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Mission-oriented innovation policy and the challenge of urgency: Lessons from Covid-19 and beyond

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ABSTRACT

While the collective “mission” to manage Covid-19, preferably through a vaccine, struggles from the time constraints that abound, researchers of “mission-oriented innovation” must conceptualize urgency better in order to keep their explanations on par with current and future policy dynamics. But how to understand “urgency” beyond observing time constraints? How does urgency transform the conditions of policy-making? What qualitatively distinguishes mission-oriented innovation under urgency? The paper spells out a concise definition of urgency in decision-making that is applicable to policy-making. Urgency transforms policy-making in that time obliterates paths of action which affects the rationality of the outcome. Path-dependencies may certainly ensue. What might affect public policy generally, is particularly challenging for mission-oriented innovation policy which must potentially manage the tension between the elevated “wickedness” and the increased urgency of societal challenges while innovation is, in addition, a specifically uncertain process.

1. Introduction: pandemic conditions

At the time of writing this article, innovative and scientific networks across the globe were searching for a viable vaccine against SARS-CoV-2, the virus that causes Covid-19, trying to “beat COVID-19 through innovation,” like Azoulay and Jones (2020) recently proposed in Science. At the time of revising it, the first vaccines have been licensed and vaccination has begun, progressing at different pace across countries. Meanwhile, new uncertainties have emerged, e.g. new mutations of SARS-CoV-2, for which the vaccines currently available display positive, but varying degrees of effectiveness. A set of reliable vaccines currently remains among the most promising and socially sustainable solutions to the continuous threat of the ongoing Coronavirus pandemic. It is also a demonstration of the principles of contemporary “innovation society” (Rammert et al., 2018).

Meanwhile, finding a vaccine against SARS-CoV-2 (and all its strands) is more than just colloquially a “mission,” it is in fact conceptually a prime example of “mission-oriented innovation policy” (Mazzucato, 2018; Hekkert et al., 2020). It is an innovation processes which is dedicated to fulfilling governmental goals, in relation to broader public problems or societal challenges (Foray et al., 2012; Wittmann et al., 2020), and which is therefore being governed by specific innovation policies (Reale 2019). Among other things, the current search for a vaccine against SARS-CoV-2 demonstrates the “directionality” of innovative activity that characterizes mission-oriented innovation (Mazzucato, 2016). Innovative activities across the board are “directed” at, or “dedicated to” (Pyka, 2017), a safe vaccine against this specific virus. In this, innovation is evidently determined, at least partly, by the “demand-pull” (Godin and Lane, 2013) that results from the public need for a safe vaccine. It is however important to distinguish this “need” and other, more abstract forms of “necessity” from more narrowly economic “demand” in a quantitative sense of immediate sales potential (Boon and Edler, 2018). Many governments have committed to buying and distributing an eventual vaccine, or at least to subsidizing and supporting its acquisition and distribution. Yet, they have much less committed to a concrete supplier or a concrete product than they have rather committed themselves to the innovation that will have proven to fulfill a certain function (being a safe and effective vaccine). In other words, these are less instances of “public procurement” (e.g. Chicot and Matt, 2018; Wesseling and Edquist, 2018) than instances of, in fact, “functional procurement” for innovation (Edquist and Zabala-Iturriagagoitia, 2020). One might see that the current developments are explicable fairly well in the terms of pertinent political economies of innovation (Blättel-Mink and Ebner, 2020). One dimension however remains that characterizes the relationship between innovation policy and Covid-19 but for which there is no conceptual apparatus in these political economies: its skyrocketing urgency.

It is a concept for this urgency in mission-oriented innovation policy...
that this paper is supposed to provide. The paper proceeds as follows: First, the difficulties and exigencies of mission-oriented innovation policy are discussed through the idea of “wickedness.” It will be shown that, convincing as this pertinent approach is, it neglects the temporal exigencies of most of the corresponding policy issues. Consequently, a concept of “urgency” is carved out, suggesting how a certain discrepancy between temporal and substantive exigencies of certain policy issues qualitatively transforms the frame for policy formulation and implementation. Thirdly, it will be demonstrated briefly how an eye on urgency changes or amends some pertinent approaches to mission-oriented innovation governance. The paper ends with a comprehensive conclusion, showing also how urgency matters not only to mission-oriented innovation policy, but also to innovation policy more widely and even to public policy generally.

2. Wickedness of “mission-oriented innovation”

Emphasizing the “directionality” of mission-oriented innovation potentially obscures the fact that such a mission is not usually easily established, let alone sustained. Recently, some commentators have in fact characterized contemporary mission-oriented innovation as ultimately “wicked” (Wanzenböck et al., 2020), drawing pertinently on Rittel and Webber (1973). Both problems, or societal challenges, and their possible innovative solutions can be more or less (a) politically contested in that political and social conflict exists about them; (b) institutionally complex, in that they affect and involve a multitude of entities and actors, with problems of collective action, e.g. the potential of diffusion of responsibility, moral hazard, and so on; and (c) uncertain, in that knowledge and predictability are limited. The authors especially emphasize contestation, pointing out that most approaches would underestimate it in their focus on technical solutions (cf. Böschens, 2018). It is now easy to see that the global challenge that lies in Covid-19 is obviously “wicked” by these standards. The entire global situation, politically as well as economically, is gravely uncertain. As uncertain remains the virus itself from a medical-scientific perspective, in that medical evidence about it only comes slowly while new mutations develop which need analyzing. Moreover, the political-epistemic situation is such that defining most of the policy problems that stem from the virus, and the policy solutions to its ramifications, is heavily contested. This goes as far as it is becoming a widespread political position to deny the virus or its dangers altogether. As time passes, more social and epistemic conflicts emerge that result from Covid-19 or which are directly related to it. The proposition to pursue a vaccine against SARS-CoV-2 inherits many of these properties of “wickedness” from the broader challenge, whereas other elements of “wickedness” are more specific to it. For instance, the institutional question of how to distribute a vaccine fairly, effectively, and efficiently is not yet resolved, much like the question of how to incentivize enough citizens to actually get it without, for example, free-riding (e.g. Hobson-West, 2003). In any case, even more proofs of the “wickedness” of this issue abound.

The more wicked a challenge, the more contingent is a mission-oriented innovation policy are discussed through the idea of “wickedness.” It will be shown that, convincing as this pertinent approach is, it neglects the temporal exigencies of most of the corresponding policy issues. Consequently, a concept of “urgency” is carved out, suggesting how a certain discrepancy between temporal and substantive exigencies of certain policy issues qualitatively transforms the frame for policy formulation and implementation. Thirdly, it will be demonstrated briefly how an eye on urgency changes or amends some pertinent approaches to mission-oriented innovation governance. The paper ends with a comprehensive conclusion, showing also how urgency matters not only to mission-oriented innovation policy, but also to innovation policy more widely and even to public policy generally.

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The more wicked a challenge, the more contingent is a “convergence” of the policy process towards both defining the problem and finding the solution (Wanzenböck et al., 2020). Concretely, different combinations of different dimensions of wickedness imply different, specific, somewhat functional requirements for a successful policy process. Briefly, for example, uncertainty implies the need for learning, maybe experimentation, contestation suggests the necessity for deliberation, and complexity seems to require coordination. Put differently, formulating, implementing and sustaining, by policy, a mission has some exigencies that result directly from the specific “wickedness” of the societal challenge in question. For instance, some have argued that the “grand challenges” which mission-based innovation policy usually wants to address require a “new generation” of innovation governance. Pertinent, state-led innovation governance appears to them as too one-dimensional, too path dependent, too inflexible, and too authoritarian (Kuhlmann and Rip, 2018, p. 448).

Instead, corresponding commentaries propose a participatory, open form of governance on all levels to reflect the complexity of the problem. Informed obviously by both a practical argument of how solutions to societal challenges most fruitfully could evolve, as well as by a more programmatic, liberal stance towards public intervention in general, certain contributions sketch out heterogeneous, differentiated policy networks, including more than the orthodox “stakeholders” (passim) of representative policy-making, as the central arena for this new generation of innovation governance. They emphasize the need to account for the importance and yield of “distributed agency” (cf. Battilana et al., 2009) in tackling “grand challenges.” A huge variety of actors, coordinated through different mechanisms and on different platforms, may thereby contribute to, first, defining and, secondly, solving the underlying challenge. This represents a somewhat evolutionary approach to governing innovation for “grand challenges,” one that emphasizes experimentation, flexibility, adaptability, openness (passim), recursion, and reflexivity. Especially, this claim to evolution and experiment includes the modes of governance themselves (passim), leading to the claim that “grand challenges” need establishing methods of reflexive governance (Lindner et al., 2016).

These suggestions are somewhat phrased as a “response” to what has been observed as the requirements of contemporary societal challenges. It seems that they are, in comparison, remarkably optimistic with regard to collective action, participation, and the tendency of spaces of solution to converge, something that is not necessarily uncontested in the literature to start with (Apreda et al., 2014). Secondly, these suggestions imply a stable institutional context and a general democratic environment which sustain experimental and reflexive governance – something that is either missing or heavily challenged in many polities across the globe. But beyond this, these propositions suppose that the time and pace that these modes of governance require overlap with the time and pace that the challenge which they are tackling allows. Now, Covid-19, however, has demonstrated that societal challenges come with different time horizons attached to them. This might have been so with earlier challenges already, but apparently, Covid-19 is the first global challenge that is both so severe and so pressing that time pressure appears openly as a condition of policy. This element of pressure, or urgency, is not yet fully conceptualized in the literature on mission-oriented innovation, surprisingly, although, in what follows, it may be argued in fact that time horizons have a clear, qualitative impact on the policies that address societal challenges.

In the literature on mission-oriented innovation policy, “urgency” has been discussed somewhat in passing, in conceding that mission-oriented innovation policy is usually aimed at a problem that is not only societally encompassing, but also more or less pressing. The baseline of this is that mission-orientation, through governmental goals, somewhat supposes political salience and, in turn, salience is, among other things, negatively related to time horizons. From this and other perspectives, there is a great general probability that the problem that underlies any mission-oriented innovation policy is at least somewhat “urgent.” However, urgency has never been defined analytically and then included into the explanations of mission-oriented innovation policy by the way that it structures and determines policy processes.

This is surprising also because it was already implied in the most fundamental conceptualizations of mission-oriented innovation. The most classical examples for mission-oriented innovation are the Apollo program and the Manhattan project, respectively (Foray et al., 2012). They are also being referred to regularly wherever and whenever mission-oriented innovation is an issue. Yet, it is noteworthy that their urgency is hardly ever comprehensively discussed, let alone compared. This is particularly astonishing looking at the Manhattan project and seeing that nothing less than the entire global balance of military power during a world war obviously seemed at stake at the time. It was an urgent project after all in that quick solutions were necessary by which urgent project after all in that quick solutions were necessary by which
classical examples also differ qualitatively by their urgency because there is some evident qualitative difference between the ramifications of losing the race for nuclear warfare and losing it with regard to landing on the moon. Commonalities aside, this might have explained differences in the respective policy measures, their deliberation, and so on. That means that, here already, the importance of differences in time horizons in relation to different possible outcomes could have been recognized, but it was not.

3. Urgency as a condition of policy

What results is a need for an analytical concept of “urgency” in policy. In an essay on processes in public administration, Luhmann (2018) defines urgency as a discrepancy between the temporal and the substantive exigencies of a decision (zeitliche und sachliche Entscheidungsanforderungen; passim). It seems that, abstractly, this can be any kind of tension or incongruence between the temporal and the substantive requirements of taking a certain decision. What Luhmann defined for administrative decisions within a bureaucratic apparatus can be easily extended to cover collective decisions more generally and political decisions concretely. The processes of taking each of them all have temporal and substantive exigencies, which might or might not correspond.

In many, not all, cases, Luhmann’s abstract “discrepancy” quite concretely means that time is shorter than it should, given the severity of the corresponding problem. A little more formally, one might experiment with saying that urgency is a function of the severity of the problem divided by the time that remains to solve it (cf. Anderson and Adey, 2012). The smaller the problem or the longer the time, the lower the urgency, and vice versa. Already when time passes, ceteris paribus, by this definition, urgency grows. If, now, the problem is also one that grows over time, much like a pandemic or global warming, while time passes urgency grows even more quickly. Now, this is an abstract definition of “urgency” as a dimension of action – something can be more or less urgent, or not at all. Another way of saying this would be that this is a quantitative definition of urgency. In contrast, a situation of qualitative urgency is one where the temporal conditions qualitatively impact the process of decision- or policy-making. In a simple situation of deciding between a set of alternatives, if some alternatives were excluded right away by the time they would take in relation to the time that remains, the decision would be flawed, in so far as it were no longer based on a substantive evaluation of the options but on a temporal one. Yet now, one must necessarily relate that also to the time that the process of decision-making, of deciding itself, will have to take. If again, additionally or separately, time is too short for certain aspects of the decision-making process, the decision will be more flawed and incomplete yet. Note that this is a purely temporal interpretation of “urgency” as a temporal constraint to action. It is strictly distinct from other common usages of the term, such as “urgency” as a normative imperative to act. (By what has been presented, asking about the normative imperative to act would be a matter of the “wickedness,” especially the competition, of a problem.)

Speaking from a policy perspective, both the formulation and the implementation of a policy will consume their specific share of time, of which the challenge in question will allow only so much. If time is too short, whatever these stages of the policy process ideally comprise in detail, it will necessarily be incomplete or sub-optimal. Certainly, policy processes are regularly incomplete or ambiguous as it is, which is why they require policy feedback and evaluation, resulting in reformulation. Policy learning is required to improve it as far as possible. The point is that urgency introduces a different kind of being sub-optimal in that urgency hinders or forbids the exact processes of policy learning on which the quality of the policy processes relies, and which are part of its procedural rationality. In other words, urgency is, in a sense, a cynical condition because processes that at least promise to improve or optimize policies would exist, but time does not allow them to happen. These restrictions will qualitatively transform the structure and, through this, the outcome of the policy processes in question. Concretely, this means that, while the “wickedness” of any given challenge suggests, if not requires, certain elements in the policy process in order to reach a sustainable and viable policy response, the specific urgency of the same challenge might very well forbid some of them. It is not far-fetched to rephrase this and say that the substantive exigencies of the policy process vis-à-vis this challenge are then incongruent with the temporal ones. Certainly, urgency affects different phases and elements of the policy process differently – an observation that awaits further discussion. Much of this appears to hinge on the specificities of the problem: if the problem is not as wicked as the solution, policy formulation is less susceptible to time constraints than policy implementation, and vice versa. This also leads to the question, for example, whether there are forms of conscious urgency management during the formulation process that at least may reduce the time pressures during implementation. This seems to depend, among other things, upon the uncertainty of possible solutions, to keep with Wanzenböck et al.’s framework.

So much for the abstract, quite analytical description from the observer’s position. From within the policy process, perhaps, it is not as easy to reflect on the structural problems of the policy process as such. From this point of view, qualitative urgency will appear as the recurrence of a certain set of empirical or practical problems. Concretely, imagining the policy process as an iterative process, the situation will continue to return where some next step might seem worth taking but is barred by how much time remains. The next best step is thus taken. This might already induce path dependencies and lock-ins by which the original constraints qualitatively multiply (e.g. Arthur 1994; Pierson 2004). Moreover, whenever learning, evaluation, experimentation, or other forms of building expertise are involved, chances are very high that the situation will continue to return where these processes must be interrupted early, leaving the impression that the whole remaining policy process could have been better informed if only more time had remained. Again, this might create more path dependencies in the remaining policy process. Depending on the conditions, this effect might multiply further once the concrete policy, formulated and implemented under urgency, induces further path dependencies on the policy level.

Mission-oriented innovation addresses societal challenges, and thereby, it is “wicked.” At the same time, addressing societal challenges is probably urgent, too. Consequently, mission-oriented innovation policy is faced with the latent governance problem of managing a remarkable discrepancy between the substantive requirements of elevated wickedness and the temporal exigencies of elevated urgency. Not to mention, additionally, that any policy that relies on innovation relies on an open-ended process. Implementing innovation policies is but a matter of establishing constructive scope conditions for a process which is otherwise hardly predictable. Unlike other uncertainties, no learning process avails against the uncertainty that is epiphenomenal to innovation. Hence, urgency is only exacerbated if the time that the policy will need to take effect can only be guessed, that is, the time that needs to be reserved for passing until the innovation in question is found.

4. Conclusion

This has been but a brief sketch that needs more discussion. That said, understanding how different types and degrees of urgency substantially transform the conditions of decision-making, learning, and policy-making will yield important insights on how to govern transitions and other challenges successfully and sustainably, through mission-oriented innovation policy and other ways. In some cases, like Covid-19, the urgency surges suddenly and together with the challenge itself, while in other cases, urgency is the result of postponing decisions about a challenge that has been very well known for some time already. Environmental problems are the most obvious case in point, the urgency of which has been emphasized by activists and researchers alike,
sometimes without substantive public response, to a point where it has become almost absurd and cynical. Even more cynically, people continue to starve for the “wickedness” [sic] of finding solutions to global hunger or, worse yet, of defining it as a salient problem worth “the mission” to begin with. Among other things, this points to the normativities of “wickedness” and of “the factual exigencies” of certain problems and to the fact that “wickedness” may be a procedural observation but should never be an apology for inaction.

Clearly, questions for policy advice abound: After all, suggestions are necessary today how to manage a disease that one would wish should have long been managed already, while however only beginning to understand it. Obviously, if qualitative urgency restricts policy processes, the question is how governments and governance can manage it if it happens. One major question in this context regards setting incentives adequately. Urgency in policy need not necessarily correspond with the interest of other actors, especially private and innovative companies, in working quickly. The options that remain need not correspond with these interests, either. Rather, this appears as a governance problem of its own, one that is susceptible to moral hazard and which is being aggravated by urgency. A striking example is that, in instances of public or functional procurement (see above), governments face the danger of extortion or exploitation. At least in principle, private providers of solutions, in this case: vaccines, may very well increase their prices or set other kinds of conditions before they deliver their solutions. While this aspect of dependency is perhaps a general characteristic of mission-oriented innovation policy – probably subsumable broadly under the “coordination” element of the general “wickedness” of solutions – it is, once again, exacerbated if there is too little time to bargain or otherwise react. A consciously “entrepreneurial state” (Mazzucato, 2013) who exerts a certain resource dependency onto private actors could be one solution among many.

Yet, it is also true that, since the first version of this article, some solutions have already been found, sometimes overcoming incumbent regulative constraints, or leapfrogging certain processes of evaluation out of pure necessity. Except for where democratic or constitutional procedures have questionably been violated, the current experience of urgency may also illustrate how certain technocratic procedures can indeed be invigorated and opened to creative and novel solutions, if necessary. Under certain circumstances, urgency might even open “policy windows” (cf. Kingdon, 2014) beyond managing the challenge at hand. This is one rather positive realization from the current situation which, if developed well, might contribute to both fostering other present “missions” as well as increasing flexibility during possible upcoming situations of urgency. More broadly speaking, institutional innovation is of course one possible solution to manage urgency, in the sense that institutional reforms may open spaces for maneuver. Reflective governance, as mentioned above, may generally transform its own rules and constraints of which some contribute to the urgency problem. Note, however, what has also been mentioned already, namely (a) that reflective governance has some preconditions in terms of reliable institutions and stable statehood and (b) that, under democratic circumstances, it is yet another substantive exigency that consumes time of its own to proceed legitimately. Hence, the potential democratic deficit of contemporary institutional innovations such as “lock-downs,” effective or not, is a matter of current debate (e.g. Merkel, 2020). But most apparently, the most central question is how to prevent reaching this degree of temporal-substantive tension to begin with. Concerning, concretely, the implications of the Coronavirus crisis, the terms of innovation policy, the major question is by establishing which governance structures, reflexive and otherwise, today’s societies can prepare the most slack and how they can best reduce the urgency that will inevitably strike should the next novel disease arrive.

It has been shown that the political economy of mission-oriented innovation has no concept that could be suited to understand the “urgency” which Covid-19 demonstrates exists in certain policy issues. Now, most certainly, it is not SARS-CoV-2 to have introduced urgency into mission-oriented innovation, as if urgent missions had not existed before. Much rather does its overwhelming and widely understood urgency illustrate that urgency exists, and has always existed, among the characteristics of grand challenges and has been overlooked, conceptually, by the literature that discusses corresponding policy responses. Consequently, urgency has been construed as a discrepancy between the temporal and the substantive exigencies of a policy response. A lack of time transforms the structure and the outcome of the policy process for good in that it restrains or curtails the policy process, inducing path-dependencies that multiply this effect. This is especially problematic in its tense relation with the elevated “wickedness” of the societal challenges that use to guide mission-oriented innovation, seeing that a high degree of “wickedness” usually raises instead of reducing the requirements for a viable and sustainable policy.

In conclusion, what, for the overwhelming salience of Covid-19, has been said about mission-oriented innovation policy might be generalized for innovation policy more comprehensively as well as for public policy at large. Societal challenges are only the major cases in point in that the tension between “wickedness” and urgency is so apparent and latent in them, but innovation policy might face urgency for other reasons than such societal strain. If Schumpeter (1942) was in fact correct in saying that competition in capitalism was essentially all about competing over innovations, and to the degree that this means finding one before others do, this could be taken to mean that latent urgency is everywhere in the capitalist economy. Also, instances of urgency in other areas of public policy are easily imaginable, too. Summing up, that is to say, it is possible to relate the substantive aspects of any kind of policy to its temporal frame and to understand how this relation enables or constrains the entire policy process. For the moment, in terms of this paper and of the global situation, the main message is that analyses of mission-oriented innovation vis-à-vis grand societal challenges must urgently take urgency into account.

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