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Rethinking Governance in Times of Multiple Crises

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Covid-19 and the Entanglements of Public Health, Security and Ecology in Europe

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Abstract*

The publication stems from a workshop that sought to critically rethink governance in times of multiple crises by assessing the crisis responses of political decision-makers, scientific experts and society at large in the context of climate change and pandemics. The workshop was funded by the German Ministry for Education and Research (BMBF) and the Franco-German Research Center for Social Sciences and Humanities Centre Marc Bloch (CMB) and it was organized in cooperation with Sciences Po, Paris. It brought together scholars from different academic traditions in an interdisciplinary and interactive work environment to exchange theoretical, conceptual and methodological approaches to researching multiple crises.

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1. Introduction

The escalating frequency of unforeseen or unmanageable events fosters a growing awareness that we are navigating through times of multiple crises. The climate crisis – a term we consider to be misleading, as we explain below – coincides with health emergencies and ever more violent conflicts erupting since the end of World War II.[1] In addition, inflation and social inequalities are rising, and a sense of increasing fragility due to a rise in threats and aggravation is on the agenda. It therefore comes as no surprise that, for example, the Association for the German Language chose "crisis mode" as their word of the year 2023. The Anthropocene – which specifically encapsulates the threatening, concrete, multiple, entangled effects of human activity on Earth – has also been referred to as the new global era of multiple crises.[2] UN Secretary General António Guterres warns that "business as usual could result in the breakdown of the global order, into a world of perpetual crisis and winner-takes-all".[3]

1 Uppsala Universitet – Department of Peace and Conflict Research, *Conflict Data Programm*, <https://ucdp.uu.se/> 15.02.2024.

2 See D. Haraway, "Anthropocene, capitalocene, plantationocene, chthulucene: Making kin", *Multitudes* 65:4 (2017), p. 75–81.

3 A. Guterres, "Global Crisis Response 'Too Little, Too Late', Secretary-General Tells Assembly 'Our Common Agenda' Event, Warning of Instability, Cli-

Current circumstances compel a rethinking of existing modes of crisis management as scholars refer to "multiple crises" or to the so-called "polycrisis" that needs to be addressed.[4] Yet, *how* to inform and re-adjust political systems, decision-making and the nexus between science and policy towards a multiple crises governance remains a huge challenge. The current paradigms of governance strategies for crisis response are confronted with cascading intertwined interactions and blurred boundaries between social, political, ecological and economic dynamics. Especially in the case of climate change and the Covid-19 pandemic, crisis governance entails high degrees of uncertainty.

Across the three major pillars of political, scientific and societal responses to climate change and Covid-19 crises this paper is structured along three central axes: What in the current 'multiplication' of crises radically changes our way of defining crises? What are the challenges and possible pathways for improving crisis governance? What role do knowledge and expertise play and what can science contribute to best reflect the situation? We respond to these questions by bringing together multidisciplinary backgrounds and theoretical, constructivist and critical approaches to a broad range of case studies that deal with multiple crises, and call for the development of a scholarship concerned with multiple crises.

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mate Chaos", *United Nations Meetings Coverage and Press Releases*, 2021, <https://press.un.org/en/2021/sgsm20891.doc.htm> 15.02.2024.

4 A. Tooze, "This is why 'polycrisis' is a useful way of looking at the world right now", *World Economic Forum*, 2023, <https://www.weforum.org/agenda/2023/03/polycrisis-adam-tooze-historian-explains>, 15.02.2024; M. Lawrence et al., "Global Polycrisis: The Causal Mechanisms of Crisis Entanglement", *Global Sustainability* 7 (2024), p. 1-16.

2. From Concepts of Crisis to Multiple Crises

2.1. *The notion of crisis*

Although crises have always been a focal interest of the social sciences – particularly in their attempts to facilitate the instrumentalization of knowledge – there is no commonly agreed definition of the term and an ambiguity as to whether "crisis" should be an analytical category, a descriptive or a normative concept.

There may be agreement that a crisis superficially consists of "time pressure and threat under conditions of uncertainty and insecurity".[5] However, this says little about the various dynamics of crises. Thus, more specific approaches are needed to explore the notion of crisis. From the perspective of complexity theory, for example, "crisis" is to be considered "a regression of determinism, of stabilities and internal constraints within a system".[6] Edgar Morin stresses that "the most interesting disruptions are not the ones which originate crises but the ones emerging from apparently nondisruptive processes".[7] The aim must therefore be to focus on the hidden aspects of crises and their interaction.

A different view of crises can be found in social constructivist approaches.[8] Here, crisis is interpreted as a construction that develops out of social beliefs, norms, interests and culture-specific values. From this perspective, what is

5 A. Boin and P. T'Hart, "The Crisis Approach", in: H. Rodríguez et al., *Handbook of Disaster Research*, New York, 2017, p. 42-54.

6 E. Morin and T. Pauchant, "For a Crisiology", *Industrial & Environmental Crisis Quarterly* 7:1 (1993), p. 14.

7 *Ibid.*, p. 13.

8 e.g. J. Roitman, *Anti-Crisis*, Durham, NC, 2014.

considered a crisis and which strategies and techniques are drawn upon for crisis management can differ considerably across different socio-cultural contexts. Social constructivist approaches are often accompanied by a critique of power relations and the uncovering of struggles for interpretative power. One crucial question may then be phrased as follows: who is in a position to harness crises for their own benefit? This also includes a critical view regarding the definition and hierarchization of threats and uncertainties as well as an analysis of public crisis discourses and the question as to why certain crises are accorded high visibility, while others receive little attention.

As those two contrasting crisis concepts suggest, it is the ambiguity of perspectives on crises which makes talking about crises problematic and fruitful at the same time.

2.2. *Different conceptions of "multiple crises"*

One must stress that diagnosing the current form of society as one of multiple crises goes beyond the general effects of talking about *a* crisis. However, what applies to the diversity of crisis concepts also applies to the phenomenon of the *multiple crisis* or *polycrisis*. For example, already in 1999, Morin and Kern had defined polycrisis as the "complex intersolidarity of problems, antagonisms, crises, uncontrollable processes, and the general crisis of the planet".[9] It is this complex intersolidarity as a cumulative interaction of single crises that can be considered a key feature of this conception of polycrisis: that it is more overwhelming than their sum. This perspective on polycrisis as the interaction of multiple

9 E. Morin and B. Kern, *Homeland Earth: a Manifesto for the new Millennium*, New York, 1999.

systems in crisis has been further developed by Swilling, who for his part speaks of the polycrisis as "a nested set of globally interactive socio-economic, ecological and cultural–institutional crises that defy reduction to a single cause".[10] Here, too, the complexity resulting from the entanglement of different crises is emphasized. A more recent definition of "global polycrisis" – one that also refers to the earth system sciences with regard to "planetary boundaries"– entails "the causal entanglement of crises in multiple global systems in ways that significantly degrade humanity's prospects".[11]

Other conceptualizations, however, do not consider the multiple crisis to be a network of interconnected individual crisis phenomena, but rather see it as deriving from a common origin. The difference can be exemplified by the concept of the "capitalocene", with capitalism then being identified as the central origin for the evolution of other crisis phenomena. According to this view, the origin of the polycrisis lies in fossil capitalism's mode of production and the accompanying way of life.[12]

Regardless of our respective viewpoints, we look at the governance of climate change and Covid-19 as multiple crises unfolding in different dimensions. First of all, we focus on the temporal dimension of crises and the respective coping mechanisms in crisis management. Secondly, we touch upon phenomena such as uncertainty, contingency, and

10 M. Swilling, "Economic Crisis, Long Waves and the Sustainability Transition: An African Perspective", *Environmental Innovation and Societal Transitions* 6 (2013), p. 96–115, here p. 98.

11 M. Lawrence, S. Janzwood and T. Homer-Dixon, "What is a Global Polycrisis? And How is it Different from a Systemic Risk?", *Cascade Institute Technical Papers*, 2022, <https://cascadeinstitute.org/technical-paper/what-is-a-global-polycrisis/> 15.02.2024.

12 A. Malm, *Fossil Capital: The Rise of Steam Power and the Roots of Global Warming,* London, 2016.

complexity, and their management in structural and organizational terms. Thirdly, the dimension of threat and insecurity is scrutinized from a social-constructivist standpoint. This is connected to a view of multiple crises as the self-confrontation of society with the enduring narrative that humankind might be the master of its own fate. As e.g. the Anthropocene shows, the idea of a precisely plannable and controllable future has lapsed. Thus a search for alternative ways to cope with crises is necessary.

3. Governance in Crisis and Crisis Governance: Challenges and Pathways in the context of multiple crises

Governance refers to political steering through institutions and diverse public, private, civil society and scientific actors and institutions that are related through the sharing of ideas, norms and goals in order to solve collective problems at different levels and through different modes. Global governance is often criticized for not being effective or even for adding to, perpetuating, or producing new problems. Other approaches aim at working towards improvement on the basis of the status quo. In what follows we will assess the challenges faced by governance in the context of multiple crises, and we will propose some possible pathways.

3.1. *Temporal and Structural Challenges of Crisis Governance*

Multiple crises render the already existing challenges faced by crisis governance systems more acute. Particularly when viewed from a *temporal* standpoint, crisis phenome-

na seem to accelerate time and create a need for ad-hoc, hurried responses that eventually sideline the lengthy deliberation processes of democratic systems when addressing immediate crises. Furthermore, the functioning of administrations that for example seek to predict the local manifestations of climate change in the face of uncertainty incentivizes reluctance among decision-makers, who must uphold their legal responsibilities and exercise care in allocating limited financial resources.

At the same time, the different speeds and frequencies of partially simultaneous events and processes pose problems. Temporally, the climate crisis has been described as a 'slow'[13] or long enduring emergency, while the Covid-19 pandemic for its part caused an acute 'Public Health Emergency of International Concern', since then transferred to long-term management.[14] Furthermore, on their respective timescales, both crises demonstrate similar degrees of socially disruptive potential and a need for synchronization. This, and the intertwined and interactive nature of multiple crises, was demonstrated by the significant, albeit temporary impact of Covid-19-induced lockdowns on greenhouse gas emissions.[15] With this background in mind we deem the popular term *climate crisis* to be inaccurate and choose rather to subcategorize climate change as a key element

13 B. Anderson et al., "Slow emergencies: Temporality and the racialized biopolitics of emergency governance", *Progress in Human Geography* 44 (2020), p. 621-639.

14 World Health Organisation, *Statement on the fifteenth meeting of the IHR (2005) Emergency Committee on the COVID-19 pandemic*, 2023, <https://www.who.int/news/item/05-05-2023-statement-on-the-fifteenth-meeting-of-the-international-health-regulations-(2005)-emergency-committee-regarding-the-coronavirus-disease-(covid-19)-pandemic> 15.02.2024.

15 P. Friedlingstein et al., Global Carbon Budget 2020, <https://essd.copernicus.org/articles/12/3269/2020/> 15.02.2024

in multiple crises. The temporal dimension also dictates that crisis responses cannot be invented explicitly for each scenario and as such they always rest on prior governance practices and technologies. Thus, crisis management reinforces prior tendencies by not necessarily adding anything new but by exacerbating existing challenges.[16]

The rather *siloed mode of operation* that characterizes modern government agencies is currently ill-equipped[17] to deal with the entanglements and sheer complexity of multiple crises. Regarding priority setting and resource allocation, responses to risks that can hardly be accurately quantified (e.g. infectious diseases), such as the stockpiling of emergency supplies, can divert resources from another area, leaving societies vulnerable to additional urgent or unintended crises (such as those relating to climate change).

The *multi-causal and socio-ecological* origin of crises – especially in the case of climate change and Covid-19 – adds to the challenges faced by governance architectures. Socially, the origins of both the climate and Covid-19 crises are not essentially anthropogenic, although neither phenomenon can be reduced to a single cause.[18] Thereby both phenomena also intensify disparities, as they exhibit a sim-

16 For example, the German government relied upon, and legitimated their political responses to Covid-19 with, previous risk scenarios and strategies developed for potential health crises by the Robert Koch Institute. See U. Zeigermann, M. Böcher and M. Krott, "Scientific policy advice in the Corona Crisis: The Robert Koch Institute's (German Health Agency) departmental research between scientific standards and political pressure", *dms – der moderne staat – Zeitschrift* für Public Policy, Recht und Management 14 (2021), p. 351-372.

17 European Commission, *Strategic crisis management in the EU. Improving EU crisis prevention, preparedness, response and resilience*, Brussels, 2022, <https://op.europa.eu/en/publication-detail/-/publication/dffc8b4b-801d-11ed-9887-01aa75ed71a1/language-en> 15.02.2024.

18 M. Swilling, "Economic Crisis, Long Waves and the Sustainability Transition: An African Perspective".

ilar asymmetry where responsibility for cause and effect is concerned: while the Global North is largely responsible for their cause, the Global South is disproportionately affected. Another problematic constellation within multiple crises is their propensity to diffuse responsibilities. In other words, increased complexity renders *who should do what* still more problematic and raises questions of responsibility. This precipitates the emergence of new arenas of blaming, which in turn disrupts previous social and political allegiances.

The unfolding of the multiple and transversal character of crises with different levels of intensity makes it hard to identify clear mandates for tackling the causes and also for addressing the consequences. This clashes directly with the functioning of public administrations and fragmented mandates, such as the allocation of funding and resources, a problem that is exacerbated by the multitude of possible coping strategies. The UN architecture is similarly structured in silos, divided as to their directions and their departments, which have difficulty integrating such transversal topics and exchanging information.

To meet these challenges, *cross-sectoral approaches*, policy coherence and integrated crisis structures that take account of shared but distributed responsibilities and respective capabilities need to be further developed.[19] Mainstreaming climate change in all UN organizations, and the creation of new institutions and nexus mechanisms that act at intersections such as, for example, Climate Change and Security in the UN Climate Security Mechanism (by the UN

19 United Nations, General Assembly, *Report of the United Nations Conference on Environment and Development*, Annex I, Rio Declaration on Environment and Development, 1992, <https://www.un.org/en/development/desa/population/migration/generalassembly/docs/globalcompact/A_CONF.151_26_Vol.I_Declaration.pdf> 22.02.24.

Development Programme, the UN Environment Programme and the Department of Political and Peacebuilding Affairs) reflect this goal. In the sphere of pandemic preparedness, current discussions regarding a Pandemic Treaty at the World Health Organization (WHO) could provide another potentially unifying instrument – however, the lengthiness of the discussions and the number of differences regarding expectations, format, and content have exemplified the difficulty of consolidating an international institutional response.[20] Approaches to health therefore need to include a view on the political, economic, and social environments surrounding us, including an explicit view on health as an integral part of multiple crises.[21]

3.2. *Crisis Governance as a communicative battle for power and legitimacy*

A critical social constructivist lens provides additional insights into the challenges of governing multiple crises with respect to divergent perceptions, values and priorities. For example, for different societies, social groups and generations, different crises might play a dominant role. An important question is how the variety of crisis perceptions can be linked and balanced, especially with regard to crisis governance at different levels and across different socio-cultural contexts. Furthermore, a socio-constructivist view on crises attempts to reconstruct their causes, consequences, and

20 C. Wenham et al., "The futility of the pandemic treaty: caught between globalism and statism", *International Affairs* 98 (2022), p. 837–852.

21 M. Linden, and R. van de Pas, "The Political Determinants of Health – 10 Years On", *International Health Policies Blog*, 2023, <https://www.internationalhealthpolicies.org/featured-article/the-political-determinants-of-health-10-years-on/> 15.02.24.

remediation strategies, but also reflects the way they frame the world epistemologically.[22] This can entail the exploration of (normative) visions of the future. As such, these critical approaches to multiple crises can be defined through their meanings and their deviation from what is perceived to be stabilized order and normality.

This is also true with regard to the sphere of communication and the legitimization of counter-measures taken to address crises and insecurities. We look at two cases in particular. The first deals with an analysis of securitization. The theory of *securitization*[23] is concerned with the question as to how far the policies adopted are driven by hidden interests and power plays when something is declared to be a 'threat' to an existing order.[24] So, to retain high levels of legitimacy, crisis responses are often securitized. The logic of securitization has often been criticized on the grounds that it serves to sideline public democratic decision-making processes. This is illustrated by the securitization of public health in the form of lockdowns during Covid-19.

Securitization theory also describes the process whereby governmental institutions integrate for example climate change into their national security strategies.[25] In the case of climate change, the securitization in question often occurs in ways that encourage reactive, militarized responses[26] rather than sustainable measures actually capable of tackling the root problems. While conventional security forces provide crucial

22 Roitman, *Anti-Crisis*.
23 B. Buzan, O. Waever, and J. de Wilde, *Security: A New Framework for Analysis*, Boulder CO, 1998.
24 M. Jänicke, *Herrschaft und Krise*, Bochum, 1973.
25 J. N. Hardt et al., *Climate Security in the Anthropocene: Exploring the Approaches of United Nations Security Council Member-States*, Berlin, 2023.
26 A. Vogler, "On (In-)Secure Grounds: How Military Forces interact with Global Environmental Change", *Journal of Global Security Studies* 9 (2024), p. 1–20.

support for disaster response,[27] their defense mandates render them incapable of prioritizing environmental protection over national defense, particularly at a time when Russia's full-scale war in Ukraine captured attention in Europe.[28]

Another framing issue arises from ill-informed claims about climate-related migration and displacement.[29] In reality these connections are very complex.[30] Describing crises such as climate change as a security threat can be problematic because such descriptions may call up the wrong measures in response. Climate change has severe and immediate impacts on human security that require urgent and large-scale measures in terms of mitigation and adaptation. However, climate change does not become a security problem simply because it constitutes an additional driver of (armed) conflict in already fragile contexts. In light of these challenges, the reduction of emissions and the offering of support to exposed communities and individuals to adapt to environmental change are responses more attuned to combating the cause.

The second case focuses on the role and power of narratives and social imaginaries. The emergency mode, and the dizzying impact of ever more threatening news – exemplified by the phenomenon of doomscrolling – can induce an atmosphere of existential insecurities in individuals within civil society. This disturbing atmosphere is especially compounded by global existential threat narratives in the context of climate change and public health (IPCC,-WHO). As a reaction,

27 L. M. Puckett, "Civil-Military Coordination in Disaster Preparedness and Response", *Natural Hazards Review* 22 (2021).

28 P. Porter, "Out of the Shadows: Ukraine and the Shock of Non-Hybrid War", *Journal of Global Security Studies* 8 (2023).

29 A. Vogler, "Barking up the tree wrongly? How national security strategies frame climate and other environmental change as security issues", *Political Geography* 105 (2023).

30 T. Ide, *Catastrophe, Conflict, Disaster,* Cambridge, MA, 2023.

an increase in social unrest (exemplified in Fridays for Future, Last Generation, *gilet jaune* and anti-Covid-19 movements and protests) and the fear of increasing polarization can be observed. A critical approach to framing focuses on the role of (digital) media. A battle over the interpretation of different crises can be observed in (digital) media; for instance, in the formation of (counter-)publics through news framing,[31] in general responsiveness (or otherwise) to scientific experts, and/or in reactions to government statements. Digital arenas are characterized by intertextuality supporting topic linkages and overlapping debates; they invite people to engage with narratives that accompany and structure crises, suggesting possible orientations. Especially during the pandemic, when social interaction was in large part confined to virtual communication, the "making sense of bad news" by reframing and integrating crisis narratives in trajectories of personal experience and biography had an important social function.

These issues of framing call for heightened attention to be paid to the role of (social) media use in order to regain interpretative agency in times of crisis. During the pandemic, institutional narratives of 'solidarity' and 'protection' were juxtaposed by the system-critical narratives of Covid-19 activists complaining about their 'deprivation of liberty' and 'incapacitation'. Such conflict lines were widely discussed as 'polarization', even if polarization of society as a whole is difficult to prove empirically.[32] Social imaginaries – as narratives, tropes, stereotypes and visions of the past and future, online and offline – play an important role when analyzing social risk

31 C. Roth, J. St-Onge, K. Herms "Quoting is not Citing: Disentangling Affiliation and Interaction on Twitter", Complex Networks & Their Applications X, 2022, p. 705-717.

32 S. Mau et al., Triggerpunkte: Konsens und Konflikt in der Gegenwartsgesellschaft, Berlin 2023.

perception and considerations with regard to political decisions touching on crisis governance. They can however have positive effects and may for example include a transformed notion of socio-ecological solidarities between different interest groups, or even help with acknowledging in our (human) existence the non-human around us.[33]

Crucially, crisis governance decisions need to be perceived as *legitimate*, also in order to provide a firmer foundation for deliberative practices. Different formats that include societal participation in decision-making, such as citizens' assemblies with respect to climate change or health crises, are promising approaches that are also more likely to ensure higher degrees of acceptability (see also section 4.2).

4. The Role of Knowledge and Expertise in Multiple Crisis Governance

Regarding the role of science and advisory bodies in times of multiple crises there are several challenges to address. In the following we refer to biases, power battles, ambivalences and ambiguities with regard to the production of knowledge and expertise.

4.1. *Challenges to the science-policy nexus in the light of multiple crises*

Against a background of multiple crises, expertise is key to identifying possible solutions to urgent problems, but also to reflecting related (putatively positive, but also possibly negative)

33 D. Haraway, *Staying with the Trouble: Making Kin in the Chthulucene*, Durham, NC, 2016.

consequences, and balancing different options for public action. The prominent role of experts during the Covid-19 pandemic and the increasing salience of scientific policy advisory bodies, like the Intergovernmental Panel on Climate Change (IPCC) in regard to the climate crisis, supports this argument. At the same time, the authority of expertise faces increasing challenges.

Expertise is not to be understood as mere hard knowledge and scientific facts, but rather encompasses the political authority and legitimacy attributed to a group of presumed experts by an audience willing to refer to their expertise. The legitimacy of scientific knowledge is deeply ingrained in societal perceptions and expectations. Crises may shake trust in scientific knowledge and expertise, as the proliferation of alternative narratives, particularly through the politicization of scientific findings and the deliberate dissemination of misinformation, amplified by social media platforms, has led to a fragmentation of public trust in expert opinion.

Both the difficulty of governing under conditions of uncertainty, and the internal capacities of institutions have consequences for how knowledge is produced and by whom. In the case of climate change as a security issue in France, for example, experts (especially from think-tanks) are central to knowledge production and dissemination, notably toward public actors. As a result, public institutions become dependent on expert knowledge, which is also economically dependent on public institutions for funding. This co-dependency can influence the way in which science is produced.

The observation that expertise and knowledge act as a central resource – especially for political decisions – but are becoming increasingly fragile and ambiguous,[34] features as an element of crisis in public and political debates. However,

34 U. Beck and W. Bonß, *Die Modernisierung der Moderne*, Frankfurt a.M., 2001.

most discourses tend to ignore these ambivalences as well as the paradoxes of knowledge. One significant paradox here is that the production of new knowledge always implies the production of new ignorance.[35] This view is expressed, for example, in the fact that new technologies can provide solutions to certain problems, but at the same time can have unintended side effects, which in turn produce new uncertainties and risks. Examples of this can be found in the debate on nuclear power, the discussions on carbon capture and storage, as well as in the current digitalization and AI discourses. The ideology of a "technological fix" in crisis management is grounded on expectations of speed, efficiency and the narrative of objective control capabilities – which can be considered the key guiding principle of modernity.[36] As we have seen from our discussion of the crisis concept, these expectations may clash with the 'need for speed' in situations of crisis.

However, the view that technology automatically provides unambiguous evidence offering political decision-makers clear recommendations for action ignores the fact that the scope for decision-making and its consequences are contingent and are therefore never without alternatives. It is important to consider the development of technology as a process of "normative social hardening",[37]

35 A thought experiment attributed to Pascal provides a striking illustration of this point (from M. Groß, *Ignorance and Surprise*, Cambridge MA 2010, p. 52): If we think of knowledge as a ball in the universe of non knowledge, the increase in volume has precisely this paradoxical effect. Because: when the ball (knowledge) gets bigger, the cutting surface of the ball with the environment ("non knowledge") also gets bigger. This shows that new knowledge inevitably produces new ignorance ("non knowledge").

36 H. Schelsky, "Der Mensch in der wissenschaftlichen Zivilisation", in: H. Schelsky (Ed.), *Auf der Suche nach Wirklichkeit*, Düsseldorf 1965, p. 439-480.

37 S. Kaufmann, "Security Through Technology? Logic, Ambivalence and Paradoxes of Technologised Security", *European Journal for Security Research* 11:1 (2016), p. 77-95.

where norms and values as expressions of certain cultural patterns become an inherent part of the construction of technology. Such a perspective leaves room for criticizing technological "solutions" rather than exaggerating the value of technology as a panacea for dealing with crises. These attributions exist and are also powerful in the political sphere, as for example the prominence of models, simulations and numbers regarding the spread of Covid-19 has amply demonstrated.[38] If it is true that political responses to crises are increasingly technological in nature, it is all the more important to keep in mind that the use of technology is preconditional and has various implications, especially with regard to the ethical and normative dimension.

Another important aspect of knowledge in times of (multiple) crises can be found in the function and nature of knowledge in relation to political decisions. The Covid-19 pandemic is a good example of the extent to which the science-policy nexus can be fraught with conflict.[39] The primacy of natural scientific knowledge over social science knowledge seemed self-evident. However, the Covid crisis was not just a health crisis but also a social crisis, the extent of which was not initially recognized. In the context of the climate crisis, knowledge conflicts and the battle for interpretative sovereignty are expressed in a different way: although the measurements on the global rise in temperature cannot be doubted, they do not automatically provide the direction of promising political pathways for a socio-eco-

38 G. Bartl, "Social and Ethical Implications of Digital Crisis Technologies: Case Study of Pandemic Simulation Models During the COVID-19 Pandemic", *Journal of Medical Internet Research* 26 (2024).

39 G. Bartl and J. Hardt, "Zum Verhältnis zwischen Wissenschaft und Politik im Kontext multipler Krisen: Covid-19 und die Klimakrise als Herausforderungen für die wissenschaftliche Politikberatung", *Zeitschrift für Umweltpolitik & Umweltrecht* 2 (2022), p. 155-178.

logical transformation. Therefore the social sciences are essential to open up the debate about transformation as a process of social negotiation in terms of diverse perceptions and interests.

With regard to the relationship between science and politics, a decisive question may be phrased as follows: to what extent should political decisions be based on scientific findings? As the Covid-19 pandemic has shown, this is an issue that can also cause social conflict. If one assumes that science and politics follow different functional logics, there is a case to be made that political decisions should not only act as an executive extension of scientific evidence. An "epistemization of the political"[40] ignores the fact that it is the task of politics – in contrast to science – to weigh interests and values. In this respect, a pure 'follow the science' logic does not tally with the primary function of politics. Of course, this problem cannot always be clearly resolved, but political decisions and measures cannot simply be based on scientific findings. In this context, Yaron Ezrahi also identifies the danger that "science can be a powerful ally, deployed to depoliticize debates".[41] The extent to which, and the conditions under which, evidence is expedient as a guide for political decisions therefore remains to be negotiated.

40 A. Bogner, *Die Epistemisierung des Politischen: Wie die Macht des Wissens die Demokratie gefährdet*, Ditzingen, 2021.

41 Y. Ezrahi, "Science and the Postmodern Shift in Contemporary Democracies": In B. Joerges and H. Nowotny, *Social Studies of Science and Technology: Looking Back Ahead*, Dordrecht, 2003, pp. 63-75.

4.2. *Changing crisis governance through pluralizing expertise*

The nature of multiple crises implies that no 'optimal' intervention exists, although modes of preparedness and pre-emption seem to be common responses when dealing with the future.[42] However, this speculative making-future reduces the possibility of actualizing a future outside of these governance mechanisms. Rather, the contingencies and thus the whole spectrum of opportunities regarding crisis responses have to be foregrounded. With regard to the nexus between science and politics, it is therefore worth identifying potentials for change and asking which new forms of governance appear to be expedient in the light of multiple crises. Crisis responses could benefit from an expansion of the epistemic corridors, and this in two ways.

A first way would be to further emphasize the relevance of social science knowledge. Especially regarding the climate crisis, social science knowledge has been mobilized to an insufficient extent so far. This point is illustrated in a study by Indra Overland and Benjamin Sovacool,[43] who found out that by the 2010s, only 0.12 percent of total global spending on climate-related research had been invested in social science research dealing with divestment from fossil fuels. This can be seen as a clear vote for a transformation of research practice and funding itself towards inter- and transdisciplinary research formats. For the general governance of multiple crises this argument also suggests that the simple

42 M. Cooper, "Pre-empting emergence: The biological turn in the War on Terror", *Theory, Culture & Society* 23:4 (2006), p. 113–135; A. Lakoff, "Preparing for the next emergency", *Public Culture* 19:2 (2007), p. 247–271.

43 I. Overland and B. K. Sovacool, "The Misallocation of Climate Research Funding", *Energy Research & Social Science* 62 (2020), p. 1–13.

continuation of standard methods of risk calculation and risk management appears to be a poor choice in view of the complex interdependencies of individual crises and uncertainties. For example, political decision-makers often overlook the fact that the use of technology can stand in the way of pluralistic forms of knowledge production.

A second useful expansion of the epistemic corridors relates to making use of deliberative practices. The integration of laypeople into policy advice in order to identify contingencies at an early stage and debate with them openly in the decision-making process would therefore be another way of dealing with multiple crises. This would increase the legitimacy, acceptability and contribution from a much larger coalition of actors, and would include citizens by creating more options for bottom-up approaches and decision-making processes (see citizens' assemblies in section 3). In this way, the instigation of new formats for the participation of civil society actors would also take into account a discursive representation of social diversity – provided that it is possible to adequately capture the individual positions. In addition to the discursive dominance of individual experts, the problem of social selectivity in the recruitment of participants must be addressed. Particular attention should be paid here to activating those social groups that are considered vulnerable and are often difficult to reach, but are hit even harder by crises.

A prominent approach that also elaborates the call for a pluralization of expertise is the proposal for a "post-normal science".[44] In contrast to "normal science", where robust knowledge is the main goal and where decisions can be based on probability or risk, "post-normal science" includes

44 S. Funtowicz and J. Ravetz, "Science for the post-normal age", *Futures* 25:7 (1993), p. 739-755.

the process, the people, and the purposes and therefore the qualitative uncertainties of knowledge production. Consequently, those advocating this approach suggest that all societal stakeholders should be involved in the research process. In a similar way Gibbons et al.[45] contrast two modes of scientific knowledge production: one mode refers to the idea of consensus and scientific certainty in a disciplinary context. The other mode conceptualizes uncertainty as an integral part of science. It thus voices a rejection of long-term/linear "solutions" and rather opts for exploratory and experimental research designs[46] within inter- and transdisciplinary approaches in order to produce "socially robust knowledge"[47] – a concept that in turn produced further controversies.[48] Thus, although there are different approaches, there is no definitive solution to the problem of producing knowledge, which is urgently needed in times of crisis. What is certain, however, is that there are alternative ideas and concepts that go beyond contemporary forms of governance.

Regarding the potential of plurality and contingency for dealing with multiple crises, Elena Esposito[49] (building on Niklas Luhmann) distinguishes between *present future* and *future present* – the first referring to the multitude of 'imaginaries' of the future that one can have today, the second referring to the 'real' future, which at some point will be-

45 M. Gibbons et al., *The New Production of Knowledge: The Dynamics of Science and Research in Contemporary Societies*, London, 1994.

46 M. Groß, *Ignorance and Surprise*.

47 H. Nowotny, "The Need for Socially Robust Knowledge", *TATuP* 8:3-4 (1999), p. 12-16.

48 E.g. P. Weingart, "How Robust is 'Socially Robust Knowledge'?", in: N. Stehr (Ed.), *Knowledge and Democracy: A 21st Century Perspective*, New Brunswick, London, 2008, p. 143-156.

49 E. Esposito, "Can we use the open future? Preparedness and innovation in times of self-generated uncertainty", *European Journal of Social Theory* 0:0 (2024).

come reality.[50] Esposito then argues that the future is not just open but can be *more* or *less open* and that the challenge of decision-making lies in the ability to de-futurize the future[51] as little as possible. Following Luhmann, we need a "present future that leaves room for several mutually incompatible future presents".[52] Consequently, the aim must be to increase the diversity of possible, yet still inconceivable futures, without becoming overwhelmed by the complexity of the present.

5. Conclusion

Although we might be tempted to see in the contemporary world an unprecedented number of crises, the real novelty lies in the epistemological shift to seeing these problems as interconnected. Against this background, conventional modes of planning and crisis governance seem to be too limited to deal with them. Moreover, these crises are not natural phenomena, but are shaped by human action, political decisions and economic interests. Contemporary crises, in their complex, socio-ecological embeddedness, are characterized by such rapidity that often there is insuf-

50 The *future present* is different from the *present future* because it stems from a variety of factors that did not previously exist and could not be considered information. This understanding was only possible once society reached a point where time was viewed as a continuous, but open linearity; cf. O. Rammstedt, "Alltagsbewußtsein von Zeit", *Kölner Zeitschrift* für *Soziologie und Sozialpsychologie* 27:1 (1975), p. 47-63.

51 Esposito states that Luhmann himself labeled statistical techniques as "techniques for defuturization" (1976: 279) because statistical methods refer only to one side of the future, on the basis of the information available at the time of the decision (*present future*).

52 N. Luhmann, "The future cannot begin: Temporal structures in modern society" *Social Research* 43:1, 1976, p. 130–152.

ficient time to make decisions and respond. Thus, alternatives seem necessary, such as an explicit perspective on the entanglement of multiple crises.

Faced with interconnected unknown unknowns, crisis governance should no longer be about trying to predict the future but rather about endeavoring to integrate a holistic approach. Multidisciplinarity should go beyond mere information exchange between different fields, but towards deep integration of perspectives and expertise. Crisis responses are often characterized by a top-down logic, and transfer between science and politics by intransparency and bias. For this interaction to be more effective, shared concepts and methodologies are crucial. The rise of technological solutionism must be balanced with multidisciplinary efforts and deliberative practices. To ensure the legitimacy of governance, social acceptance and ethical considerations regarding decisions, promoting transparency and activating channels for meaningful participation are essential, with room for self-critical awareness and exploration of the limits of such an approach.

Our awareness of multiple crises suggests abandoning the illusion that it is possible to confine the future within the rigid paradigms of conventional "crisis management". Rather we consider it appropriate to keep the "present future"[53] as open as possible and to view it as a continuous process of negotiation. We consider it necessary to establish a multidisciplinary scholarship that explicitly deals with these important questions about multiple crises.

53 E. Esposito, "Can we use the open future?".

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