



Making it abstract, making it contestable: politicization at the intersection of political and cognitive science

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Abstract

The notion of politicization has been often assimilated to that of partisanship, especially in political and social sciences. However, these accounts underestimate more fine-grained, and yet pivotal, aspects at stake in processes of politicization. In addition, they overlook cognitive mechanisms underlying politicizing practices. Here, we propose an integrated approach to politicization relying on recent insights from both social and political sciences, as well as cognitive science. We outline two key facets of politicization, that we call *partial indetermination* and *contestability*, and we show how these can be accounted for by appealing to recent literature in cognitive science concerned with abstract conceptual knowledge. We suggest that politicizing a concept often implies making its more abstract components more salient, hence legitimating its contestable character. Finally, we provide preliminary suggestions to test our proposal, using the concept of *gender* as case study.

Keywords Politicization · Contestability · Abstract concepts · Social metacognition · Gender/sex

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1 What does politicization mean? Contributions from political philosophy and political theory¹

In the last few years, a significant and growing attention has been given to the issue of politicization. The term is currently used in media debates and discussions. In this context, politicization often takes on—either implicitly or explicitly—the meaning of partisanship. Take for instance newspaper headlines such as “How Could Human Nature Have Become This Politicized?” (Edsall 2020), or “Let’s avoid politicizing the virus” (Razzante 2020). These titles convey the idea that by politicizing something, we frame it as an issue of contention between political parties. Politicization is here understood “as undue encroachment of (partisan) politics into seemingly neutral or non-political arenas, institutions, activities and realms, such as sport, religion, the arts, science, the civil service, etc.” (Jenkins 2011, p. 156). In this perspective, if this “something” has an allegedly objective nature—i.e., if it is a natural kind, like a virus—then politicization introduces an unnecessary and epistemologically dangerous partiality. Politicizing an issue therefore entails shifting the discussion from the analysis of how things really are, to the partisan struggle between parties that want to dictate their agenda and interests.

Recently, this often implicit understanding of “politicization” has been challenged. As Hay’s (2007) seminal work points out, politicization should not be reduced to the attempts of political parties and governments to frame issues as politically relevant and salient. While the idea that an issue enters mass politics “when a political party picks it up” (Hooze and Marks 2012, p. 848) surely captures an important feature of politicization, this pragmatic insight should not be mistaken for a general definition. Politicization (and de-politicization) are concrete processes that take place in everyday life, involving different social actors in different social contexts. So, while certainly the activities of political parties and governments play a decisive role in framing some issues as politically relevant, there is apparently no cogent normative or descriptive reason for reducing politicization to the domain of political parties’ partisanship.

The need for a plural understanding of the ways in which politicization (and de-politicization) takes place has been explicitly addressed by existing literature in political science and political theory. Zürn (2012, 2019) showed how practices of politicization occur at different levels and layers, e.g., domestic, European, and international. This suggests caution before defining a specific historical time period as generally de-politicized. It might be that processes of de-politicization at the domestic level coexist with, and are compensated by, processes of politicization at the international level. Along the same lines, Wood and Flinders (2014) discussed how practices of politicization can be of various kinds also at the level of the same society. They proposed to distinguish three different dimensions of politicization and de-politicization. As for politicization, the three levels are: (1) governmental: an issue falls into the domain of governmental activities; (2) societal: an issue shifts from the

¹ Although this article was conceived and discussed together by the authors, Sect. 1 is authored by Matteo Santarelli; Sects. 2 and 3 are authored by Claudia Mazzuca. Conclusions have been co-written by both authors

private sphere to the public sphere; (3) discursive: an issue becomes the object of conflict and contestability. Similarly, dynamics of de-politicization can take place at three different levels: (1) a Weberian-governmental de-politicization: the shift from government control to external agencies; (2) a Tocquevillian-social de-politicization: demotion of a topic from the public sphere to the private sphere; (3) a Gramscian-discursive de-politicization: demotion of a topic from the sphere of contestation to the realm of necessity. Since the three layers are partially independent from each other, it is possible to imagine a situation in which institutional political actors are actively engaged in strategies of de-politicization at the societal and discursive level (Wood and Flinders 2014). These approaches outline the plurality of processes of politicization, but whether and how this variety can be crystallized into a single, general definition remains an open question.

To this end, Hay (2007) attempted to provide a single general definition of politicization starting from a broad understanding of politics as the realm of contingency and deliberation. Politics is thus a domain where things can go otherwise, and where we have—at least potentially a say in deciding the direction that the course of events should take. This wide understanding of what politics is might appear too vague. However, the very vagueness of Hay’s definition has some important advantages. First, it accounts for the fact that, when presenting some issues and events as politically relevant, people often have in mind different implicit and explicit ideas of what “politics” means. In face of this plurality, endorsing a too strict and determined definition of politics would push us to hastily label as “non-political” those practices not entirely fitting into our previous definition of political. Second, a strictly determined definition would miss an important feature of practices of politicization, i.e., the interplay between concepts and practices. Feminist movements showed how practices of politicization of the body and of the private dimension potentially imply a redefinition of the political, rather than applying pre-existing definitions of politics and of “the political” to previously pre-political domains (Diotima 2009). An excessively rigid and demanding conception of politics would not be flexible enough to account for this interplay. In the framework provided by this understanding of politics, politicization can be thus understood as the process through which a specific issue, topic, or phenomenon enters the sphere of “the political”—thereby becoming the target of contention, a hub for conflicts, a space open to alternatives and controversies. Conversely, de-politicization has to do with ‘finitude’, ‘inevitability’, ‘unalterability’, ‘end’, ‘fixity’, ‘necessity’, ‘destiny’, ‘predetermination’, and ‘resignation’ (Hay 2007, p. 72).

Lately, several authors elaborated on Hay’s schema. For instance, Jenkins (2011) proposed to integrate Hay’s emphasis on contingency and deliberation with two specifications. First, contingency should include the flows of powers and conflicts characterizing social life, rather than referring to a merely general indetermination and openness. It is because of the pervasive presence of conflicts that politics appears as an inherently value-laden and contested process (Jenkins 2011). Second, deliberation should be framed as a specific possibility emerging from a more general dimension that Jenkins calls agency, defined as “the *contingent* but reflexive interplay between pervasive power relations and capacities for autonomy in collective life” (Jenkins 2011, p. 159). In this way, contingency is furtherly qualified in its constitutive con-

nection with conflict and contestation, while deliberation is expanded into the more general dimension of agency, understood as a locus of tensions and interplay between the reality of power structures and relations, and the possibility of autonomy. Along similar lines, Zürn (2012, 2019) creatively and critically developed Hay's contingency-deliberation model. He defines politicization as making a matter a subject of public discussion (Zürn 2012), as a process which moves something into the realm of public choice and of collectively binding decisions (Zürn 2019). Like Jenkins, Zürn too explicitly introduces the element of contestation as a qualifying element of politicization. Furthermore, he delves deeper on the affective dimension of these processes. An issue is politicized when it becomes the object of interest and concern—what he calls rising awareness—and when it has a potential for mobilization (Zürn 2012).

1.1 A proposed account of politicization

For the sake of conceptual clarity, these contributions can be systematized in a two-features model of politicization. The first feature is *partial indetermination*. Politicizing an issue involves framing it as something that can go otherwise, something that cannot be reduced to what is immediately given. This idea has been nicely captured by historian of concepts Reinhart Koselleck. According to Koselleck's analysis, politicized concepts are irreducible to fully determined referents: as long as they aim at mobilizing people, they involve a reference to the future, and this requires a certain degree of openness (Koselleck 2004). As the existence of politics relies on the capacity for things to be different (Hay 2007), strategies of politicization will then consist in questioning and problematizing what is taken for granted, for morally and politically unquestionable, and essential (Jenkins 2011).

The second feature is *contestability*. In the existing literature, the expression “contested” has often served the purpose of highlighting the conflictual nature of political concepts. Resorting to Gallie's original definition of essentially contested concepts (Gallie 1955), political theorists and philosophers identified political concepts as the locus of specific kinds of contestations (Connolly 1974; Gray 1977; Ball 1988). However, in the context of our discussion the term “contestability” means more than being the potential subject of disagreement. In fact, our approach aims at accounting for both the *critical* and the *constructive* function of contestability. Contestability does not simply mean that something is the object of disagreement and conflict. Rather, it also denotes the possibility of conflictual and/or cooperative co-construction. Koopman (2013, 2019) convincingly captured the critical and constructive dimension of contestability through the notions of *problematization* and *reconstruction*. By problematizing, we show how things that are portrayed as purely given, taken for granted and “natural” are in fact the outcome of contingent and conflictual practices, that entail different consequences for different groups and subjects. By reconstructing, we actively take part in the process through which individuals and groups develop and direct the possibilities of action and agency opened by problematization.

The *critical/problematizing* function of contestability is strictly related to partial indetermination. This connection can be conceived in two different directions. One might think that it is because things are partially indeterminate that a certain room is

open for contesting and problematizing things as they are, rather than taking them as purely given and unchangeable. At the same time, one might say that by representing something as contestable, we highlight the indeterminate and open traits of the represented object. Authors like Laclau (2005) and Rancière (2013) would tend to emphasize the ontological nature of this openness and indetermination, and thus the idea that contestability is made possible because of the constitutive openness and heterogeneity of society. On the other hand, indetermination and openness might be seen as the outcome of practices of contestation, rather than as an ontological presupposition of contestability. Hay seems to go in this latter direction, as he maintains that by questioning the inevitability of process which we represented before as fixed and totally outside our control, we expand the domain of politics (Hay 2007). Here, we will not take a stand between these two different interpretations, which have been already discussed and compared in existing scientific literature (Beveridge 2017). For our purposes, it suffices to say that there is an interconnection between partial indetermination and contestability.

The *reconstructive* function of contestability consists instead in highlighting the possibility of co-construction of new meanings. Therefore, contestability is not limited to conflict of opinions and intellectual disagreement. The space opened by contestability leaves room for processes of doing something new together. In this way, contestability is a kind of transmission belt between mere disagreement and the co-construction of new meanings, ideas, and concepts. More specifically, in the wake of Dworkin's (2011) discussion of different kinds of disagreement, we will understand "contestability" in the sense of a peculiar coexistence of agreement and disagreement. According to Dworkin (2011), political concepts like *freedom*, *justice*, and *equality* should be understood as *interpretative concepts*. Interpretative concepts are characterized by a peculiar coexistence of disagreement and basic agreement on the employment of the same concept. So, we share an interpretative concept even if we disagree on what instances belong to the concept and on its precise character (Dworkin 2011). In a nutshell, we usually disagree about political concepts such as *liberty* and *equality* differently from what we do when we are trying to determine whether the car hitting the road is an Audi or a Mercedes Benz. This means that their content and their meaning are subject to different descriptions, and potentially open to further conflictual revisions and negotiations². So, contestability involves a certain degree of potential tension and ambiguity. It keeps together agreement and disagreement, and it leaves the possibility open for conflict and collective co-construction.

Before moving forward in the discussion, two clarifications are needed. First, here we are not providing a definition of what a political concept is in itself. Rather, we are interested in what happens in people's minds and discourses when they frame and understand a concept as political—in particular, when they want to emphasize its political dimension. So, our approach does not aim at introducing a list of political concepts, nor at explaining why a concept is political and why another concept is

² Interpretive concepts are thus particularly subject to meaning negotiation, i.e., a type of interaction in which a common interest to agree coexists with conflicting interests in the agreement to be made. For a discussion of meaning negotiation, and of the tight relation between this type of practice and semantic indetermination see Warglien and Gärdenfors (2015).

not. However, for the sake of linguistic fluidity we will recur sometimes to the term “political concept”, without implying the existence of a pre-given list of concepts that are inherently political. Second, we believe that our approach is compatible with two different understandings of the relation between ‘political’ and politicization. According to the first understanding, some events and some issues are political in themselves. For instance, if we believe that *x* is political as long as it is a kind of structure or agency that impacts on others (Jenkins 2011), politicizing will consist in making explicit the—already—political nature of *x*. On the contrary, according to a more performative understanding, nothing is political before being politicized. There is no external source defining something as political outside the practices through which something is perceived and labelled as political.

In what follows, we will focus on what Wood and Flinders (2014) call discursive politicization/de-politicization, i.e., how people talk about and define concepts when they perceive them as political. By focusing on the communicative and cognitive dimension of this process, we do not need to endorse one of the two competing understandings of the relation between political and politicization. At the level of our analysis, it is not important to ascertain if we politicize by making explicit or relevant features that are already political, or if something becomes political only as an effect of our politicizing discursive strategies. We are interested in how people think and speak when they frame something as political and politically relevant. For this reason, our proposal of politicization is compatible with both externalist and performative understanding of the political³.

In the following sections, our argumentation will follow two steps. First, we will try to translate the insights gained from social philosophy and political theory in the language of cognitive sciences. This will shed light on the cognitive mechanisms underlying processes of politicization, hence paving the way to a measurable approach to this debated phenomenon. Second, we will apply this integrated model to a case study, i.e., the politicization of the concept of gender.

2 A cognitive perspective on political concepts and politicization

The depiction of political concepts and politicization provided so far resonates with some of the definitions of abstract concepts proposed in cognitive science. Abstract concepts have been traditionally defined as concepts lacking a clear and bounded perceptual referent in the physical world (e.g., Paivio 1986; Brysbaert et al. 2014). Others (Borghini and Binkofski 2014) identified two main dimensions for explaining abstract concepts, i.e., *abstraction* and *abstractness*. In their perspective, *abstraction* is a common feature of concepts overall, and refers to the fact that concepts serve the function of generalizing across the multitude of instances we encounter in everyday life. So, every concept can potentially vary in its degree of abstraction (e.g., the concept *golden retriever* has a lower degree of abstraction than the concept *dog*). *Abstractness* is instead defined as the level of detachment from concrete, manipulable referents of some concepts, like abstract concepts. For instance, the concept of *eth-*

³ We thank Reviewer 1 for pointing us to the necessity of clarifying this point.

ics is hardly referable to clear perceptual instances in the physical world: it is then said to have a high level of *abstractness*. In this perspective, abstract concepts⁴ are, to some extent, loosened from their concrete referents, they are quite general, and their definition encompasses several instantiations (see Borghi and Binkofski 2014). This proposed account of abstract conceptual knowledge is in line with the previous characterization of politicization. Specifically, it can be linked with the first feature of politicization as sketched out in the previous section, i.e., *partial indetermination*. In fact, while more concrete concepts tend to refer to more fixed and determined referents, research showed that more abstract concepts condense under a single label multiple and variegated situations (see e.g., Barsalou and Wiemer-Hastings 2005).

Recent proposals (e.g., Wiemer-Hastings et al. 2001; Barsalou et al. 2018; Borghi et al. 2018, 2019) are questioning the sharp dichotomy opposing abstract and concrete concepts. Behavioural and neuroimaging studies have curtailed the purported distance between ‘purely abstract’ and ‘purely concrete’ concepts, showing how abstract concepts are spanned over a multidimensional space comprised of several components (Catricalà et al. 2014; Harpaintner et al. 2018; Villani et al. 2019, see Conca et al. 2021 and Mazzuca et al. 2021 for recent reviews).

The category of abstract concepts is constituted of a multitude of different exemplars, each relying on different grounding sources to different extents (Borghi et al. 2019; Barsalou 2016a). Some abstract concepts, such as emotional or numerical concepts are more linked to sensorimotor and inner grounding experiences (Moseley et al. 2012; Connell et al. 2018; Fischer and Shaki 2018), while others are more related to social and linguistic experience (Mellem et al. 2016; Shea 2018; Borghi et al. 2018; Prinz 2002). Although different kinds of abstract concepts can be studied separately, the boundaries of the category of abstract concepts are blurred. Desai et al. (2018), for instance, demonstrated that the neural underpinnings of numerical, emotional, moral, and other abstract concepts significantly overlap with areas traditionally linked with the processing of concrete concepts. This suggests that, overall, those concepts are entrenched in a space that includes event-properties, interoceptive states, and sensorimotor features that contribute to their grounding to different extents. So, while sensorimotor properties might be generally more relevant for concrete objects representation, in some cases they might also be grounded in emotional and introspective features (as in the case of potentially highly emotionally-laden objects such as *knife*; p. 12), hence explaining the neural overlapping.

One of the proposed mechanisms for acquiring and processing abstract concepts is social metacognition (Borghi et al. 2018, 2019; Fini and Borghi 2019), i.e., the need of relying on others to understand abstract concepts. In fact, more abstract concepts are more heterogeneous, complex, and variable across contexts than more concrete concepts (Davis, Altman & Yee, 2020). So, linguistic labels and explanations help us to glue together different streams of information related to an abstract concept which we might encounter in different settings (Dove et al. 2020). Studies investigating the

⁴ Here, we refer to the notion of “concepts” as developed by proponents of embodied and grounded cognition. According to this view, concepts are couched in our perceptual and sensorimotor systems, and words re-enact multimodal experiences connected with their referents (Barsalou 2008, 2016a; see also Meteyard et al. 2012; Speed and Majid 2019).

modality of acquisition of abstract words showed that, compared to concrete words, they are primarily acquired via linguistic inputs (see Wauters et al. 2003), and recent evidence stresses the importance of mouth-motor movements in the acquisition and processing of abstract meanings (e.g., Barca et al. 2017; Sakreida et al. 2013; Mazzuca et al. 2018). It has been proposed (Fini and Borghi 2019; Mazzuca et al. 2021) that sociality and linguistic cues are differentially engaged in the acquisition and subsequent elaboration of more concrete and more abstract concepts. For example, for more abstract concepts (e.g., *ethics*), we might need to rely on others' knowledge to refine our understanding (Borghi et al. 2018; Shea 2018; Prinz 2002). Recent findings coming from Italian rating studies further support this idea. For instance, in a large rating study of abstract concepts, Villani et al. (2019) found that more abstract concepts were also characterized by higher scores of social metacognition. Similarly, Mazzuca et al. (2022) reported that concepts for which participants judged the need of others to be crucial for understanding the meaning also received lower scores of Body-Object-Interaction (i.e., a measure highly correlated with concreteness, see Tillotson et al. 2008). These results point to the tight connection between abstractness and social metacognition, underlining the importance of the latter for specific concepts. According to this proposal, while innerly searching for the meaning of a concept (e.g., *truth*), people might feel less competent (Shea 2018)—or simply unsure about the meaning—and prepare to ask for information.

Importantly, we do not simply rely on others to understand the meaning of a concept, but we often dynamically negotiate and co-construct meanings. This is especially relevant for politicized concepts, which are frequently the remit of public discussions (e.g., social media, tv shows, or simply conversations with peers). In this case, the information gained through public and social discussions might contribute to the refinement of the conceptual repertoire of speakers, without necessarily implying a strict “division of linguistic labour” (Putnam 1975). This broader interpretation of social metacognition translates into the already discussed notion of *contestability*, i.e., the second characterizing feature of politicization. Remarkably, acknowledging the role of others—whether experts or peers—in the co-construction and consolidation of meanings accounts for both the problematizing and the reconstructive facets of contestability.

Following this characterization, one might think that abstractness and social metacognition are variables synergically affecting politicization. However, not only “abstract concepts” can be contested and negotiated. To better understand this seemingly contradictory statement, we should focus on the process allowing for a concept to be politicized, instead of trying to identify which kinds of concepts can be politicized. That is to say, our proposal does not imply that only abstract concepts can be the purview of politicization. Rather, we suggest that the process through which politicization is made possible necessarily entails making the concept partially indeterminate, open to revisions and further determination, hence highlighting its more ‘abstract’ components. In the following section, we will clarify how it is possible to highlight more abstract or concrete components of a concept—i.e., we will deepen aspects related to conceptual flexibility.

2.1 Abstract concepts in context, or contextualized conceptualizations

Recent developments in cognitive science addressing the topic of abstract concepts converge on two main points. First, the neat distinction between ‘purely abstract’ and ‘purely concrete’ concepts is reductive (cf. Barsalou et al. 2018), as attested by internal differences in the category of abstract concepts (e.g., Ghio et al. 2013; Roversi et al. 2013; Crutch et al. 2013; Desai et al. 2018; Mellem et al. 2016; Villani et al. 2019). Second, a concept—whether abstract or concrete—cannot be studied in isolation from the context and the situations for which it is required. Politicized concepts seem to meet all the criteria described so far: in fact, they appear to be concepts for which more abstract components are made more relevant depending on the context, via a process entailing negotiation and re-definition.

The notion of situated conceptualization (Barsalou 2016b) provides a useful theoretical framework to explain the interplay between context and concepts. Conceptualizations can be understood as laying in between concepts and representations (for a discussion on representations see Connell and Lynott 2014; see also Casasanto and Lupyan 2015). They are less general than concepts and are constrained by situations differently from representations. We could say, conceptualizations are not task specific (like representations), but situation-specific—i.e., they depend on constraints imposed by cultural, social, and linguistic practices. In keeping with the definition proposed by Barsalou (2016b) situated conceptualizations combine local and global aspects of a situation: they allow for the integration of knowledge derived from situation processing (e.g., task conditions) and from more general relations mediated by conceptual knowledge. As a situated conceptualization is constructed, it becomes established in long term memory through associative mechanisms, and it will emerge when a person engages with a specific kind of physical and social situation to interpret the situation and to guide actions.

Importantly, situated conceptualizations can account for individual and group differences (Barsalou 2016b). It is likely that different people experience different kinds of situations related to a specific phenomenon, consequently allowing for different situated conceptualizations to arise in their respective memories. Indeed, conceptualizations are typically the battlefield of political debates. For example, the concept *work*, at the highest level of abstraction, is a quite uncontroversial concept. When descending in the hierarchy though, it is possible that the very conditions for defining something as *work* may change depending on the specific situational context. The division of labour in housekeeping has been one of the most heated issues in feminist debates: this is because duties such as housework or emotional labour have never been considered as *work*. Differences in conceptualizations have therefore consequences on the regulation of economic and social policies. More importantly, as the example shows, conceptualizations are negotiable and negotiated among social actors via public debates. Intuitively, the variability entailed in the construction of situated conceptualizations is more likely to affect abstract concepts. Indeed, except in very restricted communities of use, it is less common to disagree on what a concrete concept (e.g., *chair*) is than to disagree on what an abstract concept is (e.g., is bringing my child to school and to the gym everyday *work*?).

Situated conceptualizations might evidence more abstract or more concrete components of a given entity, regardless of its specific construal. As discussed before, all concepts can be to some extent ‘abstract’ and ‘concrete’ (Yee 2019). In specific cultural and social settings, a domain considered as traditionally concrete might be conceptualized as more abstract. Olfaction, for instance was found to be broadly represented in concrete terms in Western societies (e.g., Dutch participants), whereas it is conceptualized in more refined and abstract terms by Jahai speakers (a hunter-gatherer community of the Malaysian peninsula; Majid et al. 2018; Majid and Kruspe 2018). We suggest that for political conceptualizations, the mechanism allowing contestability and negotiability is specifically related to the process of highlighting ‘more abstract’ components of a concept. When a concept is partially indeterminate it increases the possibility to be re-conceptualized—and thereby contested—in different ways. On the other hand, when the referent of a concept is strictly determined, there is less space for different conceptualizations to arise. Whether ‘more abstract’ or ‘more concrete’ features of a concept will be considered as salient would depend on the social and cultural context in which the situated conceptualization is acquired, retrieved, and re-enacted.

In the following section, we provide an example demonstrating how a concept like *gender* becomes a politicized concept, outlining the processes that lead to its contestability. We will rely on our two-folded approach bridging together insights from political and cognitive science, and propose a tentative strategy to test our proposal.

3 A case study: the concept of gender

Gender/sex conceptualizations, and the consequences of their different definitions are ubiquitous. From public debates concerning human rights, to scientific literature, to health and well-being issues, up to private and interpersonal relations we employ gender/sex conceptualizations almost automatically. For all of these approaches to exist, it is crucial to agree on the basic criteria defining the purview of the discussion. And yet, it is properly the misalignment among different conceptions of gender/sex-related matters that makes the continuous definition and re-definition of the concept gender/sex possible.

3.1 Gender, sex, or gender/sex? Contesting the concept of gender

“The chief distinction in the intellectual powers of the two sexes is shewn by man attaining to a higher eminence, in whatever he takes up, than woman can attain – whether requiring deep thought, reason, or imagination, or merely the use of the senses and hands.” (Darwin 1871, p. 361)

Although certainly outdated, the passage cited above sets a footprint for the discussion to follow. Indeed, Darwin was not alone in claiming that sexual differences explained intellectual differences. Rather, his statement is the result of a long-lasting tradition inquiring human bodies in the attempt to find differences capable of explaining why females (or women) were not apt for public and social life—in one word, why females were inferior human beings. The passage is also illustrative of a fur-

ther trend, namely the implicit conflation of sex (i.e., the biological make-up) into gender (i.e., the social role deriving from sex). Long before Darwin's *The Descent of Man*, essentialist claims on the relationship between, for example, the dimension of women's brain and their intellect were considered well-established scientific evidence for the exclusion of women from social and political life. Studies coming from craniology and phrenology, later replaced by studies on hormones, all contributed to the idea that supposed biological differences driven by sex determined the infantile, mutable, and emotional character of women, that consequently should have been excluded from any rational activity (see Rippon 2019). In this framework, what later was labelled "*gender*", is a consequence of biological and natural factors, delimiting the boundaries of two distinct categories of the human being, viz. females and males.

The link between sexual distinctions and behavioral and cognitive properties has all but disappeared throughout history. In fact, studies aimed at identifying psychological differences between women and men continued to pile up (e.g., Maccoby and Jacklin 1974; Breedlove 1994; Sax 2017), and they all converged on the idea that these two discrete sexual categories are somehow different in their behavioral attitudes, cognitive capacities, and desires.

Feminists were among the first to question these reductionist approaches. They claimed that conflating gender (i.e., behavioral and social factors) into sex (i.e., natural features) was but a way to perpetrate the status quo of a predominantly masculine perspective (see the notion of *androcentrism* in Bem 1993; Bailey et al. 2019; Hegarty et al. 2013), that legitimized the discrimination of women (Rubin 1975). So, the distinction between the concept of sex as a natural, biological, and immutable datum and gender as its social and cultural interpretation firstly emerged to contrast the biological determinism implied in the construction of gendered identities. In this perspective, gender was understood as the result of social and cultural practices reiterated by social actors on the basis of sex differences⁵. Defining gender in these terms allowed for a critical analysis of the mechanisms entrenched in the constitution of gendered roles, that far from being natural were instead revealed as consequences of social and culturally specific processes (Risman 2004; West and Zimmerman 1987). The main point became then to contest the fixed and causal character of sex to uncouple gender roles from sexual categories.

Moving forward, the very natural character of sex was jeopardized. Butler for instance (1990, 1993), argued that the natural body cannot be completely disentangled from the socialized body, in that even what we consider as "natural" is the result of an act of interpretation. According to Butler, our sexed bodies never exist outside social meanings. Consequently, sex is not the pre-given, natural essence of gender. Rather,

Are the ostensibly natural facts of sex discursively produced by various scientific discourses in the service of other political and social interests? If the immutable character of sex is contested, perhaps this construct called "sex" is as culturally con-

⁵ The reconstruction of this passage applies more specifically to the Anglophone world. Sometimes in European feminisms (e.g., in Simon De Beauvoir and Italian feminism of "sexual difference") the concept of "sex" includes socio-political aspects that in Anglophone second-wave feminisms would be attributed to gender.

structured as gender; indeed, perhaps it was always gender, with the consequence that the distinction between sex and gender turns out to be no distinction at all. (Butler 1990, p. 9)

As Halperin (2014) summarized, “[A]ccording to Rubin, human societies begin with sexed bodies and produce gender. According to Butler, human societies begin with gender and impose it on human bodies as sex” (p. 452). This view is corroborated by findings on the biological development of sexual markers (Fausto-Sterling 2000, 2012) showing how typically feminine and masculine genitalia are just two extremes of a variegated spectrum of possible configurations (see also Blackless et al. 2000) with respect to chromosomal, gonadal, hormonal, and genital sex.

Recent findings coming from neuroscience, biology, and social endocrinology are nowadays challenging the idea that sex and gender can be completely disentangled. To illustrate, testosterone, traditionally considered the “masculine hormone”, was found to be socially modulated by incrementing sexual thoughts or activities of nurturance (e.g., van Anders et al. 2011). Along the same lines, psychological and neuroscientific research on sex differences has been subjected to a radical reexamination (see Hyde 2005; Hyde et al. 2019; Joel et al. 2015; Joel and Fausto-Sterling 2016). Against this background, some scholars recently coined the term *gender/sex* (van Anders 2015) to account for the strict intertwinement between biological and social factors in the shaping of gendered and sexed identities. *Gender/sex* is “an umbrella term for both gender (socialization) and sex (biology, evolution) [...] reflects social locations or identities where gender and sex cannot be easily or at all disentangled.” (p. 1181). In this perspective, the materiality of our bodies is neither denied, nor naturalized so as to serve social purposes. Rather, both specific forms of embodiment and social and environmental factors differentially and dynamically contribute to define *gender/sex* (Fausto-Sterling 2019).

To summarize, gender, and the categorizations it affords, is a controversial concept. More to the point, gender conceptions have been the site of contestations and political stances. Whatever the best way to address *gender/sex*, here we seek to provide partial answers to some related pivotal questions. For instance: how is it possible for a concept to be the site of so many collective contestations? Why and how did *gender/sex* become a contested, and political concept? What processes allowed for the conceptual shift from gender as a biological property linked to sex to gender as a social construction, and what are their consequences in terms of the conceptual representation of *gender/sex*?

3.2 Gender/sex is a politicized concept

In keeping with the previous discussion, *gender/sex* is an emblematic example of a politicized concept. Throughout history, in fact, different perspectives attempted to fix once and for all the physical and corporeal referent of gender (e.g., genitalia, hormones), each time incurring in some configurations escaping traditional definitions (Fausto-Sterling 2012). The failure in establishing a concrete referent for the category of gender, along with critiques to the notion of gender as a normative parameter of inclusion or exclusion (Butler 1990) of certain individualities from a given social group (e.g., women) made explicit the partial indetermination of the concept gender.

All those aspects revealed how gender/sex is a complex and ambiguous concept, and for this very reason, it is constantly contested.

Interpreting politicized concepts, and gender/sex, in these terms discloses two main problematic strands. First, one might wonder—given this definition of politicized concepts—whether the specific embodiment or personal experiences related to gender/sex matters at all. Indeed, if to explain politicized concepts we posit their intrinsic partial indetermination (or abstractness), we apparently leave no room for the centrality of lived experience acknowledged for instance by some feminist inquiries (see Beauvoir, 1949; Young 1980; Braidotti 1993; Grosz, 1987) and intersectional theories (e.g., Garland-Thomson 2002; Bettcher and Garry 2009). However, as already discussed, embodied and grounded theories of cognition (e.g., Barsalou 2008) stressed how our conceptual system and our perceptual, sensorimotor systems are strictly interwoven. In this perspective, our concepts are thought to be couched in our bodily states, and influenced by the environment surrounding us, and by our own specific bodily configurations (see the notion of “bodily relativity”, e.g., Casasanto 2009; 2011). In addition, according to recent proposals, even abstract concepts, like concrete concepts, are embodied and grounded in our bodily assets (see the previous section; for recent reviews see Conca et al. 2021; Mazzuca et al. 2021). In line with these considerations, and with the notion of situated conceptualization, it is clear how abstract concepts do not necessarily lack physical and embodied components. Instead, more embodied and bodily aspects might be more or less salient depending on the situation and on the social actors involved.

The second criticism arising from this discussion is related to the contested character of politicized concepts. Does this feature entail that politicized concepts are incessantly contested in every social context in which they are employed? As Ball (1988) noted, such trivial and unrealistic understanding can be eschewed by highlighting the contextual character of contestability. Here, we focused on the more partially indeterminate and contestable facets of gender/sex, that in keeping with our proposal allowed its politicization. However, this does not exclude that in specific social, cultural, and temporal settings, its conceptualization can be uncontested and determined. The situated and yet flexible aspect of conceptualizations again supports this intuition—making explicit how it is possible for a concept such as gender/sex to be contested in specific social and cultural settings, and not in others.

3.3 Operationalizing theory: empirical suggestions and future research directions

Further research is needed to assess the extent to which abstractness alone predicts patterns of politicization and political conflict. In the following, we outline different approaches that we believe might be informative for this purpose—and that might, in the future, provide empirical evidence for our proposal. On the one hand, semantic fluency tasks (e.g., Mazzuca et al. 2020) and psycholinguistic norms (e.g., Brysbaert et al. 2014; Villani et al. 2019) could be combined with political science instruments such as the World Value Survey (Inglehart et al., 2014) to better investigate the relation between abstractness and political values. Another promising avenue is constituted by recent developments of computational techniques for automated semantic

analyses like word embeddings (Mikolov et al. 2013), a class of machine learning techniques based on the assumption that the meaning of a word can be described by words that tend to co-occur with it (Harris 1954; Firth 1957). Among other applications, these classes of methods have been recently used in combination with other machine learning techniques to shed light on shifts in meaning over time (see for example Rodman 2020 on the concept of “equality”), or in combination with norming databases to investigate the diachronic trajectory of concreteness (Sneffjella et al. 2019).

While an extensive empirical validation of our proposal exploiting these techniques is beyond the scopes of this paper, here we provide a brief example of how the preliminary step of such analyses can be implemented. Specifically, we tackle the first characterizing aspect of our proposal, namely the relation between abstractness and politicization focusing on the concept of *gender*. For illustrative purposes, we created word vectors for Wikipedia texts based on the GloVe (Pennington et al. 2014) word embedding learning algorithm through R’s (version 3.6.2, R Core Team, 2019) “text2vec” (Selivanov et al. 2020) implementation for the target word *gender* and we calculated cosine similarities between vectors of words that most frequently co-occur with *gender*. Cosine similarity is conventionally used to measure the distance between vectors in a multidimensional space, and ranges from 0 to 1 with higher values indicating stronger similarity. All data and scripts are available at <https://osf.io/y38t4/>. The analyses were performed using RStudio (version 1.4. 1100,

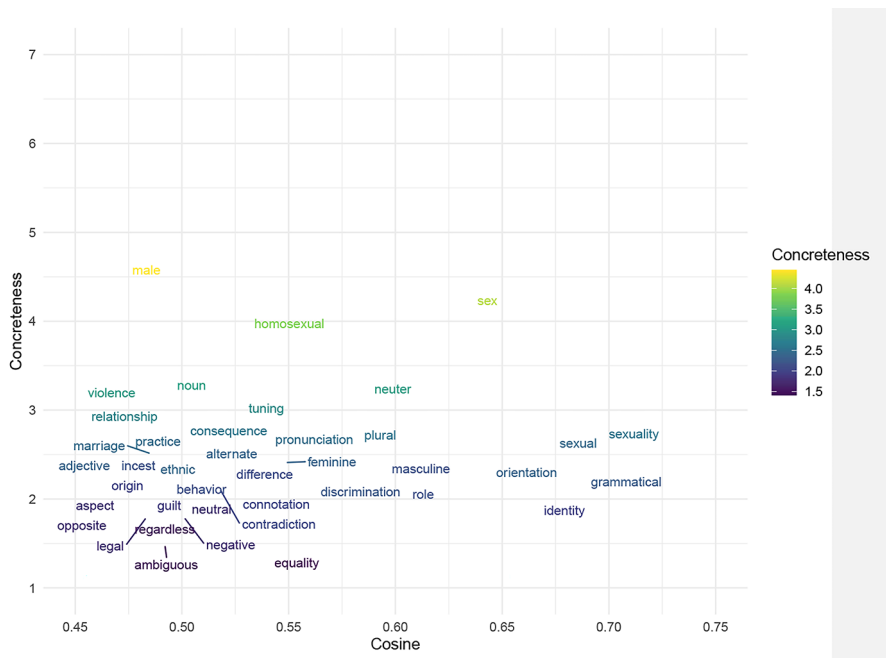


Fig. 1 Scatterplot of the top 40 words related to *gender* in Wikipedia texts and their concreteness scores in Brysbaert et al. (2014) database. Words are coloured based on their concreteness scores

RStudio Team, 2020) and data processing and visualization were carried out using “dplyr” (Wickham et al. 2020), “tidyverse” (Wickham et al. 2019) and “ggplot2” (Wickham 2016). Accordingly, the top ten most similar words to *gender* are *sexuality* (cos=0.70), *grammatical*⁶ (cos=0.70), *identity* (cos=0.68), *sexual* (cos=0.67), *orientation* (cos=0.66), *sex* (cos=0.63), *role* (cos=0.60), *masculine* (cos=0.60), *neuter* (cos=0.59), and *plural* (cos=0.58). In keeping with the approach proposed in this contribution, we sought to assess whether words that are closer to *gender* in the semantic space have also low concreteness scores. We then retrieved concreteness scores for the top 10 most similar words to *gender* according to cosine similarity scores from one of the most frequently used databases of English concreteness norms (Brysbaert, Warriner & Kuper, 2014), in which 40 thousand of English words are rated on a scale from 1 (“abstract, language based”) to 7 (“concrete, experience based”). In this subset, ratings of concreteness were very low, with *sex* being rated as the most concrete word of the sub-set ($M=4.1$; $SD=0.94$), and *identity* as the less concrete ($M=2$; $SD=1.23$). To get a broader picture, we extended our query to the top 40 words that based on their cosine similarity scores were most related to *gender*, and once again looked at their concreteness scores. We found that on average the top 40 most related words to *gender* had also low scores of concreteness ($M=2.42$; $SD=0.64$). Figure 1 shows a schematic representation of the results.

This brief example testifies the potential of these linguistic computational techniques for testing the hypothesis proposed in this paper. As we can see from the plot, most of the top 40 words related to *gender* received very low concreteness scores—there are few words passing the concreteness threshold of 3.5, and even fewer passing that of 4. However, we found no correlation between concreteness and cosine similarity in the present sample of words, $r(38)=0.10$, $p>.05$. Therefore, in keeping with our proposal, we conjecture that the contestability of concepts—i.e., what we have here identified as the second characterizing feature of politicization—should be also quantified and investigated. In the future, a more stringent test might take into account this further aspect to unravel more clearly the relationship between politicization, partial indetermination, and contestability as proposed in this paper.

4 Conclusions

While to date politicization has been mainly addressed as a form of partisanship, here we proposed a potential mechanism enabling the politicization of concepts. We argued that politicizing a concept specifically implies that its more “abstract” components are rendered more relevant. We argued that a common strategy for politicizing a concept is to highlight its partially indeterminate, general, and contestable facets. In a nutshell, we propose that in order for a concept to be the remit of negotiation, this has to be made partially indeterminate. The construal of abstractness, as purported by latest developments in cognitive science, might help operationalizing partial inde-

⁶ It is interesting to note that even though one might consider *grammatical* as a simple linguistic association, the impact of linguistic structures such as grammatical gender on social aspects (e.g., gender equality) is a timely and debated issue (Prewitt-Freilino et al. 2012; Lindqvist et al. 2019).

termination—in that it opens up the possibility for a concept to be re-defined in the process of negotiation. Likewise, insights gained from the discussion of processes of grounding of abstract concepts such as social metacognition might provide a further source for tackling politicization. Specifically, we suggested that social metacognition could account for the second proposed feature of politicization, i.e., contestability. The close relation between abstractness and social metacognition reported in studies addressing conceptual representations thereby helps unravelling the entwinement between partial indetermination and contestability—a connection often drawn by political scientists and philosophers, but seldom analytically developed.

In line with recent perspectives on conceptual representation (e.g., Barsalou et al. 2018; Borghi et al. 2019), we showed how this process does not entail a complete detachment from perceptual and concrete components of concepts. Rather, those aspects differentially interact in the constitution of politicized concepts, as a function of diverse social and historical environments, but also as a function of different experiences with the referent of the concept under scrutiny. As the literature on situated conceptualizations (Barsalou 2016b) suggests, in fact, the representation and consolidation in memory of concepts is intrinsically tied to multimodal, experiential, and contextual features, that are re-enacted each time we interact with concepts and guide our actions. Additionally, due to the low degree of “situational systematicity” of abstract concepts (Davis, Altman & Yee, 2020), it is likely that one of the preferential means through which they are constituted and consolidated are linguistic inputs (e.g., Wauters et al. 2003; Borghi et al. 2018). In the case of politicized conceptualizations, the linguistic information is often conveyed by public debates and experts, which are necessarily embedded in a specific historically, socially, and culturally situated contexts.

Whether experiential, bodily, and perceptual aspects are more salient than social, cultural, and linguistic aspects would vary within and between cultures as well as over time. More physical and perceptual aspects are less likely to be the remit of negotiation. On the other hand, more abstract features, given their partial indetermination affording new conceptualizations possibilities, allow for the flexibility that contesting a concept requires. Recent findings are speaking in favor of this hypothesis. Mazzuca et al. (2020) compared free-associations to the words *gender* produced by “normative” (i.e., generally conforming to bigenderist benchmarks) Italian speakers to those produced by “non-normative” (i.e., individuals who do not conform to bigenderist and benchmarks; e.g., genderqueer, gender diverse, and plurisexual) individuals. Their results show that while for “normative” participants perceptual, biological, and binary features were especially salient (e.g., they frequently listed words such as “female-male”, “woman-man”, “sex”), “non-normative” individuals stressed more experiential, social, and political aspects (e.g., “queer”, “discrimination”, “fluidity”, “construct”).

Although often politicizing a concept entails evidencing its ‘more abstract’ features, we do not intend to claim that processes of politicization cannot occur also via a process of de-abstraction. For instance, some strands of feminism stressed the importance of embodied and material experiences of being a woman by relying on physical and corporeal aspects related to sexual difference (Braidotti, 1991; Grosz 1994). Research in social psychology has also addressed the extent to which embrac-

ing biological arguments to explain sexual preferences results in different patterns of acceptance towards LGBTQI people (e.g., Falomir-Pichastor & Hegarty, 2014; Hegarty and Pratto 2001), and eviscerating concrete, anatomical, and neural components of homosexual and heterosexual men brains constituted the site of political contestations (see Hegarty 1997). So, concrete components of a concept (woman, homosexual) in specific historical contexts might be stressed by political subjects to claim visibility. It can be preliminarily hypothesized that the function of de-abstracting is a way to render the concept un-contestable and un-negotiable. Although this strategy can be interpreted as de-politicizing when framed in terms of discursive de-politicization as discussed in this paper, it can still bear significant political effects on social life. Indeed, *discursive politicization* –i.e., representing a concept as partially indeterminate and as the remit of contestability–can be distinguished from the *political use* and the *political effects* of a concept represented as fully determined and non-contestable. The latter would be used for political purposes, while at the same time being discursively de-politicized, in the sense that individuals and groups cannot play any role in problematizing and reconstructing this concept. Albeit this issue warrants a future detailed analysis, this preliminary distinction fits with the idea that (de)politicizations take place at different levels, hence allowing certain practices to be depoliticizing at one layer, while preserving a political function at a further level.

To conclude, partial indetermination and contestability appear to be strictly related. The more abstract we make a concept, the more contestable we make it; the more concrete we make a concept, the more de-contestable we make it.

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