schema O ≠ MC; O ∈ S; S ≠ legit.). Excerpt (17) is a telling example of how pattern 6 is used to delegitimize experts: the leader of the French-speaking right-wing party states that a fairly popular expert during the crisis is not providing scientific information when he talks about the curfew imposed by the government. Since his comments are not scientific, he is somehow disqualified because his behavior does not reflect what expert status should imply. An illustration of delegitimization of experts through pattern 7 can be found in in excerpt (1), where denying the scientific quality of the studies (science as a quality) also delegitimizes the experts. In general, the lack of scientificity of an expert is thus rarely given as premise of the

sentence. Instead, patterns 10 and 11 ('casting doubt upon scientificity' and 'association with something whose scientificity is questioned') show that, when the scientificity of experts is not affirmed as premise of the argumentative scheme, it is more likely to be questioned than outright denied.

(17) Georges-Louis Bouchez (Chairman of the MR, French-speaking right-wing party), 2021-03-09 [RT]: Le problème d'E. André **(S)**, c'est qu'il n'apporte aucune information scientifique **(O)** concernant le couvre-feu. Et il croit que ses propos sont représentatifs de "la science". 'The problem with E. André [i.e., government-appointed expert] **(S)** is that he provides no scientific information **(O)** about the curfew. And he believes that what he says is representative of "science".'

7. Conclusion

This study explored the meanings and argumentative functions of science* in the Belgian public discourse during the pandemic by analyzing tweets from both Dutch- and French-speaking policymakers and experts. The paper was premised on two hypotheses: that science* has several meanings, and that it plays a pivotal role in argumentation. Based on a mainly qualitative approach, the findings reveal that science* is far from being a monolithic term, but carries varied meanings, three of which were prominent in discussions on crisis management: science* as a status, as products of scientific endeavor, or as substantial qualities. The use of science* across roles (policymakers and experts) and languages (Dutch and French) reveals notable differences. Policymakers seemingly adopt a more utilitarian perspective on science*, whereas experts lean towards a more substantive interpretation. A similar divergence is observed between languages: Dutch speakers are more inclined to use science* with a qualitative meaning than their French-speaking counterparts. Although this linguistic difference is not central to the analysis presented in this paper, it suggests that language-specific semantic profiles could be important to consider when studying keywords.,. The paper also highlights that, due to its polysemic nature, science* served as a tool for legitimizing, delegitimizing or questioning policies, decisions, and even individuals by foregrounding or backgrounding different layers of meaning in what constitutes an ongoing semantic struggle. By identifying eleven argumentative patterns and 29 argumentative schemes involving science*, it presents a fine-grained analysis that reveals three trends across discourse, namely that legitimization is more often achieved when science* has an institutional or outcomes-related meaning, whereas delegitimization occurs when the qualitative meaning of science* is emphasized. All these results show that science* acted as a sociopolitical keyword during the pandemic, i.e., a term around which 'semantic struggles' are fought. While the findings are subject to limitations due to the restricted size of the subset on which the analysis was performed, they do, however, represent a first attempt at qualitative yet systematic sociopolitical keyword coding, where existing studies are mainly based on quantitative approaches.

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Statement of competing interests

The author has no competing interests to declare.

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Appendices

Appendix 1: List of actors

Politicians

Alexander De Croo
Bart De Wever
Conner Rousseau
Egbert Lachaert
Elio Di Rupo

François de Smet
Georges-Louis Bouchez
Gwendolyn Rutten
Jan Jambon
Jean-Marc Nollet
Joachim Coens
Maggie De Block
Maxime Prévôt
Meyrem Almaci
Paul Magnette
Pierre-Yves Jeholet
Rajae Maouane
Raoul Hedebouw
Rudi Vervoort
Sophie Wilmès
Tom Van Grieken

Experts
Bernard Rentier
Emmanuel André
Geert Meyfroidt
Geert Van Den Bossche
Herman Goossens
Leila Belkhir
Lieven Annemans
Maarten Vansteenkiste
Marc Van Ranst
Marius Gilbert
Philippe Devos
Pierre Schaus
Raphaël Jungers
Rik Torfs
Steven Van Gucht
Tijl De Bie
Yves Coppieters

Appendix 2: Collocations profiles of science* in French and Dutch

Dutch				
Category	**Terms**	**Translation in English**	**Freq.**	**logDice**
Policy	onderbouwen	to substantiate	16	9,752
Policy	advies	advice	14	9,305
Product	onderzoek	research	13	9,216
Policy	baseren	to base	11	9,164
Policy	basis	basis	11	9,031
Product	studie	study	12	8,979
Policy	bewijzen	to prove	9	8,818
Product	artikel	paper	11	8,734
Debate	debat	debate	12	8,734
Debate	consensus	consensus	8	8,733
Debate	stem	voice	9	8,708
Product	kennis	knowledge	8	8,627
Debate	argument	argument	8	8,472
Policy	evidentie	evidence	7	8,452
Product	feit	fact	9	8,406
Product	methodologie	methodology	6	8,405
Rationality	geloof	belief	7	8,368
Policy	politiek	politic	13	8,353
Policy	bewijs	proof	6	8,272
Debate	mening	opinion	8	8,218
Rationality	juist	correct	8	8,189
Debate	vraag	question	10	8,150
Product	empirisch	empirical	5	8,127
Community	arts	doctor	6	8,119
Debate	intimideren	to bully	5	8,105
Policy	adviseren	to advise	5	8,074
Debate	ethisch	ethic	5	7,993
Policy	antwoord	response	5	7,701
Rationality	puur	pure	4	7,662
Rationality	zekerheid	certainty	4	7,655
Policy	beleid	policy	5	7,644
Rationality	correct	correct	4	7,524
Product	cijfer	number	5	7,5129

French				
Category	**Terms**	**Translation in English**	**Freq.**	**logDice**
Product	recherche	research	22	8,872
Policy	argument	argument	19	8,610
Product	données	data	19	8,595
Policy	rapport	report	22	8,592
Product	article	paper	21	8,535
Community	communauté	community	16	8,481
Product	information	information	18	8,470
Product	étude	study	19	8,466
Policy	base	basis	18	8,439
Debate	débat	debate	18	8,215
Product	connaissance	knowledge	13	8,167
Policy	évidence	evidence	12	8,074
Product	publication	publication	11	7,961
Community	chercheur	researcher	11	7,924
Debate	consensus	consensus	10	7,855
Product	publier	to publish	10	7,777
Debate	avis	opinion	11	7,777
Policy	public	public	14	7,754
Product	accès	access	10	7,703
Product	analyse	analysis	10	7,617
Product	revue	journal	8	7,543
Policy	politique	politics	15	7,517