APPLY – WG3 Report, April 2020

# Basic resources and methods for designing public argumentation

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[1] This report is the result of a long and highly collaborative process: seminal ideas were generated in two WG3 meetings in, respectively, Lisbon (21-22 March 2019) and Vilnius (10-11 October 2019), and stakeholders input were collected in the latter event; online discussion among several WG3 members further expanded on these ideas, and a STSM by Fabio Paglieri (ISTC-CNR, Roma, Italy) to Mark Aakhus (Rutgers University, New Brunswick, USA) in February 2020 led to the preparation of a first draft, with crucial contributions from Serena Villata and Paolo Torroni (section 3) and from Sandrine Roginsky and Monika Mačiulienė (section 4); the final version of the report was finalized in a dedicated meeting in Wroclaw (2-3 March 2020) and later submitted to the scrutiny of all WG3 members. As a consequence of this participatory process, the authors indicated at the beginning of this manuscript are the main contributors to the actual text, yet the whole report is best understood as a collective output of WG3 activities during the first 18 months of the APPLY action.



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## 1. INTRODUCTION

The fundamental concern of the APPLY network is to improve the way European citizens understand, evaluate, and contribute to policy relevant decision-making processes on topics such as climate change and energy policy. Underlying this concern are the gaps between the way citizens, experts (such as scholars and other stakeholders), and policymakers make and criticize reasons — their natural language argumentation — in policymaking. These gaps contribute to democratic deficits that limit the achievement of democratization, civil society engagement, and better, more legitimate and efficient policymaking processes. Working Group 3 (WG3) is charged with finding pathways for addressing this concern with argumentation by prescribing tools for participants in public controversies to engage in well-informed and well-considered discussions.

WG3's main focus is thus on design for argumentation: this in turn requires extensive analysis of the technological infrastructure that is currently shaping significant portions of public debate, as well as the exploration of state-of-the-art technologies (available or under development) aimed at supporting and improving argumentative practices in the public sphere; at the same time, a design perspective on argumentation naturally requires close engagement with stakeholders, not only to better comprehend their needs and their roles in public argumentation, but also to include them in the participatory design of innovative solutions to the current pitfalls of public discussion and deliberation. A fundamental tenet of the APPLY action is that any public decision or issue is characterized by the involvement of multiple stakeholders, each with differing points of view and often multiple positions. Dealing with this challenge requires both investigating broader institutional designs and procedures for conducting argumentation at the macro-level (Jackson, 2015), as well as including designs for multiparty, multi-issue practical argumentation that often happens in several places over time (so called *polylogues*; Lewinski & Aakhus, 2014; Aakhus & Lewinski, 2017).

This report on "Basic resources and methods for designing public argumentation" reflects in its structure the basic rationale of our approach: we start by listing some key challenges and prospects for argumentation in public debate, to set the background against which resources and methods for designing public argumentation need to be tested (section 2); the rest of the report provides brief but comprehensive reviews of the three key elements required to tackle such challenges – a critical understanding on the notion of "stakeholders" (section 3), in-depth mastery of the most promising technologies aimed at supporting public argumentation, with an emphasis on open issues and critical vulnerabilities (section 4), and a design perspective on argumentation (section 5). Finally, section 6 summarizes the main findings of this preliminary survey.

## 2. CHALLENGES AND PROSPECTS ON STAKEHOLDERS INVOLVEMENT IN PUBLIC ARGUMENTATION

If stakeholder engagement is a key process in public policy argumentation frequently necessary to the solutions of social problems, this raises a number of questions: what are the best ways of organising or orchestrating engagement? What forms can engagement take? How can we ensure fair access to engagement activities from diverse populations? How can citizen engagement be encouraged and supported?

Following sub-sections will discuss the challenges of stakeholder involvement in public argumentation including but not limited to - conceptualization, identification, inclusiveness, strengthening of common interest and the role of ICT.

### *2.1. Challenge # 1: conceptualization*

The first challenge is a discursive and conceptual challenge. What terms should we use to discuss "involvement" in public-policy making and how should we name the various social actors who are involved (or should be involved) in public-policy making?

What do we mean by "***involvement***"? According to Levasseur et al. (2010), involvement is defined as "taking part", with an emphasis on participation, connection, contribution, or integration of the person. However, for these scholars, the term engagement is stronger as it relates to a "guarantee or commitment to do something". Further, as reminded by Rowe and Frewer (2005), "involvement" is frequently referred to as participation. They also remind us that involvement is indeed imprecisely defined and can take many forms, in many different situations, with many different types of participants, requirements, and aims. Indeed, as highlighted during the WG3's Vilnius meeting, involvement of stakeholders can precede policy-making and lead to the making of a public policy (or not), but it can also take place during policy-making (policy-making triggers discussions), or later on (when the policy is delivered). However, taking part in a public debate and taking part in the decision are not the same. It is important not to create frustration, as participating in public debate does not mean that it will automatically lead to visible changes. In other words, a successful public debate does not necessarily lead to solving a problem.

For Rowe and Frewer (2005), when involvement is referred to as participation, dialogue is expected to take place. White (1996) highlights different forms, functions and interests "within the catch-all term participation". The Table 1 below presents four major types of participation. The first column shows the forms of participation, the second shows the interests in participation, the third shows the perspective from the participants themselves, and the final one characterizes the overall function of each type of participation.

*Table 1. Forms, functions and interests of participation (White, 1996)*

| Form | Top-Down | Bottom-Up | Function |
|---|---|---|---|
| Nominal | Legitimation | Inclusion | Display |
| Instrumental | Efficiency | Cost | Means |
| Representative | Sustainability | Leverage | Voice |
| Transformative | Empowerment | Empowerment | Means/End |

This could help us define more precisely the nature, form of involvement at different stages of policy discussion and policy making.

When it comes to the people involved (or the people who should be involved), the term "*stakeholder*" may not be the right term, for various reasons (see section 2.8). The term seems too restrictive. A broader term, like "relevant actors" was suggested during our WG3 Vilnius meeting - stakeholders being one of the actors but not the only one. In the literature, we also find the term "public" to be used, but it might not be precise or focused enough.

### *2.2. Challenge #2: identification*

The second challenge is an identification challenge. First, who decides and how it is decided who has to be included when discussing public policy? It may depend on the issue, the context, the level. At the same time, some issues may concern everybody in one way or another (e.g; climate change).

Then, who decides and how it is decided the topics/problems to debate.

As stated by White (1996), "there are always tensions underlying issues such as who is involved, how, and on whose terms". However, for scholars studying deliberative democracy, it is not the representation of individuals that matters but representation of the range of discursive positions within society (Dryzek, 2001, mentioned by Martin, 2008).

During the *Vilnius WG 3 meeting*, these following points were discussed in relation to this specific challenge :

- The process owners and designers : who owns the process and who designs reduces the meaning of public debate as it shapes; a debate where the public is involved versus a debate that is public. When talking about who designs, it's about the spaces where design happens e.g. political bodies that make laws that define the possibilities for interaction from international down to local and the administrations. The same can be said regarding pre-consultation phase (e.g; delegating the analysis to think tanks and specialists).
- The politicization of debate: when a topic is politicized, there is a lack of tools to change the framing of the discourse (e.g. anti-immigrant rhetoric in Spain) > how to use the know-how of analyzing discourses to reach society to help them realize they have been distracted. Do we need the other side of the argument all the time? If the other side of the argument is saying a racist thing?
- The "quality" of arguments: citizens also need to be structured in their proposal > if it's not realistic then it shouldn't be implemented or even considered. How can we help them?

### *2.3. Challenge #3: inclusiveness*

Related to the previous challenge, the third challenge is concerned with inclusiveness. Special attention must always be given to the disadvantaged and marginalized who often don't have a voice, perhaps through intermediary organizations which are involved on the ground and become "translators". While institutions, media and politicians' legitimacy is called into question, it is important to make sure that those intermediaries are recognized by the people they are supposed to convey the voice of.

Cheyns & Riisgaard (2014) look at multi-stakeholder initiatives in agriculture and find that power inequalities are covered but not neutralized: "the exercise of power operates in less visible ways by favoring some forms of knowledge and modes of engagement over others. As a result, forms of engagement and knowledge favored by more marginalized actors are sidelined".

Expression of power can thus be related to the imposition of some forms of standards and framings of definitions but also of some forms of knowledge. Cheyns & Riisgaard (2014) highlight how specific forms of knowledge such a "scientific, generalizable, expert knowledge" are favored over others. As reminded by White (1996), "while participation has the challenge patterns of dominance, it may also be the means through which existing power relations are entrenched and reproduced".

During the *Vilnius WG 3 meeting*, this specific challenge was discussed thoroughly and the following comment was then made with regard to power struggles: all actors are not equal, the triangle (in the MoU) seems to indicate an equality that may not be there.

### *2.4. Challenge #4: involvement/participation/engagement*

The fourth challenge is about the type of involvement/participation/engagement of people in public debate. As regards engagement, Cheyns & Riisgaard (2014) use the sociology of regimes of engagement developed by Thévenot (2006) which explores the various ways in which people can be engaged in regards to their environment and shows "how the liberal-political model based on the interest format and the strategic engagement shape forms of participation and communication, excluding other forms". Consequently, they show that stakeholders may encounter difficulties in accommodating other "regimes of engagement than the one of stakeholders strategically defending their interests." They conclude therefore: "The consequence is a process of depoliticizing the debate that renders the implicit political choices made invisible, in general to the disadvantage of vulnerable groups".

During the *Vilnius WG 3 meeting*, it was noted that there are so many discussion topics, individual citizens do not have enough time or interest to participate in all of them. In some cases, the topics are hard to understand or overwhelming. On top of that, representative democracy causes much disconnection between citizens and institutions. Participation systems can bridge this gap by enabling informed and reasoned decisions where citizens can share their opinions. However it requires to change the culture of participation and to get participation recognized as legitimate (soft law vs hard law).

### *2.5. Challenge #5: strengthening common interest*

Then the next challenge is about how common interest can be strengthened. As reminded by White (1996), "if participation means that the voiceless gain a voice, we should expect this to bring some conflict". Besides, she believes that the absence of conflict should raise suspicions. Tensions can indeed be structured around a general axis from consensus to conflict. However they can also be structured around a different axis along the "differing institutionalized formats of engagement through which actors achieve variable capacities for political questioning and the building of shared moral-political commitments" (Meilvang et al., 2018).

This approach reminds us that engagement (and therefore dialogue and discussion) can take many different forms. The sociology of "regimes of engagement" (Thévenot, 2006) identifies three regimes of engagement: the first aims to qualify a common good from a pluralist perspective by participants who are "endowed with moral capacities", the second is that of "functional and strategic engagement (…) where the environment is dominated by stakeholders asserting interests" (Cheyns, 2011). The third regime is the regime of "familiar engagement". The literature tends to indicate that the second regime seems to be dominant, putting aside the discussion on the definition of a common good. "Disagreement is then re-formatted as a choice between options" (Cheyns, 2011). Cheyns adds: "public discussion incorporating several parties thus creates markets for opinions and preferences. This is the implicit aim, for example of the 'world cafés' and 'open space technology. (…) The compartmentalization and specialization of the questions do not require participants to envisage a common horizon focusing on issues which engage the common good". According to Cheyns, these characteristics proper to the regime of strategic engagement tend to create the conditions for the exclusion of certain participants, certain opinions and discourses and certain forms of knowledge (see challenge #3).

### *2.6. Challenge #6: the role of ICT*

Traditionally, citizen participation focused more on indirect involvement forms (i.e. voting). Recent societal and technological developments drove the change towards more direct forms of citizen participation. In other words, opportunities for dialogue, deliberation and creativity offered by Web 2.0 applications transformed the culture of participation. De Lange & De Waal (2013) conclude that use of new media, technologies and collaborative methods promise several qualitative shifts in the way public is engaged and empowered: (1) collective issues can be defined and made visible more efficiently; (2) engagement using collaborative technologies and social media allow citizens to feel as a part of something bigger; (3) media technologies empower self-organization when solving collective issues; and (4) media technologies allow individuals to act in new ways.

At the same time, governmentality approaches (Foucaut, 1980) have been used to study technologies for governing conducts. In this approach, technologies are seen to reproduce specific neoliberal rationalities. Convention theory also highlights how normative aspects of technologies are issued from specific conventions (Boltanski & Thévenot 2006), i.e. participation formats enacte some specific figures of people and participation as such. Technology thus materialises specific orders of "regimes of engagement" (see above) and serves to qualify certain types of engagement and dialogue.

During the *Vilnius WG 3 meeting*, the participants highlighted that participation may be both off- and online: the intersection between both online and offline methods is therefore an important matter (e.g. local meetings/debates, online contributions, proximity stands, thematic national conferences, regional conferences with randomly chose citizens, etc. who were not only online but access to the people was actually made offline). Further social media platforms may also be approached as a kind of public debate forum, still in written form of interaction. This brings the question to the role and status of platforms such as Facebook and Twitter : are these just tools? For instance, Facebook does design debate even though it is not elected to do so. The value of platforms on the stock market actually depends on participation; however design is on the market

principles more so than democratic principle. Online platforms reproduce current methods — treating debate as input; it is more about a way to express than to debate

As developments with advanced information and computational technologies for communication, such as AI, big data, and IoT, continue to expand into modes of participation, many concerns are emerging about a post-democratic turn in society. Key to the challenge of ICT are technologies that may not in the past been seen as a concern for argument and deliberation such as the role of sensor and sensor grids that expand capacities for sensing, monitoring, and controlling and that further radicalize the concept of stakeholder and the spread of participation to non-human actors and invisible human actors. Indeed, water and air can become a participant such as through extended systems for monitoring watersheds or air quality. Such approaches put citizens, scientists, and policy makers in new arrays of relations with new possibilities for making sense of the world and acting in it.

### *2.7. Challenge #7: linearity of existing engagement models/conceptualizations*

There is an extensive discussion on appropriate forms and magnitude of stakeholder involvement in decision-making (see section 3). The following are some dimensions along which engagement / empowerment / inclusion tends to be analysed: (1) The power transfer characteristics; (2) Features of engagement activity; (3) Communication flows and (4) Purpose or goal of the engagement. These features help us to think about various pragmatic aspects of the engagement activity (who, how, when, how much) and enables classification.

Most of the categorizations and processes use linear approach in understanding the applicability of different methods/approaches in different contexts. However, such understanding has several limitations. There are many methods which can be used at multiple stages of the engagement process. Organizing methods according to stages of the process would therefore create either a very limited picture of the ways that different methods can be used. It also suggests that there is always a definitive beginning and end to social innovation processes, with the stakeholder being engaged at the beginning of the process to develop an entirely new product or service.

### *2.8. Challenge #8: the "gatekeepers", the "mediators", the "translators" and the "experts"*

The taxonomy of stakeholders from the EU does not include media, as journalists are not identified by EU institutions as actors defending a specific interest (see also section 3) .

However, this raises the question of the nature, place and role of actors which have a mediation function - whether they are human actors such as journalists, or "non-human actors" such as online tools, and evolving approaches to the formation of counter-publics including populist movements that are more manufactured than genuinely grass-roots organizing.

During the *Vilnius WG 3 meeting*, the participants raised the following questions:

- Who are the "gatekeepers"/"mediators"/"translators" in public debates?

- What is their role? How should they be included in design ?
- What about "experts"? What is the role of experts? Who are they? And who decide that they are "expert"? (What type of expertise?) How expert disagreements should be handled?
- How can we bridge "filter bubbles": stakeholders live in their own information bubbles. In addition, this new space or sphere in which debate is taking place online is very elitist communities of scholars, journalists policy makers shaping the public agenda who create a bubble and talk about the bubble.
- What is the role of social media and other digital platforms that play a role in the formulation of public opinion and private stances.

### *2.9 Challenge #9: aggregation and rationalization of opinion*

People (agents, stakeholders, citizens, etc.) have diverse views expressed as abstract argumentation frameworks. Individual view is a mix of 'facts' and 'preferences'. So, there is a question of how to aggregate and rationalize those views.

During the *Vilnius WG 3 meeting*, these following points were discussed in relation to this specific challenge :

- With regard to stakeholders: there is a lack of analytical tools for studying the discourse from different stakeholders
- With regard to citizens: it is difficult to capture the thinking of citizens, and therefore there is a gap between the perception citizens have (which may be linked to their own experience) and what actually happens at the political level (i.e. making the decisions). There is a gap between perception and observation.
- Text analysis and argumentation map could be useful. But then the question is how to progressively help people get training on say text analysis and debate.

Issues are actually opportunities for getting people to debate. But how to structure debate for the goal of policy making? How to structure modeling and environments rather than just nudge?

### *2.10 Challenge #10: "measuring" and evaluating the outcomes*

There are no standard instruments for evaluation of citizen engagement initiatives. In addition, few studies focus on measurement of effectiveness using objective criteria and base their findings on opinions of their interviewers.

Public policy problems mostly do not have one answer, they arise from different elements and so many elements have to change to get a broader impact. Stakeholder engagement rather should be approached through an ecosystem metaphor where the valuable outcomes emerge when a number of entities work collectively to create mutual benefits by granting access to one another's resources including people, technologies, organizations and information. Thus, we could evaluate the actors and engagements methods in terms of the kind of input they provide to social

innovation processes (micro-designing in the world of macro systems). Such approach moves the focus away from the exchange between two actors to understanding that the value creation is grounded in the configurations between economic and social actors within networks.

During the *Vilnius WG 3 meeting*, is was noted that the outcomes of public debate are often fuzzy, uncontrolled : there is no guarantee of what the government will actually take into account (e.g. France's Le Grand Debate National - if the user does not use the predefined words then it doesn't get counted in the statistics).

### *2.11 Challenge #11: transparency, accountability and ethics*

During the *Vilnius WG3 meeting*, to the question "What would make your work better?", a stakeholder replied: "transparency". It does not mean that private and confidential discussions are not needed, but the process requires more transparency.

Concretely it means :

- better traceability : who is making the decision and how (e.g. the GDSS in the diplomatic discussions). Design should therefore increase transparency, while making sure that this leads to accountability, e.g. the possibility of identifying the relevant actors behind complex, polycentric decisions to ask them hard question and to get answers;
- feedback: feedback should be provided to anybody involved in the process, so they feel their opinion matters and they understand better choices and decisions made. This is specifically important for citizens who are far away from decision makers and politicians.

Such an approach will also make it possible to better understand why and how the content (questions) for discussion is framed, and therefore to understand roots of disagreements, but also the values of individual actors in debates. This will also help to detect and fight against manipulation (when organized influence groups/"dark actors" try to manipulate the result).

A culture of transparency is therefore needed, although it will have to be modulated in light of recent findings on what types of transparency work best and what others are either ineffective or even damaging to social trust (see Cucciniello, Porumbescu & Grimmelikhuijsen, 2017).

### *2.12 Overview of the challenges*

These challenges outline the key problems to be addressed. In the next sections we develop the themes of stakeholders, computation, and design to frame a way forward to a comprehensive perspective on designing public argumentation. In section 3, stakeholders in public argumentation reviews the state of the art for conceptualizing stakeholders and their involvement in policy decision making with some brief critical notes about the state of the art. In section 4, we describe some state of the art in computation for supporting public argumentation and raise critical gaps and key directions for development. In section 5, we outline a perspective on design that draws together ideas about stakeholders and computation in public debate and policy making.

## 3. STAKEHOLDERS IN PUBLIC ARGUMENTATION

The main objectives of this section are to (1) Deepen the understanding of the full range of stakeholders in public policy argumentation through a literature review and review of relevant policy documents; (2) Expand the taxonomy of the stakeholder categories and the relationship they are likely to have; (3) Identify the best practices and tools for the well-informed and well-considered stakeholder engagement into public policy argumentation; and (4) Discuss the main challenges and prospects of stakeholder involvement in public argumentation. We will combine several approaches in achieving these objectives: (1) a literature review (of extant concepts) and a review of relevant policy documents for identification of relevant groups, organizations and individuals; (2) collaborative stakeholder (expertise and resources) mapping; (3) a review of existing guidelines and best practices for stakeholder engagement in public policy argumentation; and (4) a set of workshops including relevant stakeholders.

We will use the following working definition of stakeholders in this report:

> *"Stakeholders are those who have an interest in a particular decision, either as individuals or representatives of a group. This includes people who influence a decision, or can influence it, as well as those affected by it."* (Hemmati, 2002).

However, the definition of the stakeholders raises several theoretical and practical challenges. To start off, the stakeholder concept was originally developed in strategic and business management and public relations studies (Palmieri, Mazzali-Lurati, 2016), and therefore its use in public policy still needs to be discussed and questioned (i.e. not taken for granted). The stakeholder theory has indeed something to do with new public management (NPM), i.e. a "broad set of management approaches and techniques, borrowed from the private sector, applied in the public sector" (Tummers et al., 2009) that may not be universally acclaimed, in the policy realm nor in the academia. Thus, amongst the "basic assumptions and core elements of New Public Management", Diefenbech (2009) highlights "business environment and strategic objectives" and notably the "stakeholder-orientation", i.e. "meeting the objectives and policies of strong and influential external stakeholders". He has some concerns with regards to a 'business-like' management of stakeholders interests which "concentrates on meeting the targets and requirements only of strong and influential external stakeholders" and may contribute to the "de-valuation of public goods and services, of ethical principles of public governance, of ethical values". This calls for questioning the meaning we give to a stakeholder-orientation, challenging the business understanding of the concept.

Even the use of the term "stakeholder" raises discussions[2]. Stakeholders in the policy realm may be called "lobbyists", "NGOs", "public affairs agencies", etc. – each calling carrying a number of representations (i.e. these callings are not neutral). Further, all these categories contain a great deal of heterogeneity (that may be lost in a mapping exercise). Therefore "understanding stakeholders as a category is complicated" (Kahane et al., 2013). It should thus be noted that, for some

[2] In a 2002 communication (COM(2002704), the European Commission uses the term "interested parties" instead of "stakeholder". In a 2014 public consultation document on "Stakeholder consultation guidelines", the European Commission explains that "the term 'stakeholder consultation' also referred to 'consultations with interested parties' or with 'external parties'".

practitioners and scholars, there may be some discomfort in using that term as encompassing a variety of social actors

The term stakeholder "tends to describe organized interest and advocacy groups" in policy process (Kahane et al., 2013). In doing so, it established a differentiation between stakeholder and citizen representation. It is an explicit differentiation that we also find in the documents regulating stakeholders' consultation by the European Commission. In such a usage "an individual passionate about a particular issue or political goal is categorized as a 'citizen'; an individual who acts on behalf of an organized group focused on an issue or objective is a 'stakeholder'" (Kahane et al., 2013). Thus, a stakeholder focuses on interest.

In essence, any 'decision' or 'issue' often has multiple stakeholders each with differing points of view and often multiple positions related to the action, decision, or issue. Stakeholder theory argues that the best way to understand and guide decision-making in an organisation is to focus on its relations with various stakeholders (Freeman, 1984). Stakeholders, according to one of a great many definitions, 'are persons or groups with legitimate interests in procedural and/or substantive aspects of corporate activity' (Donaldson & Preston, 1995: 67; see Miles, 2012; Mitchell et al., 1997). Who the actual stakeholders are for a given organisation is a much debated practical and theoretical issue.

In principle, then, any decision of an organisation is expected to take into account the interests of all relevant stakeholders. This, of course, requires multi- party communication and conflict-management – in short, it requires polylogical argumentation. With the important caveat that institutions such as governments do not function as corporate organizations, thus the management of conflicts or disagreements may present differences across these contexts (e.g., political ideologies have a much greater role in explaining how conflicting claims are dealt with in public organizations). The main tenets of a stakeholder approach from an argumentation perspective can be briefly summarised as follows:

1. It is a theory of practical reason, that is, of decision-making in the context of managing an organisation.
2. It combines descriptive (what is done), normative (what should be done) and instrumental (what can be done given the goals) aspects; in short, it focuses on 'reasonable strategic action' (Friedman & Miles, 2002: 2).
3. Crucially, it 'decentres organizational discourse by replacing privileged managerial monologues with multilateral stakeholder dialogues' (Friedman & Miles, 2002: 3; see also Calton & Kurland, 1995); as a result, stakeholder approach is defined by 'the requirement of simultaneous attention to stakeholder interests' (Donaldson & Preston, 1995: 67).Following sections aim to provide insights on how to detangle the complexities of stakeholder involvement in public argumentation.
4. Since the theory 'views the corporation as an organizational entity through which numerous and diverse participants accomplish multiple, and not always entirely congruent, purposes' (Donaldson & Preston, 1995: 70), in analysing organisational discourse it focuses on its functions in conflict- or disagreement- management. The chief task of decision-makers is thus that 'of balancing the conflicting claims of multiple stakeholders' (Donaldson & Preston, 1995: 79).

### *3.1. The process of mapping the stakeholders in public policy argumentation*

Stakeholder mapping is a systematic process which allows to define the individuals and groups that have an interest in a certain process and are impacted by its outcomes. The collaborative nature of the process draws on research, input from multiple perspectives and open discussions. The stakeholder mapping can typically be broken down into the phases illustrated in Figure 1.

Stakeholder mapping has been widely applied both - in business and in public - management literature. Even though it encompasses a wide range of methods, it typically focuses on the interest of the stakeholders in a particular issue and the quantity/types of resources they can mobilize to affect the outcomes. However, this is not necessarily the approach to be taken in public policy making, and therefore the mapping approach itself should be discussed. When identifying parties that are or will be affected by, and thus "have a stake in" a course of action or particular issue, it is important to seek to understand more about them in order to engage and communicate with them effectively, and also to understand whether and to what extent they should be prioritized according to their level of interest in and influence over the project. In its 2014 public consultation document on "Stakeholder consultation guidelines", the European Commission notes that:

> "the basic rule is to consult broadly and transparently among stakeholders *who might be concerned by the initiative, seeking the whole spectrum of views in order to avoid capture by specific constituencies.* The minimum consultation standards indicate that all relevant parties must have an opportunity to express their opinion. *Relevant parties are defined as those affected by the policy, those who will be involved in the implementation of the policy, those that have stated interest in the policy, those that have knowledge and expertise about the issue as well as those that support or can block solutions related to the issue*".

The iterative and collaborative process of stakeholder mapping allows us to deepen our understanding of the full range of stakeholder groups, expand and contextualize the existing taxonomies of stakeholder dynamics and will lead the way to identifying the best practices and tools for well-informed and well-defined stakeholder engagement.

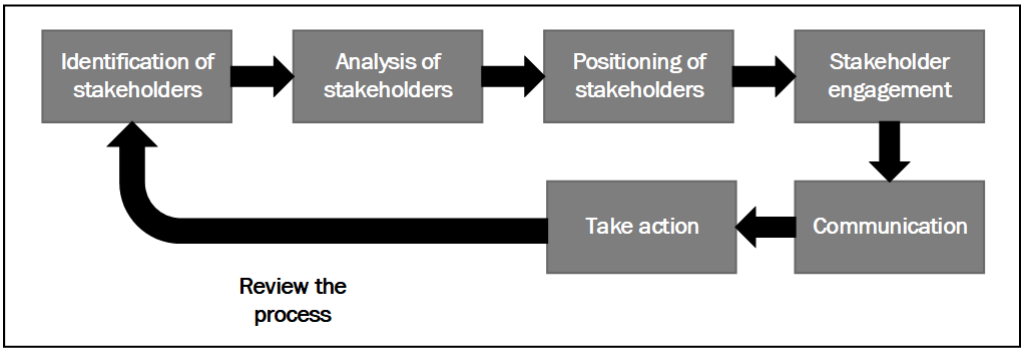


*Figure 1. Stakeholder mapping process*

### *3.2. Towards a taxonomy of the stakeholders*

At its core, public policy, and therefore public argumentation, typically involves a wide range of stakeholders in the process. At the EU level, Article 11 of the Treaty on the European Union states that "the European Commission shall carry out broad consultations with parties concerned in order

to ensure that the Union's actions are coherent and transparent". Protocol n°2 on the application of the principles of subsidiarity and proportionality annexed to the Treaty also stipulates that "before proposing legislative acts, the Commission shall consult widely" (European Commission, 2015). This is why we start the process of stakeholder mapping by analyzing documents of the European Commission on the matter.

From the document C(2016)3301 "Commission decision establishing horizontal rules on the creation and operation of Commission expert groups" (European Commission, 2014), it is possible to differentiate five groups of stakeholder defined in Table 2 below.

*Table 2. Stakeholder groups according C(2016)3301 "Commission decision establishing horizontal rules on the creation and operation of Commission expert groups"*

| Individual stakeholder | Policy orientation | Public interest | Organizations | Authorities |
|---|---|---|---|---|
| Stakeholders which represent an **individual stakeholder** | Stakeholders which represent a **policy orientation** common to different stakeholder organisations | Stakeholders which represent and act in the **public interest** | Stakeholders that are **organisations** in the "broad sense of the word", from which we can distinguish (1) private companies; (2) associations; (3) NGOs; (4) Trade unions; (5) Universities and research institutions; (6) Consultancies | Stakeholders which represent Member States' **authorities**, at national, regional or local level |

Most of identified stakeholders have to register in the Transparency Register. In the Transparency Register, stakeholders are differentiated as follows: (1) Professional consultancies / law firms / self-employed consultants; (2) In-house lobbyists and trade/business/professional associations; (3) Non-governmental organisations; (4) Think tanks, research, academic institutions; (5) Organisations representing churches and religious communities; (6) Organisations representing local, regional and municipal authorities, other public or mixed entities, etc.

In 2002, in its Communication "Towards a reinforced culture of consultation and dialogue – General principles and minimum standards for consultation of interested parties by the Commission", the European Commission emphasized the role of "civil society organisations" in EU consultations, acknowledging the lack of precision in the term (European Commission, 2012). The European Commission then encompassed in the term a range of organizations, such as: "*the labour-market players* (i.e. trade unions and employers federations – the 'social partners'); *organisations*

*representing social and economic players which are not social partners* in the strict sense of the term (for instance, consumer organisations; *NGOs* (non-governmental organisations) which bring people together in a common cause, such as environmental organisations, human rights organisations, charitable organisations, educational and training organisations, etc.; CBOs (community-based organisations), i.e. organisations set up within society at grassroots level which pursue member-oriented objectives, e.g. youth organisations, family associations and all organisations through which citizen participate in local and municipal life; and religious communities".

> *"So 'civil society organisations' are the principal structures of society outside of government and public administration, including economic operators not generally considered to be "third sector" or NGOs. The term has the benefit of being inclusive and demonstrates that the concept of these organisations is deeply rooted in the democratic traditions of the Member States of the Union".*

It should be acknowledged that, although they are not listed as 'stakeholders' in various EU documents, citizens and media should be added to the list. Therefore, it could be necessary to distinguish them from 'stakeholders'. However, in its 2014 public consultation document on "Stakeholder consultation guidelines", the European Commission does include citizens in the list of stakeholders. The following document provides such (non-exhaustive) list of categories of stakeholders (see Figure 2 below).

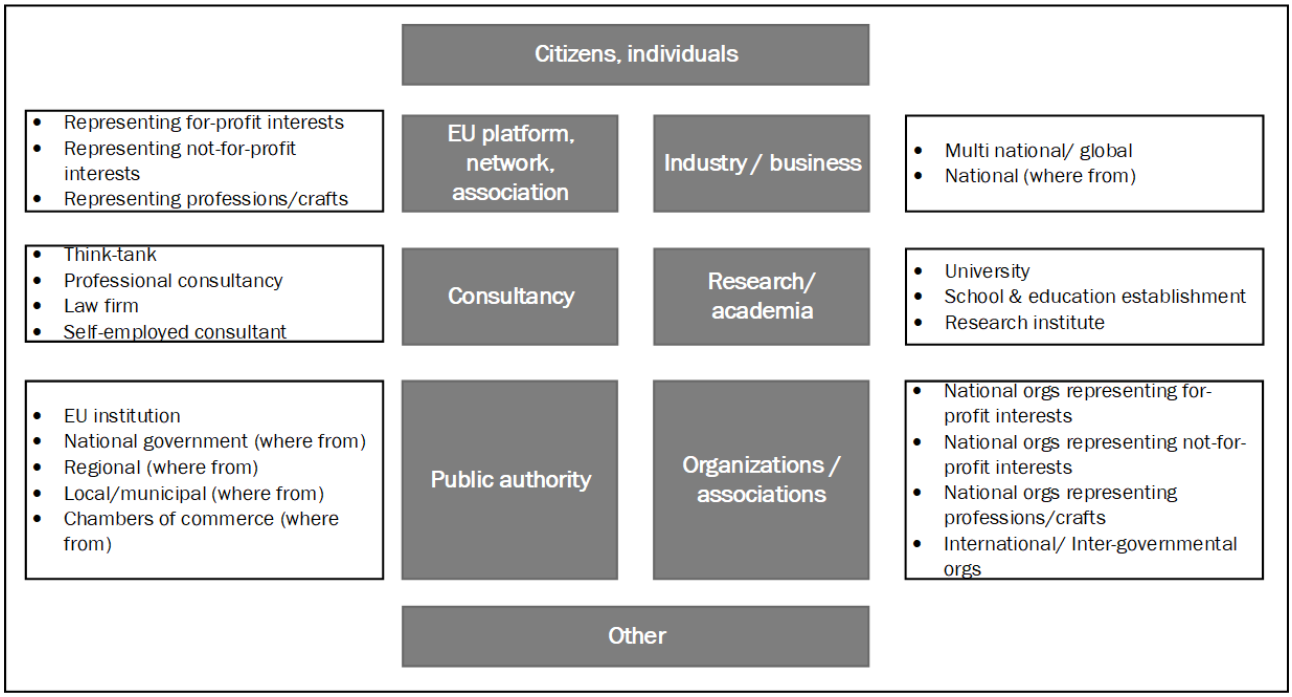


*Figure 2. Stakeholder groups defined by "Stakeholder consultation guidelines" (European Commission, 2014)*

Further, the document lists the minimum standards that define four stakeholder types, those: (1) affected by the policy; (2) who will have to implement it; (3) who have a stated interest in the policy; (4) who have the knowledge and expertise to propose strategies and solutions on the issue at hand.

It then notes that "in some cases, stakeholders may come from more than one stakeholder type". The document also states that:

> *" It is useful to distinguish between stakeholder categories that will most likely be affected (directly and indirectly) by the initiative in a significantly different way (e.g. consumers versus industry; those who will benefit versus those who will have to pay/to change their actions/behaviour). Differentiation within a specific stakeholder category should also be examined".*

Such an approach suggests that the typology cannot only be in relation with the nature and legal status of stakeholders, but also in relation *the issue at stake*. Stakeholders directly affected by a policy are thus referred to as "primary stakeholders", stakeholders that are involved only indirectly or temporarily are "secondary stakeholders".

Further the *type of interest* may be a criteria for distinguishing stakeholders which promote the public or general interest, as opposed to the special interests of particular groups or parts of society.

However, Kahane et al. (2013) warn us that "stakeholder selection may not capture the relevant diversity of views [and] is vulnerable to charge of bias" Further, they note that the "perceived public legitimacy" of an involvement process depends on "whether the participating groups are widely viewed as being the right ones". The stakeholder selection process is therefore a challenging issue, far from neutral. As an example, while taking in part in the public consultation process on the Commission's Stakeholder Consultation Guidelines, the Council of European Municipalities and Regions (2014) noted:

> *"A weighting mechanism should be designed in order to better assess the representativeness and legitimacy of stakeholders participating in consultations as well as to give a more preeminent consideration to those backed with a democratic mandate".*

It should be noted that the media *is never listed as stakeholder in EU policy documents*. The role of media in public policy, and public policy argumentation, should therefore be discussed further, to clearly identify its specific function. As noted long ago by Donaldson and Preston (1995), stakeholder theory struggles with two kinds of actors: managers and media. This seems to be the case because "both managers and media can occupy a mediating position between the firm and a stakeholder or among stakeholders. The stakeholder perspective has not dealt well with entities that occupy positions between the firm and stakeholders or among stakeholders – that is, those entities that would play a third-party role or function (e.g., advocate, mediator, facilitator, arbitrator) that acts on behalf of another actor or to jointly aid two or more actors" (Aakhus & Ziek, 2008). The power of these third parties is likely in the potential for opportunism (Donaldson & Preston, 1995) but also in their capacity for shaping the grounds for interaction and reasoning among stakeholders (Aakhus & Bzdak, 2015).

| An example of stakeholder mapping : the stakeholder consultation strategy for the evaluation of the EU adaptation strategy regarding climate action (European Commission, 2014) |
|---|
| 1. EU-level: European Parliament, European Commission, Committee of the Regions, Economic and Social Committee, European Environment Agency (High interest) |

2. National competent authorities involved in the implementation of EU or national adaptation strategies in Member States (e.g. ministries of environment and other competent authorities for sectors vulnerable to climate change such as agriculture, forestry or water, including experts dealing with the Water Framework Directive's Common Implementation Strategy) (High interest)
3. Regional and local public bodies involved in the implementation of EU or subnational adaptation strategies in Member States, including those bodies dealing with natural resource management and spatial/land use planning (High interest)
4. Internationalorganisationsdealingwithadaptationtoclimatechange,e.g.various United Nations bodies, World Bank, Organisation for Economic Co-operation and Development, International Energy Agency, International Organisation for Migration (High interest)
5. Interest groups who professionally deal with adaptation to climate change, e.g. insurance companies, academia, think tanks, green NGOs (High interest)
6. Wider interest groups who may have an interest in implementation of the EU Adaptation Strategy including civil society, private sector, small and medium enterprises, trade associations (Moderate interest)

## *3.3. Stakeholder analysis*

Typically, information about needs resides with users (i.e. stakeholders) and information about solutions resides with producers (e.g. public institutions), who often spend significant amounts of time and resources trying to obtain complex information about those needs. If knowledge of needs and tools for finding solutions can be co-located in the same place (i.e. the user), then the cost of transferring information is eliminated. Based on this notion, public institutions are keen to gather the external insights about the needs of the users (i.e. citizens) through proliferation of novel stakeholder engagement methods (e.g. idea banks, competitions, co-creation workshops, online petitions) in addressing social problems. Hence, engagement is always about redistribution of power in non-neutral context – whenever stakeholders are invited to participate in any processes, there will always be consequences for distribution of power and control.

The multi-stakeholder approach in contributing to policy-making can be an important vehicle for learning and participation. However, the distribution of power, capacity and resources of the stakeholders involved is generally imbalanced. Such differences are embedded in the social fabric of the society. This means that even if stakeholders and other types of participants are keen to participate in the discussions, there are often differences in the level of experience, expertise and access to information.

### 3.3.1. Knowledge and expertise

In policy-making, technical expertise is often the currency of influence. It is especially true in the EU, where knowledge and information are seen as 'currency' in expertise-based exchanges. "Policy-makers face complex policy problems and to solve them they need different sorts of expertise and know-how. (…) This leads them to seek information from external sources, such as interest

organizations" (De Bruycker, 2016). In its "Guidelines on Stakeholder Consultation", the European Commission notes that:

> *"The initial design, evaluation and revision of policy initiatives benefits from considering the input and views provided by citizens and stakeholders, including those who will be directly affected by the policy but also those who are involved in ensuring its correct application. Stakeholder consultation can also improve the evidence base underpinning a given policy initiative. Early consultation can avoid problems later and promote greater acceptance of the policy initiative ».*

### 3.3.2. Power and influence

The Power/Interest Matrix (Bryson, 2004) enables us to recognize the power dynamics, reflect the needs of the less powerful stakeholders and engage different stakeholder groups effectively. The outcomes of the stakeholder analysis are mapped in Figure 3 below.

| POWER > | | |
|---|---|---|
| | **Low interest + high influence**<br><br>Media | **High interest + high influence**<br><br>Context-setters (the ones that can make the difference)<br>EU, national and local level governmental agencies.<br>Key politicians and decision-makers. |
| | **Low interest + low influence**<br><br>Citizens, civil society | **High interest + low influence**<br><br>Community leaders, grassroot communities, NGOs<br>Policy-making think tanks<br>SMEs<br>Academia & universities |
| | INTEREST > | |

*Figure 3. Stakeholder power/influence analysis matrix (Bryson, 2004)*

It is however useful to go beyond this matrix (which may be more suited in a business and public management context, not in a policy-making one) in order to really understand power relations. It requires investigating the basis of the stakeholder's position of power, how power impacts on relations with other stakeholders, when and why power relations shift between stakeholders, which power resources stakeholders have access to, how it is dependent on resources, expertise or legitimacy.

Thus, stakeholder's power is linked to *specific resources* (such as information and relationships). Therefore, it raises the question of the ability of stakeholders to take part in policy-making discussions on account of their resources. This indicator not only includes material resources, but also non-material resources such as the ability to formulate specific interests and needs.

### 3.3.3. Legitimacy

Related to the questions of power and influence, stakeholders' analysis should look at how power and influence derive from legitimacy status. Legitimacy may be acquired by the interest that is served (general or public interest vs. private interest), by the size and number of people and/or

organizations that a stakeholder represents, by the type and quality of expertise (technical, grassroot, …), etc. The level of public support (and opposition) that stakeholders have is thus a very important resource, as illustrated in this statement of the European Commission in its Guidelines on Stakeholder Consultation:

> *"the Commission has a duty to identify and promote the general public interest of the Union in its policy initiatives as opposed to special interests of particular Member States or groups or parts of society – hence the need to consult widely".*

In 2002, in its Communication "Towards a reinforced culture of consultation and dialogue – General principles and minimum standards for consultation of interested parties by the Commission", the European Commission (2002) noted that:

> *"civil society organisations play an important role as facilitators of a broad policy dialogue. For this reason, the White Paper on European Governance stressed the importance of involving these organisations in its consultation processes. The Commission particularly encourages a coherent approach to representation of civil organisations at European level".*

### 3.3.4. Networking

The variety or relationships between actors involved and concerned with a given issue needs to be questioned, in order to characterize the relationships between stakeholders. It may thus be necessary to raise the following questions: What are the stakeholders' agendas? What are their fields of action and how far does their influence reach? Who are the stakeholders' allies and what is the nature of their connections? These different elements may be summarized in a form of a table (See Table 3 below).

*Table 3. Elements of stakeholder relationship dynamics*

| Issue and change objective | | | |
|---|---|---|---|
| Stakeholders<br>Name, core function | AGENDA<br>Mandate/mission, strategic objectives | ARENA<br>Field of action, scope of influence | ALLIANCES<br>Relationships with other stakeholders in terms of ABCD |
| Stakeholder 1 | | | |
| Stakeholder 2 | | | |
| Stakeholder 3 | | | |
| Stakeholder n | | | |
| A Institutionally regulated dependency | | B Ongoing information exchange | |

| | |
|---|---|
| C Coordinated action | D Co-production with common resources |

Source: Zimmermann & Maennling (2007). Multi-stakeholder management: Tools for Stakeholder Analysis. 10 building blocks for designing participatory systems of cooperation. Federal Ministry for Economic Cooperation and Development

#### 3.3.5. Trust

The analysis of the degree of trust that exists between stakeholders, and between stakeholders and policy-makers in institutions, allows for the strengthening of cooperation and, therefore, quality of discussion. This effect is not limited to the direct sphere of interaction of stakeholders and institutions: on the one hand, trust in institutions and their representatives is a key asset to ensure optimal responses to critical situations in the whole society (on the complex relationship between trust, social capital, and institutions, see Noteboom, 2007); on the other hand, the quality of public debate among stakeholders and ordinary citizens has an impact on trust attitudes, which in turn can support or undermine effective cooperation at the societal level (for an experimental investigation of the link between discourse quality and trust relationships, see Antoci et al., 2019). Particularly important is the role of transparency in modulating trust towards stakeholders and institutions: whereas the impact of transparency policies and interventions in supporting trust in institutions is mixed at best (Cucciniello et al., 2017), there is a growing demand for more transparency in policy making processes, and such demand must be addressed without undermining the effectiveness of democracy (on the dangers of unbridled transparency for democratic decisions, see Krastev, 2011).

### *3.4. Stakeholder engagement*

Discussion on the forms of involvement is important, and it also provides a way of checking whether all relevant stakeholders have been involved. Forms of involvement may include information, consultation, dialogue and many others.

Consultation is defined by the European Commission as a process to collect "opinion and views from citizens and stakeholders about its policies in line with Treaty obligations"[3]. The Council of European Municipalities and Region (CEMR) response to the public consultation process on the Commission's Stakeholder Consultation Guidelines[4] is very interesting in that regard, as it notes that participation of the stakeholders may vary in degree throughout the different stages of the decision-making process. It suggests a classification into four types, each of them "implying a progressively higher degree of participation and interactivity of the consulted stakeholder with the legislator:

| |
|---|
| 1. Information; 2. Consultation; 3. Dialogue; 4. Partnership or Alliance. |

[3] https://ec.europa.eu/smart-regulation/impact/docs/scgl_pc_questionnaire_en.pdf
[4] https://www.ccre.org/img/uploads/piecesjointe/filename/CEMR_response_EU_stakeholders_consultation_guidelines_EN.pdf

In parallel, the document puts forward a classification of the decision-making process into six different stages:

| |
|---|
| 1. Agenda Setting; 2. Drafting; 3. Decision; 4. Implementation; 5. Monitoring; 6. Reformulation. |

In its "Guidelines on Stakeholder Consultation", the European Commission notes that:

> *"Stakeholder engagement is a continuous process and formal stakeholder consultations complement the Commission's broader interaction with stakeholders (e.g. meetings or exchanges or through existing permanent platforms for dialogue).*
>
> *(…) Stakeholder consultation means all consultations with stakeholders in the process of preparing a policy initiative or evaluating an existing intervention".*

Stakeholders consultation at the EU level is governed by four principles: *participation* (i.e. "adopt an inclusive approach by consulting as widely as possible"); *openness and accountability* (i.e. "make the consultation process and how it has affected policymaking transparent to those involved and to the general public"); *effectiveness* (i.e. "consult at a time where stakeholder views can still make a difference, respect proportionality and specific restraints); *coherence* (i.e. ensure consistency of consultation processes across all services as well as evaluation, review and quality control).

| An example of consultation methods and tools : the stakeholder consultation strategy for the evaluation of the EU adaptation strategy regarding climate action |
|---|
| a) in-depth surveys : questionnaire surveys that are tailor made to the stakeholder type and knowledge gap to be filled in, made available online in English where the targeted stakeholders are invited to fill them in.<br>b) interviews of interested stakeholders<br>c) public survey: an internet-based public consultation<br>d) stakeholder workshops |

### *3.5 Overview and Commentary on Stakeholder State-of-the-Art*

Most notably, and with regard to the challenges identified in section 2, the state of the art on stakeholders and stakeholder engagement brings to light an underlying orientation resembling a functional and strategic regime of engagement that valorizes stakeholder asserting interests (see Cheyns, 2011). The opportunity for advancing range and quality of public argument relative to various choices and decisions is significant. Although shifting from a regime of engagement dominated by interest seeking will require the practical theories about participation latent in extant stakeholder management to be changed toward a more robust sense of deliberation with a focus on argumentation that opens a space of reasons not just interests (see Aakhus & Bzdak, 2015). Key to such a change in stakeholder management practice is the development of skill, concepts, and technics that can focus less on the representation of individuals and more on the representation of the range of discursive positions within society to be debated (see Dryzek, 2001; Deetz, 1992). The

practice of stakeholder engagement requires robust skills, concepts, and techniques that articulate for engagement the relevant diversity of views (see Kahane et al, 2013).

| Case study: the argumentative dimension of stakeholders involvement |
| --- |
| LOST IN DISTRIBUTION: THE DEBATE ON WATER PRICES IN TIRANA.[5] In 2017, a significant increase was proposed for water tariffs in Tirana, the capital of Albania. Considering that the population in Tirana amounts to more than 1/3 of the whole population of Albania, this was at the same time a local and national concern. The increase was needed to finance the modernization of the water distribution infrastructure, which was severely outdated (60% of the distributed water was lost in distribution). However, it was hard to make users appreciate that, since, from their perspective, they were being asked to pay more for a service that was already sub-optimal. To make things more complicated, water bills in Albania tend to incorporate also other taxes, which are then used to finance completely different areas of public welfare: e.g., school, cleaning, and property tax. This is very expedient from the point of view of the administrators, because it simplifies tax collection and reduces costs, but it creates communication problems for the Public Water Utility, since it is perceived as collecting money for activities that do not pertain to its functions.<br><br>When the price increase was about to be introduced, this decision was shared and discussed at the level of the Tirana Municipality, and then directly with the citizens, via a series of public consultations over a period of 6 months. A key stakeholder in this process was the National Regulator Authority, which is responsible for the final decision on water prices and for imposing on Municipal Water Utilities performance standards to justify such prices. Also the Mayor of Tirana, Erion Veliaj, took an active interest in the debate and frequently discussed the reasons for supporting higher prices for water, both on social media and via other communication channels.<br><br>Crucially, this was a case of *justificatory engagement* of various stakeholders and the general public: the decision about increasing princes had already been established as necessary (although the exact scope of the increase was still to be determined by the National Regulator Authority), so the aim was to explain the *reasons* that made such choice desirable for the public good. This was particularly challenging because the root problem that this increase intended to address, i.e. an outdated distribution system, was both technical and invisible to citizens: as long as water keeps being delivered to your house, you do not perceive at all the amount of it that is wasted in distribution – nor you are asked to pay for it, since it is never delivered to you. The potential for better designed argumentation and for argument-based decision support systems in this context is both obvious and undeniable.<br><br>In the end, water prices were increased by 44%, starting from January 2018: while this is definitely a sizeable increase, it is less than what was originally planned by the Water Utilities. It is also likely to prove insufficient to modernize the water supply system, since the National Regulatory Authority itself estimated a cost of 6.4 billion euros in order to provide uninterrupted water supply |

[5] This case study was collected, discussed, and analyzed during the WG3 meeting co-located with the APPLY 2020 conference in Wroclaw, PL, March 4-6, 2020. We are grateful to all WG3 members that took an active role in the meeting, and in particular to Evis Gjebrea, Deputy General Director of the Tirana Water Utility, Albania, for bringing to our attention this interesting case study, which exemplifies well both the importance of stakeholders involvement (see section 3) and the relevance of a design perspective on argumentation (see section 5) in the management of complex and controversial public debates.

all over the country, an amount which is around 64 percent of the country's GDP (for comparison, the average amount annually devoted to all public services in Albania is around 5% of GDP. Source: https://www.tiranatimes.com/?p=1763). Hence further increases in prices are planned over the next few years.

Given the amount of controversy around these issues and in light of future interventions, the Tirana Water Utility has been experimenting with new ways of *validating the effectiveness* of their investments and of *involving citizens and other stakeholders* in the discourse surrounding water supply problems. To maximize the return on investment for citizens, and thus prove that the increase in prices is justified, they have been focusing on pilot projects, targeting critical issues in specific areas of the Tirana water distribution systems: these projects have proven very effective from a technical standpoint, yet have also created inequality issues among different municipal areas, since all citizens are paying the costs of these interventions, while only those living in the targeted areas benefit from them.

On the other hand, new forms of public consultation have been tried, with significant success: two pilot areas were selected, one urban, the other rural, with the aim of prompting the creation of *water-users committees*. Two large-scale meetings were organized in each of these areas, during which the population elected their committee members, which in turn received in-depth training on the water systems from the Water Utility and other experts; moreover, they were instructed on how to address complaints or various requests they might have, and a written manual was provided for that purpose. This led to the creation of a new type of stakeholders, with the explicit function of acting as *intermediators* between the population and the administration. These intermediators (or facilitators, or ambassadors, depending on what aspect of their role one wants to emphasize) found themselves in the unique position of having a sound and comprehensive understanding of the problems under discussion, both from a technical point of view and from the perspective of the end users. Even more crucially, they were experts that the citizens could rely upon and acknowledge as such, without perceiving them as being automatically on the side of the administration. The creation of this mediation figure proved pivotal to a much better public dialogue around water supply issues in these pilot areas, so much so that now the experimentation is going to be extended to 22 other areas in the Tirana municipality.

The take-home message that the Tirana Water Utility extrapolated from this ongoing experience is that the goal of a public administration is not only to communicate its reasons for certain decisions, but also to *educate the citizens to understand and process autonomously such reasons*: not in the paternalistic sense of having these reasons explained by some third party, but rather making citizens an integral part of the sense-making process surrounding the collective problem under discussion.

## 4. ARGUMENT TECHNOLOGIES IN PUBLIC DEBATE

In this section, we report on the existing approaches and technologies exploiting argumentation in public debate. In doing so, it is important to distinguish between technologies that currently shape and influence public debate (e.g., social media platforms), and argument-oriented technologies that try to complement, replace, improve on those (e.g., argument visualization tools

like OVA, argument mining applications like DispuTOOL, or debate platforms like LiteMap, DebateHub and various Evidence Hubs).

In his discussion of civic technology, i.e., technology used for the public good, Stempeck (2016) suggests a spectrum based on the depth of technologies used with a civic goal: civic features, civic externalities, and civic products. *Civic features* refer to the inclusion of a civic engagement perspective into mainstream Information and Communication Technologies (e.g., a search engine informing the user about the election candidates). *Civic externalities* are "produced by technologies that weren't necessarily intended to affect civic life, yet most certainly do. Take, for example, how Twitter has made conversations more transparent and accessible to broader publics. The reduced friction between conversations in this open communications medium has produced positive and negative externalities ranging from increased awareness of social justice issues African-American communities face to targeted group harassment of individual females" (Stempeck, 2016). Finally, *civic products* are platforms specifically designed to achieve social change, and they constitute the main focus of this section, with an emphasis on argumentative products. However, how it will become apparent throughout this survey, it is essential to account for the role of new argumentative products within the broader context of the underlying socio-technical infrastructure scaffolding public debate, with all its externalities (positive and negative), as well as to consider whether specific argumentative goals may be better served by designing argumentative features rather than stand-alone products.

### *4.1 Argument(ation) Mining.*

Argument Mining (AM) (Lippi & Torroni, 2016; Cabrio & Villata, 2018; Reed & Lawrence, 2020) aims at extracting natural language arguments and their relations from text. Two stages are crucial: (1) Arguments' extraction: the identification of arguments within the input text, i.e., the detection of argument components (e.g., claim, premises) and the identification of their textual boundaries. (2) Relations' prediction: predicting the relations (e.g., attacks and supports) holding between the arguments identified at stage (1). This complex task involves high-level knowledge representation and reasoning issues. Recently, also argument quality assessment came into focus (Wachsmuth et al., 2017) with an empirical study over user generated content in social networks. While solutions to AM basic tasks slowly become mature, many tasks remain largely unsolved. To date, researchers have investigated AM on a variety of genres such as news articles, user generated content, political debates and speeches, and clinical trials. In the context of WG3, argument mining approaches applied to political discourse are particularly relevant as they aim at easing the understanding of the arguments proposed by politicians in public debates and to point out fallacies and inconsistencies, if any. Among them, Menini et al. (2018) predict relations on speeches of the Nixon-Kennedy campaign considering only annotations on the relations among such arguments. Lippi and Torroni (2016a) focus on the 2015 UK election debates to study the impact of vocal features from the speeches on the identification of claims in debates. They built a corpus of political debates annotated with premises and claims. Duthie and Budzynska (2018) proposed the ethos mining task aiming at detecting ethotic arguments and the relations among the politicians and the parties in the UK Parliament. Sentences are annotated as being ethotic arguments or not. Basave and He (2016) studied the use of semantic frames for modelling argumentation in speakers' discourse. They investigated the impact of argumentation as a influence rank indicator for politicians on the 20 debates for the Republican primary election. Visser et al. (2019) present a dataset composed of the

transcripts of televised political debates leading up to the 2016 presidential election in the US, with the addition of the reactions from the social media platform Reddit. The corpus is annotated based on the Inference Anchoring Theory, and not with argument components. Haddadan et al. (2019) create a huge annotated dataset including 39 political debates from the last 50 years of US presidential campaigns, addressing the argument component detection task on such a corpus. Habernal et al. (2018) present the first attempt to mine for fallacious arguments, i.e., *ad hominem* arguments. They address an empirical investigation of the typology of ad hominem arguments as well as their potential causes on Web based argumentation data (i.e., Change my View on Reddit).

### *4.2 Argument visualization.*

The visualisation and interactive analysis of arguments is a research topic that is receiving an increasing attention in the latest years. In particular, the following interactive systems have been proposed (Bex et al., 2013; Reed et al., 2017):

- The Argument Analysis Wall[6]: the goal of the Wall is to improve the interactive analysis of debates and support online interaction with those arguments. They built an FTIR touchscreen, 3.2m long, 2.4m high, rear projection at a resolution of 5760×2160, and developed an analysis application which outputs to the Argument Interchange Format (AIF). They analysed episodes of the Moral Maze, broadcast on BBC Radio 4. The audio is transcribed by a stenographic service in London, and arrives to the Wall as a text feed. It is first segmented into argument components by two 'chunkers', and the output from the chunkers is handed on to the Analysis Wall application.
- Online Visualization of Arguments (OVA)[7]: OVA provides a drag-and-drop interface for analysing textual arguments. It is based on Araucaria, and it is designed to work with web pages, and in a browser rather than requiring local installation. It also natively handles AIF structures, and supports real-time collaborative analysis. The OVAview component is a renderer that can be used to transform arbitrary AIF structures into both graphical and text-based summaries to ease the interaction of users with argumentation structures.
- Arvina[8]: Arvina is a prototype of a new dialogue system. It implements the concept of Mixed Initiative Argumentation, whereby a mix of human players and agents enacting AIF resources can take part in a debate and have equal levels of participation: offering claims, asking questions, responding, challenging and so on.

Recently, Betz et al. (2019) has started experimenting with novel visualization styles to better map different features of large scale debates. The OpMap app is a tool for visualizing large scale, multi-dimensional opinion spaces as geographic maps: opinions are first represented as labelings on a structured deductive argumentation framework; then probabilistic degrees of justification and Bayesian coherence measures are used to calculate how strongly any two opinions cohere with each other, and the opinion sample is then represented as a weighted graph, with opinion vectors serving as nodes and coherence values as edge weights; the nodes of this graph are partitioned

[6] http://www.arg-tech.org/index.php/projects/argument-analysis-wall/
[7] http://ova.arg-tech.org/
[8] http://www.arg-tech.org/index.php/arvina-mixed-initiative-argumentation/

using clustering methods, and finally the graph is visualized as a geographic map, using a method based on a particular (e.g., force-directed) layout (Betz et al., 2019).

An important contribution across argument mining and interactive argumentation analysis is the *IBM Debater*.[9] The goal of this system is to help people build persuasive arguments and make well-informed decisions. The system gathers relevant facts and opinions (applying AM techniques), form them into structured arguments, and then use precise language in a clear and persuasive way. The Debater's knowledge base consists of around 10 billion sentences, taken from newspapers and journals. The first step is to build an opening speech to defend or oppose the starting motion. The Debater searches for short pieces of text in the massive corpora that can serve this purpose. In order to debate effectively, the system needs to construct the strongest and most diverse arguments to support its case. It does this by removing redundant argumentative texts, selecting the strongest remaining claims and evidence, and arranging these by theme, creating the base of the narrative to support or contest the motion. It also uses a knowledge graph that allows it to find arguments to support the general human dilemmas that are raised by the debate topic, such as when it is right for the government to coerce its citizens, infringing on their personal freedom of choice.

### *4.3 Agreement technologies for collective decision-making.*

The idea here is to exploit computational mechanisms to leverage decision making at a large scale. Earlier works this line have been theoretical frameworks for collective argumentation such as social abstract argumentation (Leite & Martins, 2011) and prototypical technologies for bottom-up argument co-creation such as the microdebates app (Yaglikci & Torroni, 2014). More recently, Ganzer-Ripoll et al. (2019) propose a computational infrastructure to support argumentation-based debates. Their focus is on reaching agreement about the outcome of a debate. To that end, they provide a method for computing collective decisions emerging from sets of arguments and opinions about argument validity. The theoretical underpinnings of these lines of research encompass social choice theory and computational argumentation, especially studies on multi-party persuasion (Bonzon & Maudet, 2011), weighted argument systems (Dunne et al., 2011; Bistarelli et al., 2009) and ranking-based semantics for abstract argumentation (Amgoud & Ben-Naim, 2013; Bonzon et al., 2016), among others.

### *4.4 Tools for online public dialogue.*

Since the early days of social media, a large number of tools have been proposed for online public dialogue. Some popular ones explicitly refer to debate, arguments and opinions, but do not rely on argumentation technologies. These include commercial platforms for democratic decision making through debates, such as Consider.it and Quoners.com. Other tools instead are oriented towards structured argument-based discussion. These include Deliberatorium (Klein, 2012) and other tools intended to leverage "collective intelligence for the common good" (Schuler et al., 2018). Successful examples are LiteMap (litemap.net), DebateHub (debatehub.net) and various Evidence Hubs (De Liddo et al., 2012). Earlier technologies, not specifically oriented to public dialogue and deliberation, include argument visualization and diagramming tools such as Araucaria (Reed & Rowe, 2004) and various knowledge cartography tools (Okada et al., 2014). In spite of the considerable effort put in

[9] https://www.research.ibm.com/artificial-intelligence/project-debater/

these many other initiatives, informed citizen engagement remains an open issue. Authors involved in e-participation projects pointed out that complex topics need to be presented in a simple yet relevant way aided by starting questions, data visualisations, or scenario building, enabling participants to provide different kinds of inputs (opinions, proposals, arguments, etc.; Sánchez-Nielsen et al., 2014).

### *4.5 Policy-making support tools.*

Finally, several toolkits have been developed by a number of European projects to aid policy-making. Sense4us (www.sense4us.eu) built on policy modelling and simulation, data analytics and social network discussion dynamics, producing integrated tools for improving public service and policy provision. FUPOL (www.fupol.eu) used multi-channel social media communication, crowdsourcing and simulation to develop software, guidelines, training material and consulting services. ePolicy (www.epolicy-project.eu) developed a toolkit for optimization and decision support for policy making at the regional level taking into account objectives, constraints, financial issues and impacts on environment, economy and society. The target domains for all these projects included energy and environmental policy, sustainable development, land use, urban planning, urban segregation and migration. All these projects made use of analytical tools through opinion mining on e-participation data. However, they did not consider the public argumentation dimension as their main focus, and their analysis of citizen debate was quantitative rather than qualitative.

We organize now the tools and technologies described above in two tables (see Table 4 and Table 5 below) to highlight their role with respect to the goals and the stakeholders of APPLY.

*Table 4. Policy Stakeholder x Tools and Underlying Technology*

| | End-user tools(platforms and apps the users will directly interact with) for… | Underlying technology (i.e. tools that make the whole system work but are not necessarily / typically visible to users) for… |
|---|---|---|
| Citizens | Consider.it, Deliberatorium, LiteMap, DebateHub, EvidenceHub | Argument theories, social media platforms, social choice (voting) |
| Scholars ('experts') | IBM Debater<br>DISPUTool[10]<br>Argument Analysis Wall<br>OVA<br>Arvina | Argument mining technology (machine learning and deep learning models) |

[10] https://www.ijcai.org/Proceedings/2019/944

| | | |
|---|---|---|
| Policymaker | ePolicy, sense4us, FUPOL toolkits | Opinion mining, social media analysis |

*Table 5*. Policy Stakeholder Gaps x Tool and Public Argumentation Problem Addressed

| GAPS[11] | This tool / app / platform addresses a problem / challenge between (: | The problem being addressed is: |
|---|---|---|
| citizen-scholar | LiteMap, DebateHub | help people structuring the debate and identify fallacies by using some simple argument model and visualization tool |
| citizen-policymaker | IBM Debater | Help people reason by providing compelling, evidence-based arguments and limiting the influence of emotion, bias, or ambiguity |
| scholar-policymaker | ePolicy toolkit | help accommodating citizen opinions in the policy-making process together with other objectives, constraints, financial issues and impacts on environment, economy and society |

### *4.5 Overview and Commentary on Technologies for Public Argumentation*

Tables 4 and 5 above highlight that relatively few technologies have been designed thus far with the explicit aim of filling the gaps between the different stakeholders involved in public argumentation, as identified by the APPLY project. More generally, most of the technologies and tools described in this section are far from being usable from citizens and they are mostly intended to support scholars' activities in the argumentation field. In particular, few approaches have been designed to fill the gap between citizens-scholars (LiteMap, DebateHub) and scholars-policymakers (ePolicy), and only IBM Debater aims to address the gap between citizens-policymakers even if it is not freely available.

An important future output of the APPLY project will be to understand the reasons behind this troubling lack of technological support for public argumentation, and to suggest ways for

[11] For a specific definition of these gaps, see the APPLY MoU, p. 5, https://publicpolicyargument.eu/wp-content/uploads/2019/01/CA17132-e.pdf

remedying it. An early indication, already emerging from the considerations presented in this section, is the need for stronger collaboration between scholars, designers, software developers, and stakeholders. So far research on argumentation technologies has been mostly driven by scholarly concerns (e.g., how to leverage well-established theories of argument for better argument visualization), but it is high time to shift the focus also (and possibly mostly) towards practical concerns: many technologies are mature enough to be used "in the wild", and there are pressing societal and political needs to be addressed via argument technologies. Another yet under-explored but highly promising direction for development pertains the degree of integration of new argumentative products within the broader socio-technical systems that support and shape public debate: all other things being equal, it seems often preferable to design solutions that can seamlessly interact with platforms already used by citizens, policymakers, and all other relevant stakeholders (e.g., social media).

## 5. A DESIGN PERSPECTIVE ON ARGUMENTATION

The challenges highlighted in section 2 point to disruptions, and sometimes radical reformulations, of given ways for understanding public, participation, and stakeholder. The state of the art regarding stakeholder engagement and technologies for public argumentation reveal both constraints and opportunities for addressing the challenge of participation in policy. The same is true for argument. Indeed, the challenges call for expanding attention to argument beyond the evaluation of conventional, vernacular forms to also better understand how argument practice evolves, adapts, and becomes built into institutions and technologies (Jackson, 2015). Where humans understand each other via natural language, machines communicate through data and algorithms while nature speaks many languages of its own. Even so, it is possible to construct coherent socio-technical systems for making sense of the complex relations between human action and the natural environment, such as in the use of sensor grids for real-time, data driven environmental monitoring and management (e.g., Varadharajan et al., 2019). It should be noticed that such a socio-technical system is built by developers and operators making many choices about how different stakeholders and data will relate to each other and the engagements necessary for handling differences. Indeed, even on online platforms and media sites or in traditional in-person venues where vernacular argument is prominent, the choices about how stakeholders relate and engage should be noticed. So, even though humans might experience these complex spaces in terms of natural language argumentation, the institutional, informational and computational environment that enables such communication also structures it (Aakhus, 2017). To respond to and make sense of these features and challenges of contemporary policy context, we turn to a design stance on argument to assemble a state-of-the art perspective for understanding the basic resources in designing public argument with respect to challenges (section 2), stakeholders (section 3) and argumentation technologies (section 4).

A design stance brings into focus a central puzzle of the gaps between policymakers, citizens, and experts (of all kinds): "how to make communication possible that was once difficult, impossible, or unimagined" in policymaking (Aakhus, 2007, p. 112). The design stance in argumentation studies seeks to see the range and variety of designs for argument in the world around us while cultivating the practice of argumentative design to enhance capacity for reasoning about the world around us (Jackson, 2015). With the design stance, we attend to how technologies and techniques for

argumentation draw stakeholders together into particular argumentative relations that may enhance or undermine reasonableness.

While some do claim that rhetoric is the paradigmatic design art (e.g., Kaufer and Butler, 1996; McKeon, 1987), the development of a design stance for argumentation studies is a recent development that is highly pertinent to addressing the evolving complex communicative contexts in which people engage each other. This is especially true for policy making and the various ways the relationships among stakeholders are mediated and facilitated for making and criticizing arguments through socio-technical systems. To ground the search of the state-of-the art in designing public argumentation, a brief conceptualization of design as it relates to argument is offered.

Design is most commonly understood as an activity undertaken to improve human experience by creating an artifact such as a product, device, or structure and, more recently, a service, platform, or organization. Noted design theorist Herbert Simon (1996) explains that artifacts function as an interface for adapting one environment to another to make new forms of activity possible. The objective of design, however, is not simply creating an artifact but with improving experience. So, following Simon, design should be understood as an activity of transforming a given circumstance into a preferred one through intervention and invention. As such, design is neither an empirical project focused on establishing *what-is* nor a normative project focused on establishing *what-ought-to-be*. Instead, design combines knowledge about *is* and *ought* to create what is possible but does not yet exist in a circumstance. The knowledge generated by design, as Nigel Cross (2006) explains, is evident in the artifacts created, the creative activity of designers, and the processes for creating artifacts.

Design is natural to human communication, especially persuasive and argumentative communication. It is most obvious in the uses of language where disagreement becomes relevant by making and criticizing reasons through various communicative actions such as offering accounts, making explanations, sharing information, or telling stories. It is also evident in the types of social and institutional roles taken up relative to disagreement in the process of arguing and the procedures for handling disagreements in particular ways to produce knowledge, justice, and prudent courses of action. A design stance for argumentation recognizes these natural capacities by attending to the practices and structures that are developed to shape and discipline how disagreement is handled through argumentation (Aakhus and Jackson, 2005). A design stance "entails disciplined, reflective discovery, and development of concepts for seeing what is possible and methods for realizing what is possible" (Jackson and Aakhus, 2014, p. 3).

The basic claim of the design stance is that by improving our ability to see the designs for argument in the world around us the prospects can be increased for cultivating argumentative design that enhances our capacity for reasoning about the world around us. Toward this end, a basic frame for discovery and innovation in public policy argumentation can be outlined in terms of design artifacts for argumentation (ie., argument technologies), design processes for argumentation (i.e., stakeholder engagement), and design thinking for argumentation (i.e., innovation of artifacts and processes).

## *5.1. Design Artifacts for Argumentation*

- Discourse and Activities as *Artifacts*

  The concept of artifact is used here to recognize that uses of language and interactivity can be inventions and innovations adapted to managing disagreement -- to open it up, settle it, or resolve it. Artifacts can be understood as more or less successful designs for recurring problems in managing disagreement.

  - Uses of language to construct particular discourse units
    - Kaufer and Butler (1996) conceive of rhetoric as a "design art" which invites seeing different kinds of discourse units constructed with language as artifacts. As such the variety of linguistic constructions, such as stories, accounts, promises, requests, questions, and so on can be understood as designs with the potential for managing disagreement.
    - Arguments often do not appear in ready-made textbook ways as claims and reasons. And, moreover artifacts may appear as *argumentative patterns*, which are a standardized set of moves that manage the complexities of managing a particular set of issues (van Eemeren and Garssen, 2013).
    - Argument formulations and patterns can differ by issues, communities, domains, and fields of specializations. The detection of these artifacts and their aggregation with argument mining and visualization strategies and technologies can lead to insights about how groups of people collectively construct ways of managing disagreement in different times and places.
    - Understanding argument message artifacts can lend insight how stakeholders' engage and where they are likely to misalign. Such insights can be useful for stakeholder analysis but also for designing argumentation support in the form of guidelines, institutional or technological structures for producing messages with relevant argument quality for the relevant stakeholders and the occasion of decision making.
  - Uses of interactivity to construct activity
    - The interactivity among stakeholders can take different forms and is subject to design as various third-parties (e.g., mediators, facilitators, gatekeepers, planners, managers) take a lead in shaping or disciplining interactivity into an activity with particular form and quality. This happens through the uses of questions and summaries to turn a quarrel into a negotiation and it also happens when a public meeting is planned orchestrate participation so that particular issues are addressed and particular stakeholders are assured of opportunities to speak (Aakhus and Laureij, 2012).
    - Aakhus and Jackson (2005, p. 427-430) have described seven critical factors about language and social interaction in designing activity: turn-taking, identity, speech acts, sequencing, repair, interactional emergence, and cultural beliefs about communication. The ways in which the interaction is shaped has consequences for the argumentative content and quality of an

activity. These factors foster attention to activities as design artifacts for managing disagreement among multiple participants over time and space.

- Interactional formats can differ by issues, communities, domains, and fields of specializations. The detection of these artifacts and their aggregation with argument mining and visualization strategies and technologies can lead to insights about how groups of people collectively construct ways of managing disagreement in different times and places.
- Understanding argument interaction artifacts can lend insight into how stakeholders' engage and for constructing encounters among stakeholders with patterns of interaction and workflows for managing disagreement. Furthermore, care can be taken to understand how these focal factors scale for different kinds of public argumentation.

- For argumentation, and human communication more generally, the creation of an artifact serves the purpose of realizing some form, quality, or state of communication while preventing other forms and qualities such as when the aim is to turn quarreling into negotiating or planning. A design proposes preferred conduct, and as such a design is a kind of practical reasoning about messaging and interacting that makes assumptions about how communication works and how it ought to work (Aakhus and Jackson, 2005).
- One important aim of seeing the designed artifacts for communication and information is understanding what the artifact takes to be the main exigency for policymaking, the particular problem - or gap - for argumentation, the solution, and the rationale justifying the effectiveness and legitimacy of the solution to the problem relative to the exigency (Aakhus, 2002). Such attention opens the given design up for reflection to better understand principles for designing messages and interaction for managing disagreement.

- *Infrastructure*

  Design rarely, probably never, happens from scratch -- that is, design always happens within contexts that have history and legacy of prior interventions and inventions that have sunk into the background as routine and taken for granted ways of doing things. This can be understood as the installed base for action -- in this sense, infrastructure is both technical and social as infrastructure becomes part of the way in which people and groups relate to each other (Starr & Ruhleder, 1996). Hanseth and Lyytinen's (2010) conceptualization of infrastructure offers a useful starting point for understanding how the classes of artifact design described above come together to form infrastructures for managing disagreement. Thus, the state of the art in argumentation technologies can be understood in terms of what has been achieved and what remains to be achieved in building technological support for argumentation in public policy.

  - Capabilities: The possibility and/or right of a user or user community to perform a set of actions on an object or in a process. Examples: Button for submitting a complaint can only be used by certain people and the result will only go to certain people. A question asking for a summary obligates a particular response.

- Applications: Suites of capabilities developed to meet specified user needs within a select set of communities. Examples: Online discussion platform provides capabilities for submitting comments, reviewing and replying to other comments. A human facilitated community meeting structures input and responses.
- Platforms: A framework or architecture that allows organizing a set of capabilities into a well-bounded and controlled system. Example: An agency develops an online means for commenting on policy proposals, aggregating comments, and organizing technical response to comment themes as input into agency prioritization which includes as output to decision-makers rationale justifying the recommendation relative to the citizen comments and expert responses.
- Infrastructure: Composed of other platforms, applications, capabilities, and infrastructure. Example: The implementation of the platform mentioned in the previous example must connect with elected official decision making process and potential for judicial review. An important function of argumentative infrastructures is to provide support for messaging and interacting within and about complex policy domains. Relevant examples include both stand-alone infrastructures (observatories) and interventions that are integrated in broader socio-technical systems.
    - *Observatories*: sensing, interpreting, deciding among many actors about a complex physical/social space (discourse related to watershed management or to managing retreat from rising sea level in at-risk areas). Well-studied examples include observatories for public health (Kanellopoulos et al., 2019), environment (Horsburgh et al., 2011), watershed/river basin management (Varadharajan et al., 2019), and indoor air quality (Kircher et al., 2009).
    - Building argumentative infrastructures within *broader socio-technical architectures*: the main advantage of this more holistic approach is to integrate argumentative infrastructure with existing/projected communication flows, data management, and policy making processes, so that a dashboard and workflows are available to the "street level" user. Notable examples where such invention could be incorporated include the Estonia digital state initiative (for critical discussion, see Anthes, 2015; Drechsler, 2018), as well as the a comprehensive plan for mitgating the consequences of sea-level rise with an ecologically sound, community sensitive collaborative design for managed retreat of residence and business from the seashore (Burger, O'Neill, Handel, Hensold, and Ford, 2017).
- Infrastructure communities: The infrastructural view by Lyttinen and Hanseth spells out various communities in the socio-technical systems that makes up an infrastructure, and offers a way to re-think stakeholders in terms of discursive communities with a variety of viewpoints and habits of reasoning (not just interests). These communities all have a different relation to the the technical aspects of the infrastructure and are connected to each other as they have a stake in the infrastructure. Thus, in addition to the stakeholder roles to be discussed below, those

with a stake in policy process and the available methods for managing disagreement in policy process will also include:

- User Community: The people for whom the capabilities, applications, and platforms are developed. However, it should be noted that for any user community there are also groups of non-adopters and resistors.
- Operations Community: The people involved in maintaining the effective operation of the capabilities, applications, platform, and infrastructure. Since there can be a variety of expertise required to make something work, the operations community can have several subgroups of needed expertise.
- Design Community: The people who develop the capabilities, applications, and infrastructure. As the complexity of the artifact increases new kinds of design expertise will be required for the development.
- Standardization and Governance Bodies: Those who oversee the legitimacy of the capabilities, applications, and platforms.

## *5.2. Design Processes for Argumentation*

The adaptation and evolution of design artifacts - messages and interaction - and the infrastructure can happen in a variety of ways that can be more or less reflective about argument and communication. Design is not simply the application of theory to practice or the translation of empirical findings for various audiences.

Improving designs will entail attention to design method. Design methods involve different ways of using normative and descriptive assumptions. Norms can provide a stable theory for evaluating practice to find its shortcomings and to propose ways to correct non-normative activity. Norms can be used to discover the variety of principled ways that practice deviates from the norm and thus to discover alternative, legitimate forms of practice. Norms can be interrogated from the perspective of practice to suggest that current norms are problematic and require reformulation.

Design is typically understood as instrument -- that is, organized around problem-solving or resolving some gap between the given and preferred with a practical, implementable solution. The outcome is improved practice - and theories and concepts are used with respect to that end. An area for development is user-centered design for argument. These design methodologies enable users to comment on the usability, usefulness, and legitimacy of the artifact and the use of those user insights in formulating the design of the artifact. Such developments will be important for elevating interesting design of argument technologies that have been driven primarily by academically defined problems.

Moreover, by finding ways for argumentation theorists and researchers to engage with other kinds of design oriented disciplines it may be possible to push the instrumental orientation that involves discovering, developing, and implementing alternatives to current practice toward conceptualization of more radical alternatives that can inspire deeper imagination about what is possible with regard to designing for argumentation. Each of these outlines for argumentative communication. This would include:

- Speculative Design: Design that is organized around envisioning new ways to do things. The artifact created may never be put to use but is inspirational for new forms of instrumental solutions.
- Adversarial Design: Design that is contentious in calling out and challenging the presumptions and values of existing artifacts and practice. It may be practical but it's aim is to expose issues with current practice and to imagine other ways things could be done.

### *5.3. Design Thinking for Argumentation*

Design enacts practical, sometimes formal, theories of argument in the interventions carried out and inventions created. Whether the designers have been reflective about argumentation is always an important consideration. There is much opportunity and need to advance design thinking for argumentation. "Design involves interpreting and judging the communicative possibilities in any setting and inventing actions or means to bring to life forms of action latent but yet unrealized" (Aakhus and Jackson, 2005, p. 420). As such, argumentative design always seeks artifacts and infrastructure for argumentation that makes communication possible that was otherwise difficult, impossible, or unimagined - and this is crucial to addressing the gaps between stakeholders in policy making. Through design it is possible to challenge received wisdom and extant knowledge through invention and intervention. Some of the key elements of design thinking for messaging, interacting, and infrastructuring relevant to argumentation include advances in:

- Design Language
    - Theories of language, interaction, and communication -- and especially argumentation -- offer particular vocabularies for describing and explaining or evaluating that have the potential for altering practice. These theories thus offer design language that has the potential for altering practice. To see this just ask, following Craig (1999), if people understood the theory, then how would they behave?
    - Between our ordinary ways of understanding argument and more formal theory, lies a variety of professionalized ways of understanding communication and argument. These communities of practice (eg., academic disciplines, units in agencies) devise ways to talk about argumentative conduct and its effective performance. These are also design languages for argument.
- Design Hypotheses
    - The artifact offers a design hypothesis as it suggests an alternative to current uses of language or interactivity to realize new discourse units or activity to change argumentative conduct.
    - Design hypotheses reflect particular combinations of normative and descriptive assumptions.
- Design Models and Theory
    - Theory of change. The theory or the model provides a way to see what counts as a problem and what counts as a solution in any situation. The theory or model is

framework for generating particular design hypotheses for the intervention or invention. It provides a more general specification of the key normative and descriptive assumptions for thinking about developing interventions and inventions.

For any intervention or invention, we can seek to discover how the design (artifact, infrastructure) seeks to alter communication and argumentation to solve some problem or gap in policymaking, the design process involved in making the intervention or invention, and the design thinking for inventing products and processes. To advance the design of public argumentation in policy making requires seeing how policy stakeholders and socio-technical systems for argument come together in policy practices, forms of organizing, and institutions for decision making. Our attention is not limited to interventions and inventions directly inspired by argumentation theory and research because it is important to account for the ordinary ways argumentation is conceptualized and designed in policy related practices. Our frame also casts a wide net as a starting point so that contemporary preoccupations in argumentation theory and research do not unduly skew the search for innovations in supporting interaction and reasoning in policymaking. The aim is to first see what is going on in the world in this respect, and then how it can be used in advancing the design of public argumentation in policymaking.

## 6. CONCLUSIONS AND FUTURE DIRECTIONS

Going through such a diverse and detailed report, it is conceivable that some readers may have the impression that the exact role of argumentation in public debate remains somewhat elusive. The boundaries between public discourse, socio-technical infrastructure, and institutional design are indeed blurred, unavoidably so. Is it then possible that a clear grasp on the specifics of argumentation is, so to speak, lost in public discussion?

Several factors contribute to make argumentation relatively ineffable in public discourse. On the one hand, its presence is so ubiquitous as to make its detection very difficult: just like air for breathing, argumentation is literally everywhere in public discourse, and this is exactly why it is so hard to pin it down precisely. On the other hand, stakeholders, either individual or collective, enter public deliberation typically to pursue some practical goal, and argumentation is just one instrument among many (albeit a particularly powerful one) for the pursuit of their aims. In other words, people and institutions 'in the wild' are not necessarily committed to argue, and assuming otherwise would be a capital mistake – one often perpetrated by argumentation theorists, we suggest. Finally, argumentation enters into public discussion in a variety of ways, and we must resist the temptation of oversimplifying them: instead of just focusing on content (e.g., argument schemes), or just looking at the interaction (e.g., dialogue games), or just considering the broader context (e.g., critical discourse analysis), we need to understand all these aspects, alongside many others, within a coherent framework.

This is hard work, to be sure, and the mantra of simplification must be heeded occasionally, since there is method to its madness: it is indeed often necessary to single out a specific aspect of the role of argumentation in public discourse, in order to understand it with the required degree of precision. Nonetheless, these in-depth incursions should ultimately lead to a broader, overarching synthesis, in which we address the ever present question: *how do all these different bits and pieces fit together* in a unified field of human activity, i.e., public argumentation? If this approach conveys the impression that argumentation is all over the place in public discourse, that's because this is

exactly how it is: the role of argumentation in public debate spans across all aspects of human interaction, and must be analyzed as such.

This is even more crucial in an age dominated by a technology-driven data society, leading towards an algorithmic culture (Striphas, 2015) and even algorithmic identities (Cheney-Lippold, 2011). The potential that these socio-technical transformations have for the implementation of the long-awaited argumentative turn in policy-making (Fischer & Forester, 1993) and the advent of discursive democracy (Dryzek, 1990) cannot be overstated, but nor should the dangers and pitfalls for democracy inherent to these very technologies be underestimated, e.g., in terms of individual rights violations (Richards, 2012) and the erosion of traditional political agency (Dahlgren, 2018). Against the backdrop of these profound societal transformations, a comprehensive and multi-faceted approach to argumentation in public debate is more of a necessity and less of an option.

This becomes particularly apparent as soon as we realize that what is needed are not merely new technological tools and apps, but rather *a blueprint on how to collectively shape socio-technical change*. A focus on public argumentation has the potential to offer that, but only via proper integration of all its relevant aspects: the design of the underlying infrastructure and enabling conditions, the development of suitable technological solutions, and the effective and fair involvement of all key stakeholders. This is the mission that informs WG3 activities within the APPLY network, and the ultimate reason behind the somewhat overabundant structure of this report.

Lastly, it is important to stress that the take-home message on the virtues of integration is not intended just for stakeholders, but for all our fellow scholars as well. Too often argumentation theory has prospered within the narrow walls of its own ivory tower, rarely deigning to get its hands dirty with field work: in fact, it is indicative that, more often than not, empirical work in this domain is equated with text analysis, which is, of course, an important part of it, but not the whole, not by a far cry. We need to go beyond textual boundaries in our quest for the role of argumentation in public debate, tackling also the interactive and institutional nature of argumentative practices. This is the mission that the APPLY action is committed to, and the overarching challenge that our consortium will be dealing with over the next few years.

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