

RESEARCH ARTICLE

(Re-)connecting academia during a sudden, global crisis

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Abstract • Three years ago, the sudden onset of the COVID-19 pandemic challenged academia just like any other societal field, while at the same time putting science center stage. Media attention tended to focus on particular disciplines, such as epidemiology and microbiology, and on individual, mostly local, experts. Based on the idea that science as a global, multidisciplinary community has something to offer society beyond the highly specialized output of individual research fields prepared for local, short-term perspectives, the Institute of Technology Assessment of the Austrian Academy of Sciences launched a spontaneous expert survey in June 2021 with a global and interdisciplinary aspiration, addressing three non-standard issues related to the pandemic and its management: side effects, opportunities, and preparedness. In this paper, we present our methodology and the results of our analysis. We conclude with a discussion of potential contributions of technology assessment in times of sudden, global crises.

Der Nutzen interdisziplinärer und transnationaler Wissenschaft in einer akuten globalen Krise

Zusammenfassung • Vor drei Jahren forderte der plötzliche Ausbruch der COVID-19-Pandemie die akademische Welt ebenso heraus wie alle anderen gesellschaftlichen Akteursfelder. Gleichzeitig wurde die Wissenschaft zu einem zentralen Aspekt der Krisenbewältigung. Die mediale Aufmerksamkeit fokussierte sich auf einzelne Disziplinen wie Epidemiologie und Virologie und auf einzelne Expert:innen. In dem hier vorgestellten Projekt folgten wir der Überzeugung, dass die Wissenschaft als globale, multidisziplinäre Gemeinschaft wichtige ergänzende

Beiträge leisten kann. Unter dieser Annahme führten wir eine spontane Expert:innenumfrage unter Wissenschaftler:innen aller Disziplinen auf vier Kontinenten zu drei weniger beachteten Fragestellungen durch: zu Nebeneffekten, Chancen und Vorsorge. Wir berichten über Methodik und Ergebnisse dieser Befragung und diskutieren mögliche Beiträge der Technikfolgenabschätzung in plötzlich auftretenden globalen Krisen.

Keywords • COVID-19, expert survey, global crisis, technology assessment in times of crisis, interdisciplinarity

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Introduction: COVID-19 and science

In September 2022, the World Health Organization (WHO) announced that “the end of the COVID-19 pandemic is in sight” (UN News 2022), while various national experts like the German virologist Christian Drosten or the head of the German Standing Committee on Vaccination (STIKO), Thomas Mertens, already declared the pandemic as over (ZDF 2022; Turczynski 2022). Just as we finalize this article, national governments are announcing ends to public health emergency measures during the coming months, thus ending the pandemic in practical terms. Initiatives to assess the recent pandemic and its management are being launched at various levels. The pandemic triggered by the SARS-CoV-2 virus at the end of 2019 had kept societies around the world on edge for several years. Looking back, we remember the initial phase of shock at its unstoppable spread and its health effects during the winter of 2019/2020, followed by local attempts at keeping the damage at bay and a global search for effective therapies and vaccines. We remember ensuing national pandemic management in the form of recurrent ‘lockdowns’ and the wave-like incidence patterns, the successful development of vaccines, increasing levels of immunization, and the ever-new variants of the virus (from ‘Alpha’, ‘Beta’, ‘Gamma’ and ‘Delta’ to ‘Omicron’).

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In all these developments, science has played a central role, from the rapid sequencing of the pathogen to predicting further developments and developing suitable vaccines. Virologists and epidemiologists have been central actors in communicating the pandemic's complex aspects to the public from its very start, enabling its public understanding and also shaping its perception beyond the level of 'mere facts'. Notably, experts from other relevant disciplines – from the social sciences or the humanities, from health research or ecology – were far less swift in relating to the crisis and far less visible in doing so. Thus, some disciplines featured at the forefront of pandemic management and media attention, while others took a back seat. Interdisciplinary and cross-regional cooperation also seemed to suffer during the imminent crisis as research institutes had to switch to a digital mode at short notice, international conferences were cancelled, research trips rendered impossible, and academics lacked the extra time required to reach out to colleagues beyond their disciplines and continents. Unfortunately, all this fragmentation happened precisely in a situation where a diverse scope of expertise and transnational and interdisciplinary cooperation were urgently needed to help deal with an acute societal challenge of global proportions. Presumably like all other scientists for whom a pandemic did not present a common topic, we technology assessment (TA) practitioners were struggling with the question of how to best contribute to answering to the crisis and supporting its societal processing.

During the initial years of the pandemic, a prerequisite for such an endeavor was to make do with existing resources, including in-house competencies, trans-institutional networks and funding. As for competencies, TA as a 'professional transdisci-

Against this background, the Institute of Technology Assessment decided to contribute, even with an activity that did not focus on an inherently technological issue but rather on the mission of (re-)connecting academia during a sudden, global crisis so as to harness its full potential in identifying and addressing relating challenges. One and a half years after completion of these efforts, we cannot only present the results of the survey, but also the content of ongoing methodological, paradigmatic and strategic reflection pertaining to our activities: Can TA contribute to sudden and urgent crises by serving as an integrating hub? What are the potential benefits, the downsides and the obstacles to such an endeavor?

Aims, methods and methodological considerations

From the outset, our project ("Covid-19 – Voices from Academia"/COVAC) was driven by an ambition spanning two dimensions: Along an *epistemic* dimension, the aim was to provide a richer view of the pandemic and its societal processing, asking less prominent questions and building on as many disciplines and geopolitical contexts as possible; along a *social* dimension, the aim was to (re-)connect scholars from different disciplines and countries and thus to foster exchange and integration on the issues at hand beyond the single project. This two-dimensional or hybrid ambition was to be attended to by our methodological approach. Moreover, we wanted to launch and complete the project as soon as possible so as to inform society timely in a situation characterized by ongoing change.

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pline' had the tools, the skills and the mind-set to organize for integration across disciplines, nations and contexts, with the ambition to realize the full potential of what the scientific community at large could provide to societies in a crisis like this. Situated at the Austrian Academy of Sciences, the Institute of Technology Assessment also had access to a transnational network of academies of science and, thus, to scholars from different disciplines and continents.¹ Moreover, the Austrian Academy of Sciences funded a small-scale project on a short-term basis.

¹ The German Institute for Technology Assessment and Systems Analysis (ITAS) at the Karlsruhe Institute of Technology made use of the existing network of German speaking TA practitioners (Netzwerk TA) in a comparable endeavour. Moreover, the European Parliamentary Technology Assessment (EPTA) Network built on their members to assemble information in the respective European countries (EPTA 2021).

The resulting approach comprised an anonymous on-line survey among fellow academics from as many disciplines and countries as possible, aiming at a more comprehensive picture under the assumption that scopes of expertise, perspectives and geopolitical experiences might differ by research field and location. The questionnaire we prepared for this survey consisted of three main questions, addressing issues that had not gained much attention during the initial phases of the pandemic:

1. critical side effects and collateral damages of the pandemic and its management that had been unduly neglected and needed to be addressed better sooner than later;
2. the most significant opportunities that arose from the certainly painful and costly disruptions the pandemic and its management had caused; and

3. potentials for action to make other such crises less likely in the near and distant future, fostering prevention or at least better preparedness. To not narrow the scope any further, these questions were formulated in an open manner, allowing for a maximum of three written answers to each.

Invitations to complete this survey were distributed via national academies of science in June 2021. With an aspiration to include at least four continents (Europe, Asia, South America, North America) and the pragmatic decision to focus on one country per continent, we reached out to more than 1500 established university scientists (mostly at the rank of professors) in Austria, Canada, Brazil, China and further countries the respective academies held members in. We also addressed additional scientists individually following a randomized collection of addresses at renowned universities to fill potential geographic and disciplinary gaps. Survey participants were addressed as specialists, but also invited to respond beyond their distinct field of expertise and relate to geopolitical specificities. The questions encouraged accounts, assessments and recommendations. Additionally, we asked for each participants' discipline, country, age, career stage, gender and let them rate the importance of each of the three issues put forward via the three open questions. All of these data were collected to get a better idea of the sample's composition; only discipline and country were also correlated with the participants responses to the three open questions. A final set of data was collected to allow for further interaction, and thus, community building: Respondents could agree to being informed about the outcome of the survey, to being mentioned by name and/or to be contacted for further exchange in follow-up activities.²

Overall, we collected 81 opinions from eleven countries covering four continents (Figure 1) and from a diverse range of disciplines (Figure 2). About two thirds identified as male, about one third as female. The vast majority (89 %) identified as professors, otherwise tenured senior staff, or retired professors. The

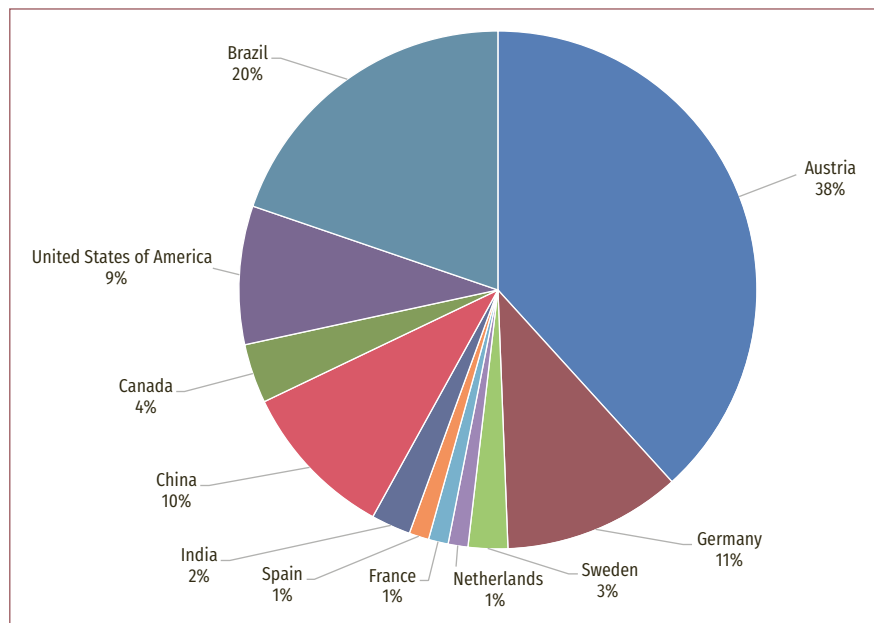


Figure 1: Respondents by country.

Source: authors' own compilation

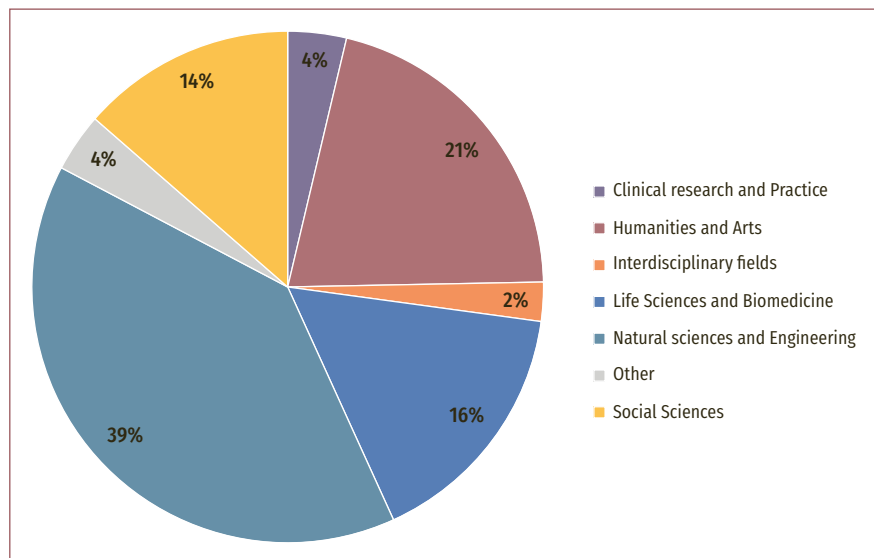


Figure 2: Respondents by disciplinary field.

Source: authors' own compilation

majority of respondents (> 70 %) rated the three open questions as important or very important; the question of prevention and preparedness was rated predominantly (>75 %) as very important (see also Kastenhofer et al. 2021).

Such sample characteristics naturally raise the issue of representativity: They show a low response rate on the one hand, but academically well-established and thus individually authoritative respondents on the other hand. 81 experts no doubt provide for a relatively higher representativity than the individual experts from individual countries and disciplines featured in most public debates, but the high rating of each question's relevance

² These data were collected separately so that anonymity of responses was safeguarded.

could also point towards a selection bias resulting from a distinct wording or framing of the survey (possibly inviting dissident opinions or critics of prevalent paradigms) so that those not in line with the survey's methodical approach, its implicit and/or assumed agenda might have chosen not to contribute. Thus, the results cannot be generalized without caution as a broadly held opinion of science at large. They can, however, be considered an enriching contribution of renowned experts representing diverse specialties and locations. More insights into why many of the invited academics did not respond would certainly help with clarifying this issue further. The few written statements we got from academics choosing not to respond e. g. point towards them simply not identifying as expert on any aspect of the pan-

Critical side effects

The first question focused on the side effects of the pandemic and its management: "From your expertise and professional experience: What are the most critical side effects and collateral damages of the pandemic and its management that have been unduly neglected and need to be addressed sooner rather than later?" Analysis of responses revealed several common themes brought up by the experts, including economic aspects, political and leadership issues, societal culture and public discourse, conduct of life, health, and well-being. Further issues included education, science management, and communication (raised often by experts from North America, but also Asia), and ecological aspects.

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demic (we did as a matter of fact invite scholars from *all* disciplinary backgrounds so as not to prejudge which expertise was relevant), thus potentially explaining the different scales of participation by disciplinary field.

However, other factors certainly played into the decision (not) to participate, too: The response rates differ greatly not only between fields of expertise, but also between countries and continents: We were unable to motivate scholars from African countries to contribute to the survey and participation from Canadian as well as Chinese scholars remained very scarce. We can only assume that the reasons vary substantially between countries. Looking at disciplines per continent, we also find that from South America no humanities and arts scholars participated, from North America no life scientists, and from Asia no social scientists. Therefore, we are especially cautious with relating distinct kinds of responses to distinct country or disciplinary affiliations, as the former could be confounded by the latter, and vice versa.

The resulting texts were analyzed in accord with qualitative sociological methodology, following the Grounded Theory approach (Corbin and Strauss 2008), building up a coding scheme in an iterative mode, 'memoing' throughout the process and searching for overarching themes and opinions. We also compared emerging codes and codings with geographic and disciplinary affiliations of respective respondents.

Further results

As much as scrutiny of participation patterns and discussion of their potential causes provides for promising avenues for reflection in itself, the primary epistemic emphasis of the survey of course lies in the analysis of the responses to the three open questions.

Lack of or inconsistent leadership was addressed most frequently, although differing by country (with a maximum for Brazilian experts, resonating with inter-country differences of pandemic management and development, OECD 2021). Lack of knowledge or even denial of scientific evidence on behalf of political decision-makers and hesitation to act were considered fatal for sound management of the pandemic and humankind in the long run (again, with a maximum for Brazilian experts). Insufficient access to education, lack of science literacy, and/or limited access to trustworthy sources were seen to boost vulnerability to misinformation. Unpreparedness for the pandemic and future pandemics was another issue raised by many, interpreted as neglect of responsibility and foresight by the political elites.

Respondents also raised the question which parts of society were acknowledged or included in decision-making, fearing further fragmentation of society as to age, gender, health, income, and job security and promoting inequality. The pandemic was seen as more significantly affecting vulnerable parts of society than well-situated ones. Vulnerable groups included women, young people and children, households with low income and persons with prevalent physical or mental health-issues. Mostly, individual respondents would focus their statement on one of these groups, but taking all responses together helped with identifying potential cumulative effects of co-prevalent vulnerabilities and the additional burden posed by the pandemic and its management.

Opportunities

The second issue raised in the survey had been addressed already in some reactions to the first question, bringing up ecological ramifications and options to learn for a more sustainable way of living, including air traffic coming to a halt and home office hours rendering commuting unnecessary. Further input addressed digitalization, home office, the crucial role of

science, and especially biomedicine. Responses also acknowledged a higher awareness of the importance of face-to-face (family) contacts, enhanced international exchange and collaboration, but also self-sufficiency and local self-organization (the latter especially in responses from Brazil).

Thus, the initial phase of the pandemic was also appreciated as a time of ‘creative disruption’ (building on the concept of ‘creative destruction’ coined by the economist Schumpeter in the 1940s). But the appreciation was put into some perspective as some of the themes brought up were seen ambivalently (some comments assessing digitalization positively, some in negative terms, depending on the details of these processes), some positive developments were described as temporary phenomena (like the halt of air travel), others counteracted by an simultaneous negative development (home office lowering commuting while the fear of contagion decreased the share of low-emission public transport in favor of high-emission individual transport) and overall, the actual amount of possibly lasting positive effects was not quantified. Options for lasting positive effects were, however, raised in relation to the third open question.

Prevention and preparedness

This third question asked what we could do now to make further pandemics less likely in the near and distant future and how we could achieve more resilience concerning the emergence of global pandemics. It proved to trigger the most pronounced normative statements (besides some very outspoken political statements voiced as a critique of governmental action by some respondents in reaction to the first question). In general terms, respondents asked for paradigm changes in various actor fields, from national politics and international collaboration to scientific research, production and consumption and health systems.

our questionnaire, not enticing experts to breach their role as honest brokers via stealth advocacy (Pielke Jr. 2007). While addressing paradigms and normative standards does not necessarily (and, in our opinion, not in this case) represent a breach of this role definition, we do interpret it as a sign that the (self-assigned) role definitions of scientific experts are currently on the move. The position that “whenever a man of science presents a value judgement, the full appreciation of facts is lost” (Weber 1919, p. 25, translation by authors) seems to at least evolve in face of contemporary societal challenges.

Discussion: technology assessment’s contribution in times of crises

In the first two years of the COVID-19 pandemic, only a few scientific initiatives with a global and interdisciplinary aspiration have emerged, adding to existing institutions like the WHO, the OECD or the UNEP. This paper appreciates the value of such initiatives in times of societal crises as promoters of societal sense making, understanding and collaboration across countries, political departments and social sectors. They invigorate and enact what has been framed as ‘the scientific community’ at large (Hagstrom 1965) or as ‘the republic of science’ (Polanyi 2000), building on the idea that science as a societal sub-system has something to offer to society beyond the highly specialized output of distinct research fields. In some cases, they have taken the form of expert surveys.

These few, (at least partly) comparable initiatives (interdisciplinary, global, and thematically comprehensive scope) include two project series launched by the Atlantic Council (Scott 2020) and the Pew Research Center (Anderson et al. 2021), the “World

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They demanded that top priority be assigned to fostering the public good and solidarity in all these areas, while mitigating the influence of vested interests and competition. The list of normative standards mentioned further includes humanism, respect, empathy, honesty, global cooperativeness, justice, fairness, inclusiveness and equity. More specifically, respondents supported approaches like ‘responsible leadership’ in government, ‘local subsistence’ and the ‘circular economy’ for the production and consumption sector or the ‘one health’ approach for the health sector. As for science, both, high quality basic research as well as inter- and transdisciplinary research were favored.

The readiness to address paradigms and normative standards came as a surprise to us, assuming that scientists addressed as experts would rather tend to speak ‘truth’ and ‘facts’. Also, we had tried to treat the science/policy boundary with caution in

after Covid” project (Grossmann et al. 2022), expert Delphi processes launched by Iftekhar et al. (2021) and Wood et al. (2021) and by the German Institute of Technology Assessment and Systems Analysis (Weinberger et al., 2020) and comparative studies conducted by expert teams (OECD 2021; Jasanoff et al., 2021). Of late, a “multinational Delphi consensus to end the COVID-19 public health threat” has been published by Lazarus et al. (2022). This study includes 39 experts from academia and 347 non-academic experts and thus adds valuable insights. It can build on a meanwhile tremendously increased disciplinary evidence base for many relevant factors, allowing for much more robust expert opinions and better informed inter- and transdisciplinary compilation. Still, it does not run counter to the general assumptions and findings of the study presented here, e.g., finding that the vast majority of experts agree that “the incorporation of re-

search paradigms from diverse disciplines has greater potential to end COVID-19 as a public health threat than reliance on a single research paradigm (for example, evidence-based medicine)” (ibid., p. 336).

Our own analysis of responses to the first question (side-effects) has shown how essential a multidisciplinary synopsis is in a sudden and (mostly) unforeseen societal crisis. In this case it helped to draw our attention to how individual detrimental factors can add up and result in a mutual reinforcement of vulnerabilities. Only with robust methods and processes of interdisciplinary integration and with open minds such insights can be reached – a task technology assessment practitioners as experienced and dedicated ‘interdisciplinary’ can contribute to. Re-

tion process with a public funding body would not have allowed us to start almost instantly. The financial support we could get from our home organization only allowed for limited personnel and thus for limited capacity to spread the survey and to analyze results. Against this background, we were content to work with 81 responses; any higher response rate would not have allowed for the necessary in-depth qualitative analysis given the person months we had at hand. Funding agencies have – with time – responded to this problem and developed special funding schemes; but we might need more in this respect in future crisis situations. Moreover, we might need more ideas about the open-ended character of projects addressing sudden crisis and how funding schemes can attend to it. And, thirdly, the full po-

We might need more ideas about the open-ended character of projects addressing sudden crisis.

sponses to the second issue have helped us to better understand that some aspects (like internationality or digitalization) can play an ambivalent role in the pandemic, with specific details in design and implementation making an essential difference. In cases where technology plays a central role (like with digitalization), the high relevance of these details can serve as a motivation to increase TA efforts to address pertaining challenges. Responses to the third issue with a clear vote for value-based paradigm shifts in a wide range of social spheres point towards an extended role and function of scientific experts during societal crises that asks for extended quality criteria, review mechanisms and evaluation schemes. Contributing to robust new identities and role definitions for scientific experts in times of crisis and (imminent) catastrophe represents just another task technology assessment (like other ‘professional transdisciplines’) is well equipped for (Bauer and Kastenhofer 2019; Kastenhofer and Bauer 2022; Kastenhofer 2022).

But we do not want to end this discussion without also pointing at aspects that still need to be attended to so as to secure the full potential of TA and academia at large in future, comparable crisis situations: Our survey was, not least, also an experiment, testing if, how and under which conditions we could contribute. Thus, observed strengths and shortcomings should also be translated into learnings. Firstly, to productively contribute, we had to and could in some respects build on preexisting social capital: existing collaborations, networks and communication channels (in this case: of our home organization, the Austrian Academy of Sciences). To achieve higher participation rates and thus more robust results, we would have needed even more and stronger social ties in more countries with a wider transcontinental spread. TA currently striving for a global network via initiatives like GlobalTA could help considerably in this respect. Secondly, economic resources proved a bottle neck when trying to react short-term to the unforeseen crisis. The normal applica-

tional of policy relevant research can only be realized when it is heard and taken up by societal actors. This is a challenge we are all too familiar with in TA, but that needs to be attended to anew with every new activity. The question of who the experts are and how experts and expertise can best be integrated into urgent political matters at the local, regional, national and transnational level is one of the central challenges this pandemic has pointed at and that we have to keep discussing within and beyond academia.

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