Universality in Pieces? Mobilizations of Science in a Fractured World

Hynek Bečka

Max Planck Institute for Social Anthropology, Halle (Saale)

Samiksha Bhan

Max Planck Institute for Social Anthropology, Halle (Saale)

Desirée Kumpf

Max Planck Institute for Social Anthropology, Halle (Saale)

Claudia Lang

University of Leipzig

Hanna Nieber

Max Planck Institute for Social Anthropology, Halle (Saale)

Julia Vorhölter

Max Planck Institute for Social Anthropology, Halle (Saale)

Hanna Werner

Max Weber Centre for Advanced Cultural and Social Studies, University of Erfurt

Introduction

In recent years – in the context of debates on post-truth, Covid-scepticism and decolonization – the idea that science represents universal knowledge has been challenged from a variety of perspectives. Despite (or because of) this, science and the promise it holds out for generating knowledge that is relevant to solving planetary problems are gaining new valence and momentum. Based on ethnographic research, this special issue investigates mobilizations of science and claims to universality in a variety of different contexts. We ask: When, and around which issues, does universality become mobilized and contested? What are the politics behind specific attempts to universalize and/or localize knowledge? Where do claims to universality enact inclusive and/or exclusive socialities? Our central argument is that universality is both necessary and

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unreachable, problematic and desirable; it is an elusive, but powerful notion, deeply engrained in the idea of science, which orients people's actions towards particular goals. Studying people's varied attempts to universalize or localize knowledge in the name of science – for political, ethical, or pragmatic purposes – offers relevant insights into how people imagine, create, justify or call into question often unequal social structures. It also reveals, as many of the contributions in this issue show, the hopeful visions scientists and citizen-scientists pursue in striving to build better futures. This special issue, then, speaks to a key theme in contemporary anthropological debate, namely the politics of knowledge and the complex quest for epistemic justice in an unequal world.

Although science has been disputed since its inception, these contestations have gained a new dynamic in recent years as disparate actors from across the political spectrum have fundamentally called into question the status of science and its claims to universality. Central to these interventions are often critical reflections on 'whose science' produces what kind of knowledge, where, and for whom. While climate change sceptics and Covid-19 deniers have recently been most vocal in their critique of 'mainstream science', postcolonial critics have long diagnosed scientific institutions and ideologies as both unequal and biased. They argue that knowledge produced under these conditions cannot possibly have universal relevance for everyone, everywhere, given that the paradigmatic premises of universality remain largely unquestioned and are inherently bound up with notions of 'Western modernity'. At the same time, scientific approaches remain a compelling and normative force in people's ways of thinking, acting and feeling in the world. Demands are high for policy-makers worldwide to 'follow the science', for instance, in the context of climate change or during the pandemic. Here, many people are dissatisfied that governments are not taking the far-reaching relevance of scientific advice seriously enough. In the face of globally interconnected crises, injustices and existential threats, the idea of universally applicable standards continues to hold out the promises of equality, justice and survival.

Between scepticism and aspiration, there are numerous suggestions and initiatives for re-thinking and re-situating what scientific universality could or should do. While recent media representations often suggest the radically opposed positions of those who celebrate and those who reject science or science-related truth-claims, in this special issue we offer a nuanced perspective on the diverse and shifting debates on the role, status and imagined possibilities of scientific knowledge in different social, geographical and epistemic contexts. We investigate mobilizations of universality with, for, and against science in fields as varied as astronomy, biomedicine, psychology, artificial intelligence, genetics, conservation ecology and environmentalism.

Following well-established criticisms of science's claims to truth, universality and impartiality – prominent, among others, in the field of STS and in the history and anthropology of science (e.g. Franklin 1995; Haraway 1988; Harding 1991; Latour and Woolgar 1986; Martin 1998; Mol 2003) – we start from the assumption that what is seen as the universality of science in fact moves through, and is modified in, different contexts. Scientific knowledge is never absolute; rather, it is contingent and relational,

always enacted and negotiated in practice. From this angle, universality is an abstract ideal that can never be fully attained. But far from seeing people's preoccupations with universality as futile, in this issue we are interested in the political valence that comes from engaging with universality for various specific purposes. Our aim is to examine how people approach universality, not as a unified totality but as a handy composition tool for various projects in changing political landscapes. People do not always voluntarily acquiesce in claims to universality, but practices of universalizing (or particularizing), we argue, can enable people to engage and utilize scientific knowledge in a way that connects their specific political projects to wider frames of reference. These practices play an important part in integrating science into social life.

In this introduction, we first present a brief overview of universality's troubled history (for a comprehensive analysis see, e.g., Hofmann and Messling 2021). This is followed by the discussion of three figures – the horizon, the fragment, and the aggregate – which all capture, if in different ways, universality's inherent (yet productive) incompleteness. Finally, we introduce the individual case studies from which our engagements with universality emerge.

Staying with the Universality Trouble

Universal knowledge claims, including those of modern science, have historically been staked on the fundamental human capacities of reason and rationality. The Enlightenment period and the ensuing scientific revolutions came to celebrate rationality and reasoned thinking as the bedrock of scientific thought. And yet this faculty of reason was not only socially and historically contingent, it also excluded much of humanity (Said 1978; Haraway 1988; Wynter 2003). Slaves and women have been outliers of rational humanity since antiquity. But the philosophical transfer of authority from divine power to human capacity was quickly transformed into the universalization of Europe's particular interests, beliefs and norms as the fundamental human essence (Said 1978, Chakrabarty 2008, Laclau 1992, Hofmann and Messling 2021). Nowhere was this essentialism more prominent than in the colonies, where introducing scientific rationality to the 'savage' world became an invaluable part of the civilizing mission pursued by the imperial powers (Prakash 1999).

Given the range of historical, political and epistemic troubles attached to it, universality should be viewed neither as an inherent property of science nor as the basis of a moral quest to advance knowledge and progress for the benefit of humanity as a whole. On the contrary, as a wide range of scholarship in the social sciences has argued, any attempt to unify knowledge contains the danger of homogenizing differences and reifying the dominant group's perspective (Harding 1991). Thus, on the one hand, the 'universalization of Europe' as the originary site of modernity, history and science became an object of investigation for postcolonial and subaltern studies. This scholarship

has responded by carving out other histories that cannot easily be incorporated into a single narrative, be it about the introduction of capitalism and capitalist modernity (Chakrabarty 2008) or science and technology (Prakash 1999; Habib and Raina 1999; Dumoulin Kervran et al. 2018; Bärnreuther 2021) to the rest of the world. Universality in this form of analysis is countered by multiplicity and plurality.

On the other hand, scholars in postcolonial STS have demonstrated how scientific breakthroughs – for example, the notion of variation in plant biology (Subramaniam 2014), the discovery of disease-causing pathogens (Arnold 1993; Anderson 2006; Venkat 2021), or the development of technologies of preserving, analysing and reading DNA (Kowal et al. 2013) – were made possible by colonial (and settler-colonial) conquests and the global trade in populations, specimens and laboratory science. While these critical studies of science and empire have contributed to our understanding of how racial, geopolitical and cultural inequalities persist in and inform our postcolonial present, they have also opened up new pathways to reflect on how the work of producing science and technology has become a remarkably global pursuit. Against the image of monolithic and hegemonic 'Western' science and technology, such analyses draw attention to the work of non-hegemonic, non-Western actors, sites and positions.

A closely related question is that of the situatedness of knowledge production in science and its unequal effects. It is not uncommon for practitioners and institutions to ask who their knowledge is accountable to, where is it derived from, who has produced it, who receives the benefits, and how research can be translated into action. Recent calls to open up science and include citizens and non-experts in its production are gaining traction and valency not just in the Global North but also in the context of decolonizing science (Lyons et al. 2017; Gabrys 2022). While some scholars argue that decolonizing knowledge means diversifying knowledge and education systems to mitigate the hegemonic legacy of white European thinkers and thought by including and highlighting non-hegemonic knowledge (Ndlovu-Gatsheni 2018; Harrison 2022), others warn that such efforts risk essentializing or even racializing difference (Kennemore and Postero 2020). While some take decolonizing to mean countering the racial exploitation and injustice engrained in the history of science through knowledgecreating and knowledge-sharing partnerships with indigenous communities (Verran 2018; Asiamah, Awal, and MacLean 2021), others warn of 'equity washing' and point to the complexities of initiating genuine partnerships (Ballo et al. 2021).

Similar to collaborations between scientists and non-scientists, there is a trend towards collaboration between different sciences regarding common concerns. The science wars of the 1990s that fiercely debated whether scientific claims are based in nature or socially constructed (Ross 1996) seem to have transitioned into debates about what the different sciences can bring to the table. The science wars' combatants have been steadily moving beyond critique, distancing themselves from the simple deconstruction of scientific authority (Hacking 1999) and instead addressing matters of shared concern (Latour 2004), such as environmental crises (Zimmer 2023). In the wake of these transitions, anthropologists studying scientists or working on multidis-

ciplinary projects find resonance in 'friendship with scientists', a methodological disposition to redefine what critical science studies mean and to 'engage scientists on their own terms, as they work out what will count as true, rigorous, and worthy of concern' (Fortun and Fortun 2005:51; see also Benezra 2016).

And yet, crossing the boundaries of disciplines and epistemes does not in itself resolve conflicts, avert crises, or achieve more equitable solutions. Collaborating on matters of shared concern by social and natural scientists does not always work out for the best (see e.g. Benezra 2023). Increased interest and insight into the production of scientific knowledge by citizens and non-experts is no guarantee of democratizing science – or society – as the contestations referred to above clearly show. However, thinking from a shared space affords asking novel questions.

In summary, the continuing and widespread representation of science as universal has structural implications with respect to participation in and exclusion from doing science. However, outrage against unequal possibilities of participation in the advancement of science is gaining traction. Resonating with how the International Council for Science has linked the 'Principle of Universality of Science' to human rights and formulated the goal of 'equitable and non-discriminatory access to science' (International Council for Science 2017), scientists from various corners of the globe are building on the international political purchase that their demands to participate elicit. Science, in this policy-making environment, is an unchallenged common good – an assumption which, as noted, is often called into question in social science studies. In the end, then, several factors, ranging from location and discipline to identity and personal conviction, shape how people imagine and relate to science and the idea of science's universality.

The Politics and Practices of Universalizing

In this special issue, we trace how the universality of science has political purchase despite its inevitable incompleteness. We identify two key aspects of scientific knowledge-making in our respective case studies: 1) politics and participation, and 2) practices of universalizing. Though these two aspects in many ways overlap, the first focuses on people and the related question of who can produce and who is the imagined recipient of universal scientific knowledge, whereas the second has more to do with content and the question of how knowledge actually becomes (more) universal. We observe that our interlocutors work towards, produce, claim, contest and practice science's universality for different purposes.

In our attempts to analyse these dynamics, we deploy a number of conceptual tools, three of which we present here: horizons, fragments and aggregates. These 'figures' help us to think the incompleteness of universality in different ways – as a horizon that one strives towards but never reaches, as a series of fragments that never amount to a whole, or as a continuous process of aggregation.

Firstly, universality as 'horizon' draws on the work of the Beninese philosopher Paulin Hountondji (2017). Writing against 'ethnophilosophy' in the 1970s, Hountondji advocated the pursuit of philosophy as a universal endeavour, amalgamating Western and other differently located philosophies. Universality, he contended, may be and remain incomplete, but there is value in striving towards ever greater universality by accumulating the scholarship from increasing numbers of particular positions. Hountondji's philosophy defends the value of universality not in spite of local particularities and differences but because of them. Drawing on the US-based philosopher and political scientist Olúfémi Táíwò (2022), we might say that those who contribute to the knowledge and practice of science from any location not only become part-owners of science but, more importantly, contribute to its movement towards ever greater universality. As horizon, universality is a future-looking practice and becomes a potential, a promise, and aspiration.

Secondly, we conceptualize the always unfinished nature of science's universality inthe-making through the concept of 'fragments'. In her work with survivors of collective
violence in Delhi, Veena Das (2007) argues that 'fragments' of experience ought not
to be taken as 'various parts that may be assembled together to make up a picture of
totality' but rather as elements marking the impossibility of an imagined whole. In
Marilyn Strathern's work on parts and wholes (1992), fragments emerge as broken
pieces with reference to a prior cohesive totality that has been forever lost. Finally, in his
work on the fragmentary quality of moral traditions in South India, Anand Pandian
(2008) suggests taking fragments as marking the impossibility of a coherent whole and
seamless horizon of experience. Building on this work, we read universality as fragmented, but use fragments less as reminders of a lost past than as traces of an aspired
wholeness in the future. Expanding on Pandian's image of the mosaic (itself inspired
by Walter Benjamin) as composed of fragments, we draw attention to the possibility of
universality and universalizing by joining together particularities as fragments.

Thirdly, we think about universality as aggregated. Therefore, we draw on Dörte Bemme's (2019) concept of the 'aggregate human', which she has developed in the context of her work on global mental health epistemologies and interventions. The idea of an aggregate human defies the idea of the universal human unified by a single theory of, say, the psyche, or mental health, and goes beyond the dichotomy of the universal and the particular. In this model, universals emerging, for example, in global mental health are contingent and unstable. They are true and measurable, but only until they stop working in the field or until the parameters of 'what works' shift to a new iteration. They make epistemic objects comparable across difference, but without fixing or essentializing them as once-and-for-all given. Following Bemme, universality becomes pragmatic, and claims to ontology are reformulated as questions of applicability (Bemme 2019).

Horizon, fragment and aggregate are just three of the figures we think with in this issue, and they show the multiplicity of how the universal becomes mobilized for various purposes and with various intentions despite as well as because of its inherent incompleteness. We believe that such nuanced academic engagements with the everincomplete universality of science opens up perspectives on how people in different social, geographical and epistemic contexts strive to act collectively in a fractured world.

The Contributions

The contributions in this special issue address some of the key questions around politics and participation, such as: Who gets to produce, or participate, in the production of scientific knowledge and make claims that it is universal (Bečka, Nieber, Vorhölter)? For whom is scientific knowledge produced (Bhan, Lang and Sathaye, Nieber, Vorhölter)? To what ends are claims to universality made or contested (Bečka, Bhan, Kumpf, Werner)? These contributions trace how the ideal of science's universality is enacted in light of its incompleteness and portray a kaleidoscope of universalizing practices, always situated in particular power constellations and always mobilizing the politics of participation.

Hynek Bečka argues that the universality that Covid-19 sceptics in the Czech Republic seek is one of participation. Protesting against anti-pandemic measures and refusing vaccination, they claim that science should not be bounded by established expertise but open to all who are able to observe, experiment and gather evidence by themselves. Bečka shows how these 'rational sceptics' negotiate the boundaries of good and bad science and create alternative knowledge by mobilizing the notions of universality and embodied empiricism.

Desirée Kumpf examines how the premise of universal interconnection between humans and their ecological life-worlds operates as another notion of universality in the 'mission-oriented' conservation sciences. In the example of wolf rewilding in Italy, uncertain and unreliable camera-trap images inspire story-telling in online forums which allows both conservation scientists and their audiences to sense and narrate the relationships between wolves and humans. As universal interconnection becomes an important narrative mobilizing public support for conservation projects, embodied experiences of immersions into fragile environments add to the canon of universal knowledge.

Claudia Lang and Sonali Sathaye investigate the universalizing processes of psychology and therapy and some of its frictions. Based on an ethnography of life skills training courses in Bengaluru and a mental health app designed in the same city, they look at the universalizing practices of everyday psychology, therapy, and self-work. Lang and Sathaye show that, in the case of the courses, universality is assumed to be bounded and context-free, while in the case of the app it is 'aggregated'. Thus, the divergent ways the universal is aspired to be achieved in these two cases is linked to a shift in the meaning of 'context', which is bracketed in the first case and operationalized in the second.

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Julia Vorhölter's contribution questions conventional framings of psychotherapy as something external and foreign to 'Africa' that have been imposed by outsiders. Instead, she shows how psychotherapists in Uganda cater to the demands for psychotherapeutic care of an emerging middle class and pragmatically navigate the particularities of the Ugandan clientele while believing in and contributing to a universal psychology. Nevertheless, they are frequently confronted by historical legacies and contemporary structural inequalities which limit how and where they can practice, and, how their work is valued.

For astronomers in Africa, as Hanna Nieber's chapter shows, universality provides a strategic discursive repertoire for entering the global field of science diplomacy and combating the structural inequalities of participation. Building on the fact that, without the perspective from Africa, astronomy's gaze into outer space is incomplete, astronomers in Africa argue for their participation in astrophysical research by holding astronomy accountable for its claim for universality. Nieber takes inspiration from Paulin Hountondji's formulation of universality as horizon and reads this metaphor through the example provided by astronomers in Africa to show how universality elicits hope, provides direction, and allows for an examination of position-based particularities.

A similar form of 'anticipatory universality' animates postcolonial genomics in India, as Samiksha Bhan's contribution illustrates. Like their colleagues in other parts of the Global South, geneticists in India are critically aware of the Eurocentric bias in genome databases worldwide which limit the potential clinical benefits for under-represented population groups. In their simultaneous need to claim inclusion in genome databases and devise public health solutions closer to home, Bhan argues that Indian geneticists approach population 'in fragments' rather than as a unified whole. These population fragments, however, rely on other knowledge regimes that often reinforce genetic essentialism and stigmatize already marginalized groups, while deferring the universal applicability of genomics into the future.

Hanna Werner's contribution examines the ambivalent relationship between environmentalism and science in contemporary India. As a contested source of legitimacy, science is an inevitable yet troubled reference point in environmental politics. Werner addresses the conflicted entanglement of science and religion in India's current political landscape and sheds light on how environmental activists (must) navigate these spheres. In this context, she explores the possibilities of conceptualizing a grammar of environmentalism – a grammar that challenges common readings of environmentalism, puts hegemonic claims to universality in perspective, and redirects the focus onto questions of environmental justice.

The goal of this special issue is not to offer solutions but to illuminate universalizing practices within and with science. We describe what kind of work goes into universalizing science in unequal, stratified and patchy conditions of life in different parts of the world, and we develop the conceptual tools to do so. In our individual contributions, we explore what matters to our interlocutors as they ask questions about and through science, contribute to existing discourses, or contest knowledge production, all the

while situating themselves within specific localities, vocabularies and broadly defined goals. Our contributions show that making knowledge universal is not and indeed never can be a singular project or ambition. In this sense, then, we see the universality of science as never quite finished, always in making, and always situated in particular politics and moral economies.

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