Anton Kirchhofer and Karsten Levihn-Kutzler

Introduction—Postcolonial Modernity and Narratives of Science

In 2019, Oxford University's St John's College advertised for a two-year postdoctoral research assistantship in order to research the college's "involvement in colonialism."[1] The project *St John's and the Colonial Past*, as reported in *The Guardian*, was supposed to uncover "benefactions to St John's and the alumni who served in the empire" and "investigate the monuments, objects, pictures, buildings that evoke the colonial past" (Adams 2019). The project is part of a wider movement among museums, universities, and other institutions to address the constitutive entanglements of their own institutional histories with the imperial and colonial histories that unfolded around them and shaped them. This, in turn, might be understood as heralding a shift in the position and relevance of 'the postcolonial'—the gaze is no longer directed towards the former colonies and their engagement with the material and ideological legacies of colonialism; here, the metropole turns the investigating gaze back onto itself. But the news item reporting on the position also reveals the limitations such self-reflection still has. The report in *The Guardian* adds: "The college said the post would be *unique within Oxbridge* as an effort to investigate its own history [...] and hopes it will '*set the standard for future work in other institutions*'" (Adams 2019, both emphases added). The investigation of St John's colonial past is meant to underline the continued thought-leadership of the metropolitan institution; it is seen as a demonstration of the ongoing excellence of the two oldest British universities, an asset in a global competition for innovative and pioneering research as well as in the internal competition among colleges as peers and competitors. Paradoxically, then, the project may reinforce, rather than addressing, the constitutive disparities of global knowledge

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production which have their origins in the colonial entanglements the project investigates.

Postcolonial studies has a strong record of calling into question the modernization narrative long current in 'the West'—the Euro-American self-perception of innate social, political, economic, scientific, literary, and artistic global leadership (see, for instance, Lipset 1959). In this worldview, the history of colonialism was a somewhat peripheral and supplementary phenomenon, a process aiming for 'the spread of civilization' in which regrettable mistakes had been made but which still would eventually allow the formerly colonized nations to 'catch up.' It must be noted, of course, that within the framework of postcolonial studies, that account has been substantially and effectively challenged in favour of a paradigm of a co-production of modernity between colonizers and colonized, although under conditions of disparity and disappropriation (see, for instance, Gilroy 1993; Chakrabarty 2000). Nevertheless, the position of postcolonial studies in academia was itself framed by the after-effects of the modernization discourse. The gradual establishment of postcolonial studies in academia, as an added component in a range of disciplines, came about in connection with the 'cultural turn,' alongside cultural studies, gender studies, gay and lesbian studies, disability studies, and other intersectional allies. The adoption of postcolonial concerns in departments of arts and humanities certainly did not progress evenly, with some disciplines and some universities taking the lead and others following more slowly or not at all. The same is true for the establishment of professorships in postcolonial studies. But the debate about these generally was framed as a question of supplementation—a debate about the need for additions to established mainstream concerns and canons which have supposedly formed independently of postcolonialism's 'supplementary' concerns.

Over the past five or ten years, however, it increasingly seems that 'the West' has finally begun to give wider public recognition to what we suggest should be described as its own *constitutive postcoloniality*. What began in the 1960s and 1970s as a special interest, as a 'niche' concern in academia, is now coming to be recognized more and more as the constitutive feature of modern societies. Adopting such a perspective entails a more general recognition of what we might call the constitutive postcoloniality of contemporary structures, institutions, and processes of knowledge production. A postcolonial perspective is, then, no longer an optional extra added to certain disciplines in the humanities but a part of the history of the formation of disciplines and institutions of knowledge production across the board. It gives visibility to historical entanglements as well as continuing structural asymmetries and disparities in contemporary knowledge practices.

The growing recognition of the constitutive postcoloniality of modern societies and their institutions of knowledge production, far from rendering the need for postcolonial critique obsolete, creates new directions and challenges for postcolonial inquiry. As is shown by the report on *St John's and the Colonial Past*, an example chosen from a range of similar instances emerging since the late 2010s (see, for instance, Weale 2019), acknowledging the colonial past does not necessarily mean acknowledging the past's continuing structural relevance for the present. By keeping colonial history disconnected from the present, St John's acknowledgement of its colonial past comes to legitimize its claim to a position of leadership in a global imaginary of knowledge production, in which the imperial centre still retains the mantle of the intellectual vanguard. Historical revisionism can thus be implemented in ways that reinforce the global hegemonies in institutional frameworks for knowledge production, instead of questioning them. The 'grand narrative' of "The Spread of Western Science" (Basalla 1967), a central element of twentieth-century modernization narratives, remains the narrative on which St John's stance is predicated: a claim for academic leadership within a set of research institutions ('Oxbridge') which, in aggregate, share a claim to global intellectual leadership. What the project's research angle, as reported, does not appear to envisage is a revision of the unilateral and Eurocentric conception of agency in the progress of scientific research and knowledge production.

This shortfall is especially regrettable at a time when science and questions about the status of knowledge have become central to urgent geopolitical issues, such as climate change and pandemic diseases. Science is both more urgently needed and increasingly embattled, both in postcolonial contexts and in the West. Rather than simply shoring up a Eurocentric version of scientific authority, we believe that it is urgent to address science's entanglements with colonial power and its complex and ambivalent position in postcolonial cultural and political contexts. But as of now, the cultural imagination of this connection has rarely been made a focus of research. Our goal in this volume is to promote a multi-perspectival reflection on the role of science and related knowledge practices in narratives of postcolonial modernity and on the cultural conceptualization of science in postcolonial societies around the world.

In this introduction, we want to provide a framework for this reflection. In order to do this, we will first establish the colonial origins not of science per se, but of the identification of science with Western cultural authority, a strategic misrecognition that persists until the present day. Drawing on insights from postcolonial science and technology studies, we will then turn to two examples for cultural narratives of science in postcolonial contexts.

While both of these try to reclaim the cultural authority of science for other, indigenous knowledge systems, they both paradoxically reproduce the terms of Western grand narratives about the spread of Western science. We suggest that moving beyond these narratives requires an understanding of the polyvalence of science as a signifier and a careful analysis of how 'science' operates in any given narrative. Finally, we will briefly introduce existing critical perspectives that form the background to the contributions in this volume—literature and science studies, postcolonial literary and cultural studies, postcolonial science and technology studies, and environmental criticism. Our aim with this volume is to encourage a dialogue between these perspectives that will ultimately lead to a critical practice that reckons with the complex intersections of science, narrative, and postcolonial cultures.

Strategic Misrecognition: Colonialism and the Narrative of the 'Spread of Western Science'

In the foregoing brief discussion of *St John's and the Colonial Past*, we have taken that project as an indication of the need for new accounts that connect historical insights with contemporary practice. Evidently, there is still a disjuncture between, on the one hand, the emerging new historical perspectives and, on the other, the cognitive, structural, and institutional frameworks that shape the processes of knowledge production from which these revised perspectives emerge. In other words, there is a dissonance between a genuine reckoning of St John's with its colonial past and the narrative that institutions like St John's tell to explain global structures of knowledge production. We take this as an exemplary illustration of the need in our current discussions both within and beyond postcolonial studies for a closer and more differentiated engagement with the nexus of science, culture, and postcolonial narratives, both in a historical and a contemporary perspective.

A new narrative of the history of science alert to the entanglements between science and the histories of colonialism and imperialism will have to contend with aspects such as the following: colonial resource extraction, plantation economies, and the slave trade have provided foundational capital for many scientific institutions in Europe; colonial power has facilitated the extraction of scientific objects—such as mineral, plant, and animal specimens, cultural artefacts, and human remains—for the benefit of European institutions; and specific disciplines, from cartography and tropical medicine to linguistics and anthropology, have directly

contributed to colonial infrastructures and the exertion of imperial power. Moreover, as we have seen in recent debates about the decolonization of scientific institutions, colonial legacies also persist in structures of systemic racism restricting access to science and higher learning as well as in the Eurocentrism of university curricula.

While all these historical connections are known and documented, though perhaps not universally recognized, postcolonial critique must go a step further and add to our perspective a more fundamental interrogation of the ideological function of a particular cultural narrative of science. The historical connections highlighted above, we suggest, have been obscured by the narrative of 'the spread of Western science,' a particular cultural narrative, within whose context science's claim to universality—i.e. its indifference to cultural context—is paradoxically yoked together with a claim for Western cultural hegemony. Even though in the social sciences, especially in the history and sociology of science, this narrative no longer holds the sway it once enjoyed, we have already noted that the ongoing structural and institutional effects of this cultural narrative can still be seen operating, for instance, in the way that St John's College framed its endeavour to engage with its own connections to the history just invoked. The search for different and more appropriate narratives will need to involve a critical evaluation of the role which the long-accepted cultural narrative about 'Western' science and its historical 'spread' has played in obscuring the geopolitics of knowledge production and the transcultural exchanges and entanglements in the history of science—and how it still shapes the structural and institutional features of our own research and critical discourse.

Taking the constitutive postcoloniality of modern science seriously thus not only involves problematizing specific histories and policies that connect the history of science with colonial and imperial projects; it also challenges us to recognize that the widespread cultural narrative of the 'spread of Western science' was and is a *strategic misrecognition*, operating as a particular conjuncture of science, culture, and *colonial* narrative, by combining a claim of the universal validity of scientific knowledge with a claim of the cultural hegemony of the West. The narrative of science as a specifically and perhaps exclusively 'Western' phenomenon—emerging in early modern Europe and intrinsically linked to processes of modernization and secularization—constitutes a specific element in the order of colonial discourse. As such, it has played a highly impactful role in legitimizing colonial and imperial projects. Understood as the explicit opposite of native 'superstition,' science provided the contrasting foil to the assumed irrationality of colonial subjects, which justified—mandated,

even—the application of colonial rule. To take a particularly notorious historical example, Macaulay's infamous *Minute on Education* positions English, amongst other qualities, as the language of science, which furnishes its speakers "with full and correct information respecting every experimental science, which tends to preserve the health, to increase the comfort, or to expand the intellect of man" (1920, 110), while the learning of Sanskrit and Persian constitutes "not merely a dead loss to the cause of truth" but "bounty-money paid to raise up champions of error" (114). The scientific claim to universal truth vouched for the ubiquitous untruth and pervasive irrationality of non-Western forms of knowledge and knowledge generation; the codification and disciplining of knowledge in the sciences recast all other knowledge as un-methodological, anecdotal, and undisciplined. Science thus became instrumental in establishing and maintaining colonial difference and "the subalternization of knowledge built into it" (Mignolo 2000, 4).

But what perspective emerges once we recognize the identification of 'Western' and 'science' as a strategic misrecognition, a cultural narrative aiming to universalize cultural and geopolitical hegemony? How can we find more comprehensive and appropriate narratives of the institutional and conceptual history of science, narratives that take the geopolitics of knowledge production and transcultural exchanges and entanglements in the history of science into account? These questions will become even more acute when we turn the lens onto representations of science as a specific form of knowledge production in the context of colonial and postcolonial societies.

Strategic Reversals: Postcolonial Critiques of Science, Identity Politics of Knowledge, and the Afterlives of Modernization Narratives

Both in a historical and a contemporary perspective, there is a demand for modes of reflecting on and accounting for the complex ways in which 'science' operates in a widely varied set of real-world contexts, as well as in recent and urgent critical debates. After all, science has become relevant in some of the most urgent and existential questions of our time, pertaining to issues like struggles for environmental justice, postcolonial responses to climate change, the debate about the concept of the Anthropocene, or the cultural and political responses to pandemics from HIV/AIDS to COVID-19. Some postcolonial nation-states have emerged as powerful 'players' in a global landscape of competitive knowledge production themselves; yet

the position of science in the self-conception of postcolonial societies is often vexing and contradictory. And in spite of its historical connections to histories of colonial oppression, science was also part of the promises of post-independence modernity. Science education may offer marginalized and disenfranchised populations chances for improvement and emancipation, but science also has been co-opted by parochial nationalisms opposed to such projects. Science and modern technology are deeply implicated in resource exploitation and environmental degradation, but they also provide diagnostic tools and technological remedies necessary to protect and restore postcolonial environments. While it is far from exhaustive, this list of aspects may be sufficient to illustrate the polyvalence of science, both in its real-world effects and as an ideological construction.

In trying to better understand the complex and often ambivalent role of science in postcolonial contexts, we can draw on the work of scholars both in the history of science (see MacLeod 2000) and in science and technology studies (see Harding 1998, 2011; Anderson 2002, 2009). Over the past three decades or so, these scholars have worked to contest and displace the narrative of the 'spread of Western science' and begun to explore more multipolar conceptions of agency in the progress of scientific research and knowledge production. Researchers in the postcolonial history of science have sought to move beyond concepts that posit a stark opposition between 'Western science' and 'indigenous' or 'traditional knowledges,' drawing attention to the local and the global entanglements in the production of scientific knowledge (see, for instance, Konishi et al. 2015). Many current approaches emphasize reciprocal exchange and dialogue, describing and criticizing existing imbalances and inequalities while maintaining a focus on networks of knowledge and the circulation of knowledge within these networks. Working from both contemporary and historical perspectives, scholars have explored the connections between colonialism and the practice and progress of science (e.g. Nandy 1988; Baber 1996; Chakrabarti 2004), describing the co-production of scientific knowledge in colonial or transcultural encounters and tracing the global circulation of knowledge (e.g. Raj 2007; Günergun and Raina 2011; Renn 2012; Lightman et al. 2013). A lively and growing body of research has emerged over the past few decades, focused on exploring methodologies and angles of inquiry that have the potential to take us beyond the reductionism of the stereotypes that have been allowed too long to govern the received cultural perspectives on science and culture (see, for instance, Smith 2018).

While this recent work in the history of science and in postcolonial science and technology studies thus provides a basis for a less culturally biased understanding of the history of science and of the geopolitics of

knowledge production, it does not provide a ready-made, all-encompassing alternative narrative of the history of knowledge production. This may be due in part to the fact that some proposals for alternative grand historical accounts, such as, for example, the 'globalization of knowledge' (Renn 2012) arguably still negotiate, revise, and update versions of the 'spread of Western science' narrative. Arguably, the same difficulty besets a range of other narratives about science that have emerged amidst political and social debates in postcolonial contexts.

A frequent postcolonial response to the entanglement of science and colonialism has consisted in the proposition of counter-narratives that revolve around validating—and even valorizing—other knowledge practices under rubrics such as alternative sciences, indigenous knowledge, and traditional ecological knowledge. In critical discourse, a strategic reversal first manifested amidst the emergence of postcolonial science and technology studies in the 1990s, when sociological and anthropological critiques of science's supposed objectivity and universality (see Woolgar and Latour 1986; Knorr Cetina 1999) were combined with a 'rehabilitation' of non-Western knowledge practice (see Harding 1998, 2011). In more recent debates about the decolonization of universities and other scientific institutions and research methods, such indigenous practices are often seen as emancipatory and holistic practices of knowing, particularly adept, for instance, in understanding 'environmental' problems as a complex web of social, ecological, and spiritual factors (for a succinct summation, see Knopf 2015).

While the reappraisal of, and respectful engagement with, these knowledge practices can only be welcomed, critics have also pointed to the danger of an uncritical reification of indigenous 'alternative' sciences, which would leave the colonial dichotomy of science and its others intact and merely invert its normative value (Green 2012, 4; see also Baber 2002, 2003). Such a strategic reversal of the traditional master narrative of the spread of Western science may lead to its own conceptual impasses, giving rise to what Green calls an "identity politics of knowledge" (2012, 5). A particularly striking example of the theoretical and ethical quandaries produced by this type of reversal are the South African 'science wars' surrounding the AIDS crisis, including the failure of the South African government to provide anti-retroviral drugs in the early 2000s. This failure has been widely attributed to the scepticism of then president Thabo Mbeki and minister of health Manto Tshabalala-Msimang about the scientific consensus—fuelled by distrust in the international pharmaceutical industry and a conviction that the AIDS crisis was part of a larger crisis of poverty and malnutrition. Besides the horrific death toll to which Mbeki's policies contributed, they

also resulted in a public debate about the authority of science and indigenous African knowledge practices with puzzling constellations:

> AIDS activists' defence of a pure science, apparently untainted by any human interests, has put its supporters in an uncomfortable alliance with 'Big Pharma.' Indigenous knowledge proponents' defence of a pure traditionalism, apparently untainted by any human interests, sets up an uncomfortable alliance with elites who use the idea of 'tradition' to insulate themselves from criticism from 'inside' ("cultural pollution!"), and criticism from 'outside' ("you have no right to speak!"). (Green 2012, 3)

The rejection of the scientific consensus about AIDS is the correlative of an identity politics of knowledge. It is predicated on a counter-narrative which recasts science as Western imperialist propaganda imposed on the colonial world while recentring indigenous African knowledge practices as true and authentic. Apart from the severe human cost resulting from these policies, such a cultural stereotyping of science as 'Western' then has a hard time avoiding the trap of reproducing and reinscribing colonial dichotomies such as those postulated by Macaulay by simply mirroring them in reverse—ultimately producing nothing more than a new form of strategic misrecognition.

The position of science in public discourse in India is similarly difficult to track by using a simple binary between Western science and indigenous or "subalternized" knowledge. As Gyan Prakash has shown, the emergence of India as a secular nation-state itself was underwritten by invoking science "to authorize an enormous leap into modernity, and anchor the entire edifice of modern culture, identity, politics, and economy. The very existence of India appears crucially dependent upon the stability of the apparatuses and practices it designates as rational" (Prakash 1999, 12). More recently, however, the connection between science and Indian secularism has been undermined by Hindu nationalists who have sought to ideologically co-opt science. Claiming to see modern scientific concepts and technology anticipated in mythological narratives and Vedic scripture, Hindu nationalists invoke ancient 'Hindu science' to legitimize Hindu supremacy (see Subramaniam 2019; Nanda 2016). In whatever guise it manifests, the mounting of a counterclaim has emerged as the preferred way of contesting colonial forms of the cultural stereotyping of science. But to present a claim of precedence for 'Eastern' science, in whatever form it is conceptualized, is still to maintain the continuity of the dynamics driving the quest for the cultural prestige and political legitimacy that is apparently to be derived from the idea of precedence, superiority, or exclusiveness in the practice of 'science.'

While such ideological co-option of science may have less immediately lethal consequences than the rejection of medical and epidemiological advice, some critics have warned that once science is reduced to a mere cultural signifier and its claim to universal validity is conceded, criticism foregoes whatever emancipatory potential science might have in a social context such as the Indian caste system. As Meera Nanda polemically puts it:

> The oppressed Others do not need patronizing affirmations of their ways of knowing, as much as they need ways to challenge these ways of knowing. They do not need to be told that modern science is no less of a cultural narrative than their local knowledges, for they need the findings of modern science, understood as transcultural truths, in order to expose and challenge local knowledges. (Nanda 2000, 209)

Thus, neither a wholesale rejection of science in favour of other, indigenous knowledge systems nor the rhetorical appropriation of science as an originally indigenous knowledge system takes us beyond an 'identity politics of knowledge.' These alternatives work not by displacing but by reframing the concept of 'Western science.' They preserve a binary that pitches colonial 'Western science' against its 'postcolonial others,' even as they seek to redress the balance between the two. By the same token, it seems fair to say that the strategic reversals of the traditional narrative share that narrative's character of strategic misrecognition, even though they represent different versions of it. Pursuing what may be described as a strategy of geopolitical reversal does not fundamentally alter the perception of 'science' which still figures here as an activity and a body of knowledge with universal validity, but at the same time entangled with cultural privilege.

What the situation would require, however, is a move towards accounts of science that take note of the plural and often contradictory roles of science in contemporary debates, and that recognize the complex entanglements that mark the history of science and continue to inform the ways in which science is invoked today. There is not, in our estimate, a ready set of approaches to these problems available at this point. To address this situation will involve forms of engagement with the roles of science and related knowledge practices, both historically and in our contemporary discourses, that move beyond merely reframing colonial cultural narratives of science, even while they recognize the ongoing impact of such narratives. Instead of a new master narrative of science, it will very likely prove more productive to give room to a plurality of angles that may, in aggregate, enable better ways of conceptualizing or operationalizing the polyvalence of science in a constitutively postcolonial modern world.

The Polyvalence of Science: 'Global Assemblage' and the 'Sign of Science'

Literary and cultural studies can make a significant contribution in this situation, we suggest, by promoting a differentiated and multi-perspectival engagement with the roles played by narratives, not simply in representing science but in promoting, legitimizing, and defining science. Engaging with the nexus between narrative and science means engaging both how science functions as a polyvalent signifier in literary, cultural, and public discourses and how narratives are used to produce and uphold cultural significations of science. In this context, we propose that it will be useful to distinguish at least three different meanings that the term 'science' can carry, each of which requires different forms of analysis and opens different spaces for intervention: science as a signifier of political and cultural authority; science as self-reflexive, open-ended process; and science as a complex, institutionally based, and institutionally regulated social practice.

To begin with, our engagement with previous critiques of the narrative of the 'spread of Western science' has focused on the use of science as a signifier of Western cultural and political authority (which is either bluntly rejected or rhetorically appropriated in its postcolonial reconfigurations). In the public debates surrounding these narratives and the conceptions of science they project, it is not specific scientific practices and institutions that are at stake, or the question of how these intersect with societal power structures, but a more reductive conception of science that claims to focus on science 'as such.' Gyan Prakash, already cited above, has called this rhetorical figure "the sign of science," by which he designates "science's cultural authority as the legitimating sign of rationality and progress" (1999, 7). Prakash elaborates:

> As such science means not only what scientists did but also what science stood for, the dazzling range of meanings and functions it represented. The rich and pervasive influence of science was rooted in its ambiguity as a sign—its ability to spill beyond its definition as a body of methods, practices, and experimental knowledge produced in the laboratory and confined only to the understanding of nature. (1999, 7)

Prakash's analysis focuses on the role of science in the emergent independent Indian nation-state, but his observation about the role of "the sign of science" as a source of social authority and political legitimacy could easily extend to any modern state. Science continues to be taken as a barometer of civilizational advancement, a central component of the

grand narrative of modernity. In the context of a modern state, a policy that is mandated by science is without alternative; to be against science is to be irrational, gullible, backwards, counterfactual, superstitious, or fundamentalist. If we follow Michel Foucault's analysis of the modern liberal state, science becomes one of the crucial sources of biopolitical legitimacy: inasmuch as the modern state claims to exist to foster life, science provides the knowledge that understands what 'needs to be done' to protect and foster life (see Foucault 1978; Lemke 2011). Consequently, even actors that reject or deny specific pieces of scientific knowledge often do so by claiming the authority of science for themselves while 'mainstream' science is portrayed as corrupted by sinister conspiratorial forces (see, for instance, Garrard et al.'s insightful analysis of the rhetoric of climate change sceptics [2019, esp. 207–24]).

That the sign of science is used to legitimate public policy as imperative is especially ironic because 'science' can also mean the exact opposite of such compelling certainty. In an idealized self-conception of science, which appears to be paradoxically implied in the sign of science, the suspension of absolute certainty—or "organized skepticism"—is part of what Robert K. Merton identified as the "ethos of science" (Merton 1979). In this view, science does not 'reveal' or 'uncover' previously hidden truths so much as it establishes hypotheses supported by data; hypotheses which are, in the final analysis, always preliminary and, at least potentially, subject to revision and correction. In other words,

> while many (or most) scientifically proven understandings about the world are solid enough to use as a basis for all kinds of acts of private and public decision-making, and most scientifically produced technologies are entirely safe to use both in everyday situations and in matters of life and death, they do not constitute anything other than a *moving consensus* among those scientists that are considered the most competent within a specific disciplinary field. (Hallonsten 2022, 294)

Of course, this is a normative ideal rather than a working description of actual scientific labour. Sociologists of science have pointed out that the work of actual scientists is guided by a much more complex web of norms and incentives—"organized skepticism," for instance, may often be countered by an "organized dogmatism," by which scientists are incentivized to defend theories and results that they have built their careers and professional reputations on (see Anderson et al. 2010).

Since the 1970s, the sociological and ethnographic study of science and scientific work in laboratories and other scientific settings has coalesced

into the field of science studies (see, for instance, Woolgar and Latour 1986; Latour 1987; Knorr Cetina 1999). For this approach, then, the term 'science' refers to a social practice conditioned by institutional constraints and economic incentives that condition what kind of research is funded, published, and rewarded with academic prestige and career advancement. These involve networks consisting of both human and non-human actors and revolve around processes of *construction*, *assembly*, and *negotiation*, rather than the *discovery* of scientific knowledge. This is not to say that scientific knowledge is arbitrary but, rather, that it emerges from a complex network of technical infrastructures and social interactions. Science studies also emphasized the impact that wider economic and political conditions, ideological frameworks, and cultural values have on research.

For a period peaking in the 1990s (the so-called 'science wars'; see *Lingua Franca* 2000), the emphasis on these aspects gave rise to accusations of cultural relativism and naïve constructivism that, so critics argued, undercut the authority of science and made science studies—and the wider humanities as a whole—an unwitting patsy for corporate polluters and politically motivated anti-science populism. Arguably, the debate was animated by a superficial reading of poststructuralist discourse and a hyperbolic conception of its reach. In reaction to the charges levelled during the science wars, Bruno Latour, one of science and technology studies' most prominent proponents, conceded that genuine critique should amount to more than mere deconstruction and should instead develop a panoramic view of the network of social and technological actors involved in the production of scientific knowledge (see Latour 2004). Moreover, recent upheavals within scientific disciplines—such as the replication crisis in psychology and various cases of scientific fraud—have led to a more open dialogue about the economic incentives and institutional context of scientific research within science itself. The rise of self-critical methodological reflection within science—known now as 'metascience'—and the push for more transparent and participatory research practices under the banner of 'open science' since the 2010s would seem to suggest the emergence of a more productive interface between actors within science and critical observers in the humanities and in the wider public (see, for instance, Dijstelbloem et al. 2013, 2014; de Knecht et al. 2021).

When we come across the term 'science,' then, any one or any combination of these different significations—science as sign of authority, science as idealized process, or science as institutionally based and regulated practice—may be in operation. We do not mean to imply that every narrative of science can be neatly categorized along these three usages, nor that they are necessarily the only meanings of the term science. Indeed, we will often

find that different significations are entangled in cultural articulations, because the term science may have a plurality of functions within any given cultural setting. But it will be helpful to bear this polyvalence in mind as we come to examine different constructions and different modes of invoking science in the context of literary and cultural narratives.

An understanding of science in postcolonial contexts that corresponds productively to the heterogeneity of elements and functions of science in a globalized world has been suggested by Stephen Collier and Ahiwa Ong (2005). Their proposition of understanding science as a 'global assemblage' offers a perspective on the constitutive tensions in science between a definitional claim to universality, i.e. independence from cultural specificities, on the one hand and its invariable institutional and geopolitical positionality on the other. Collier and Ong define assemblages as "ensembles of heterogeneous elements" (Collier and Ong 2005, 5). In this perspective, the dimension of 'universality' in science is manifested as "an 'immutable mobile,'" a term which they adopt from Latour and gloss as "a technoscientific form that can be decontextualized and recontextualized, abstracted, transported, and reterritorialized, and is designed to produce functionally comparable results in disparate domains" (11). In practice, however, they note that this "immutable mobile" only exists within the context of particular assemblages; these are "products of multiple determinations that are not reducible to a single logic," and they should not be conceptualized as fixed and monolithic but, rather, as "emergent," appearing in "forms that are shifting, in formation, or at stake" (12). As Ong goes on to point out in a subsequent study, the concept of 'assemblage' "challenges the STS [i.e., Science and Technology Studies] theory of a universal science that floats beyond local mediations" (Ong 2016, xiii). The term 'global assemblage' therefore "suggests inherent tensions: global implies broadly encompassing, seamless, and mobile; assemblage implies heterogeneous, contingent, unstable, partial, and situated" (Collier and Ong 2005, 12).

While the concept of a 'global assemblage' offers a plausible account of the plurality, diversity, and sometimes disparity of the significations of 'science' across the range of its discursive and 'real-world' articulations, we will want to recognize, too, that this (or indeed any other) conception of 'science' is not likely to be universally adopted. In fact, in discursive practice, we are also likely to encounter the wide range of different conceptual options designated as 'science' that we have gestured towards earlier in this section. And the stories we tell about science are liable to feed back into how scientific research is being done and how it is publicly perceived in any given context.

Intersecting Science, Narrative, and the Postcolonial

A critical practice that engages with the polyvalence and heterogeneity of 'science' and the polyvalence and diversity of 'narrative,' based on a recognition of the constitutive postcoloniality of modern societies, can both draw on and contribute to a range of research fields, each of which approaches the intersection of science, culture, and postcolonial narratives from different directions. We specifically see four distinct critical traditions and their respective critical vocabularies that can gain by a more extensive reflection on the intersections between science, culture, narrative, and the postcolonial, namely: postcolonial literary and cultural studies, literature and science studies, postcolonial science and technology studies, and ecocriticism. As this section will briefly outline, literature and science studies has only very recently begun to address questions of coloniality and postcoloniality and to broaden its Western-centred canon of primary texts. Postcolonial literary and cultural studies, meanwhile, will benefit from more differentiated engagements with the polyvalence of science in its readings of postcolonial literary and cultural narratives. It may, in the process, gain opportunities for a more extensive, complex, and productive dialogue with postcolonial science and technology studies—a field which has, to date, not widely engaged with the relevance of the medium of narrative both for the cultural and critical perception and conceptualization of science. Finally, environmental criticism, as a field in which science has long held a position of epistemological authority, may obtain a greater reflexivity relating to the complexities of the significance of science for its critical practice. At any rate, our hope is that this volume will contribute to a dialogue between these traditions that can not only draw on their respective critical insights but also enrich the critical discourse in each of them.

As we have noted, *literature and science studies* has very recently begun to expand its traditional focus on looking at literature in connection with the science of its time and looking at science through the lens of the literature of its time. Drawing on antecedents such as Svendsen (1956) and Nicolson (1962), literature and science studies came into its own in the 1980s, especially around landmark studies by Gillian Beer (1983) and George Levine (1988), both preoccupied with the relationship between nineteenth-century English literature and the emergence of Darwinism. Beyond the impact of Darwin's ideas on an explicitly thematic level, Beer and Levine stress common tropes and structures of thinking, a "mutuality of assumptions" (Levine 1988, 8) that link nineteenth-century literary and scientific writing. Rather than merely analysing the reception of scientific ideas in literature,

it has become a central tenet in literature and science studies that, at many points, "[t]he traffic [...] was two-way. Because of the shared discourse not only ideas but metaphors, myths, and narrative patterns could move rapidly and freely to and fro between scientists and non-scientists" (Beer 2000, 5). The field subsequently differentiated in two distinct clusters: a more theory-driven North American tradition, which often engages contemporary issues and texts, and a more historicist British tradition, which sought to place the traffic of ideas between science and literature in its specific historical context (Willis 2015, 3; Dawson 2006, 302).

While the intersections of narrative and science have thus formed a central concern in literature and science studies, the field has nevertheless been somewhat of a latecomer to the cultural turn. Both the British and the North American articulations of literature and science studies have maintained, well into the twenty-first century, a focus on Western narratives and 'Western science.' More recently, however, scholarship has begun to acknowledge the need to expand the canon of literature and science studies (see Gill 2018). Decolonizing literature and science studies thus not only entails a debate about what is studied but also how it is studied, and a genuine 'decolonization' of the field would have to go beyond a merely additive logic of including postcolonial texts. Literature and science studies stands to benefit from a stronger engagement with the conceptual tools of postcolonial criticism and theory, and the present volume thus seeks to make a contribution by encouraging a debate with postcolonial literary and cultural studies and working towards a postcolonial literature and science studies.

Postcolonial literary and cultural studies, in turn, stands to gain from a more extensive and reflexive engagement with the polyvalence of science in postcolonial contexts and, indeed, in contemporary criticism and theory. To the extent that the field has engaged the sciences, it has been predominantly focused on the connections between 'Western science' and the project of colonial and imperial expansion. Voices in the field have tended to position themselves in alignment with various forms of resistance to the claims for epistemic authority linked to the sciences—rather than exploring the polyvalence of science in postcolonial contexts.

A critical concern with the link between knowledge and imperial power goes back to foundational texts of postcolonial theory, such as Edward Said's *Orientalism,* which underlined how entangled the academic study of colonized spaces was with colonial fantasies. The politics of knowledge has thus always been a core concern in postcolonial theory, foregrounding how the surveilling, cartographing, and categorizing of colonial spaces and peoples conditioned and enabled their material subjugation and

exploitation. A principal area where postcolonial criticism engaged with science, then, was the way in which science was used to establish racial identities and hierarchies (see, for instance, Gates 1985; Gilroy 1993; Young 1995). More than a merely rhetorical invocation of science, late nineteenth- and early twentieth-century race science "was widely accepted among the scientists of its times," as Banu Subramaniam points out (2014, 4). The prominence and legitimacy of race science in its time highlights to what degree scientific thinking can be suffused with cultural preconceptions and stereotypes, despite its aspirations for universality and autonomy. It is thus not surprising that postcolonial literary and cultural studies has tended to position indigenous knowledge as a site of anti- and decolonial resistance.

By contrast, postcolonial studies has only far more recently begun to pay attention to science and technology as possible sites of appropriation and resistance. New interfaces have emerged between science and postcolonial literary and cultural production, and research on these has particularly focused on postcolonial science fiction, postcolonial speculative fiction, and Afrofuturist narratives. How 'scientific' science fiction actually is and whether the engagement with 'actual' science should be seen as a formative concern for the genre is an open debate within science fiction studies (see Bould 2012, 5–58). However, science and technology are central to the way in which the genre often re-stages and mythologizes the encounter between colonizer and colonized as antagonistic contest over who possesses the most powerful technologies. As John Rieder points out, "[t]he key element linking colonial ideology to science fiction's fascination with new technology is the new technology's scarcity. […] [T]he relevance of colonialism to stories about technology shows up in the social relations that form around the technology's uneven distribution" (Rieder 2008, 32). Postcolonial authors such as Nalo Hopkinson, Larissa Lai, and Nnedi Okorafor often displace this dynamic by playfully combining elements of science with African, Caribbean, and indigenous epistemologies (see Langer 2011, Kilgore 2014). As much as the genre responds to and rewrites the Western science fiction canon, postcolonial science fiction's generic roots may be equally found in magical realism and, ultimately, indigenous storytelling traditions. As Jessica Langer argues, the presence of mythological or 'magical' elements in these texts "open[s] the genre of SF to new dialectical possibilities, and, more importantly, acknowledge[s] and foreground[s] the disparate worldviews of colonized, formerly colonized and diasporic peoples, for many of whom science and spirituality are intertwined and inseparable" (Langer 2011, 129). Thus, in the hands of these authors, the genre is less an extrapolation of what a future world

could 'really' look like and more of an epistemological laboratory in which the supremacy of Euro-American conceptions of science and knowledge can be challenged.

In extending its critical engagement with the polyvalence of science beyond the field of postcolonial science fiction, postcolonial literary and cultural studies can benefit from a dialogue with *postcolonial science and technology studies*. However, while postcolonial science and technology studies offers detailed analyses of the social and institutional dynamics of knowledge production in colonial and postcolonial contexts, the role of narrative in debates about culture and science has rarely been made a focus of research, with issues of representation and narrativization only occasionally coming to the forefront of sociological research. Sheila Jasanoff and Sang-Hyun Kim's work on 'technoscientific imaginaries' stands out as a project that points in the direction of underlining the role of shared cultural imaginaries for shaping science and science policy (Jasanoff and Kim 2015). At the same time, more consistent engagement with literary and cultural studies might prove a fruitful direction for an interdisciplinary postcolonial studies that explores the significance of the intersections of literary, cultural, and science studies.

Indeed, a more determined critical reflection on the polyvalence of science in the context of *ecocriticism*, and specifically in postcolonial ecocritical debates and approaches, might align productively with the intersections of science and literary and cultural narratives. This is not only because many debates about science in postcolonial contexts involve an environmentalist component but also because environmental criticism has a long-standing special, but contradictory, relationship to science and scientific knowledge. The earliest articulations of ecocritical stances in the 1990s programmatically positioned themselves as an alternative to the perceived solipsism of postmodern literary criticism. The ecocritical focus on the cultural depiction of nature (a term that has only gradually come to be problematized) would seem to suggest a disciplinary proximity to the natural sciences, especially biology, ecology, and the environmental sciences. Inasmuch as ecocriticism regarded itself as an activist field that sought to mobilize literature and literary criticism to combat the ecological crisis, it drew on the natural sciences to define these problems (see Heise 1997, 2006). Given this, some ecocritics have suggested that the embrace of the natural sciences is almost a prerequisite for the field's interdisciplinary practice (see Love 1999a, 1999b), if not a panacea for the humanities as a whole (see Gras 2010).

But ecocriticism also carried from the beginning a deep suspicion that science was the source of environmental problems, not only as the source

of specific technologies detrimental to the environment but also through an atomizing, objectifying worldview. For many ecocritics, then, redress for the environmental crisis lay not in specific 'technofixes' but in dismantling "conceptual dichotomies that modernity, the Enlightenment, and science were thought to have imposed on Western culture—the separation of subject and object, body and environment, nature and culture" (Heise 2006, 506–7). The increasing engagement of the field with postcolonial contexts and questions of environmental justice in the 2000s have expanded the understanding of environment to encompass "the places in which we live, work, play and worship" (Adamson, Evans, and Stein 2002, 4), thus further relativizing—but not entirely displacing—the centrality of the sciences for defining the problems that environmental critics are interested in. Explorations of the connection of colonial power and environmental destruction in postcolonial ecocriticism often touch upon the multiple, often contradictory, roles of science (see, for instance, Alaimo 2010; Nixon 2011), but there is no systematic exploration of how science is represented in postcolonial environmental discourse.

The discussion of the concept of the Anthropocene within the humanities in the 2010s, pioneered by esteemed postcolonial historian Dipesh Chakrabarty (2009), has not defused this tension. On the one hand, the concept undermined the problematic distinction between nature and culture, and the earth sciences and the social sciences and humanities would be forced to reckon with each other in order to understand the irreversible planetary impact of global modernity. Confronting the *longue durée* of the current environmental crisis also poses a question of aesthetics—what forms of narrative can move beyond the individualism and anthropocentrism that has characterized much of canonical modern literature (Ghosh 2016)? However, the term has also generated considerable pushback, especially from scholars in postcolonial ecocriticism because it "risks concealing—historically and in the present—unequal human impacts, unequal human agency, and unequal human vulnerabilities" (Nixon 2018, 8). Characteristically, while such critiques point out the universalizing and depoliticizing tendencies of a merely scientific discourse about the Anthropocene, they do not so much dismiss scientific findings as they selectively marshal them for critiques of capitalism and imperialism. Thus, the debate has included a plethora of alternative names (Capitalocene, as in Moore 2015, or Plantationocene, as in Haraway 2015) and alternatives starting dates for the Anthropocene (see, for instance, Lewis and Maslin 2015 or Malm 2016). But the central tenet that global modernity has inaugurated a distinct era in the history of the planet finds wide acceptance among these critics. Perhaps the most far-reaching critique of the debate comes

from Kathryn Yusoff, who calls out the apocalypticism of the Anthropocene discourse for obscuring colonial histories in which such apocalyptic harms have already been visited on indigenous communities (2018, xiii). Moreover, Yusoff identifies geology itself as an epistemological paradigm of colonial modernity, which, she argues, categorizes both minerals and black bodies as passive matter awaiting extraction by white subjects (3). Against the background outlined in this brief survey, the current debates around the Anthropocene and its namesakes, which affect and involve all four research fields we have invoked in this section, emerge as another area in which the critical reflection on the complexities of the intersections between science, narrative, and the postcolonial is called for.

Survey of Contributions

The contributions gathered in this volume approach the interface of science and culture in postcolonial narratives predominantly from a background in literary and cultural studies. More specifically, our contributors come from the backgrounds of both literature and science studies and postcolonial literary studies, often with pronounced interest in postcolonial ecocriticism; and all come together in engaging, from different angles and with different degrees of explicitness, with the questions raised by postcolonial science and technology studies. What their contributions share is a focus on the negotiation of these questions within specific primary texts so that, taken together, they demonstrate the thematic and aesthetic range opened up by literary narratives engaging with the interface of science and culture in postcolonial contexts. We have deliberately chosen to avoid pigeonholing the contributions according to their sub-disciplinary profiles, choosing instead to cluster contributions according to the ways that they conceptualize and engage with the functions of narratives, across a broad range of primary texts and thematic interests.

The initial section of this volume reveals a spectrum of perspectives on the potentials and functions of narrative for understanding the role of science in postcolonial contexts; but more than that, the contributions also reflect and problematize the role of narrative at the intersection of culture and the sciences. On the one hand, narrative, including autoethnographic observation, has the potential to foreground and interrogate established disciplinary practices and challenge the conceptual division between the (objective, rational, and disinterested) investigating subject and the (objectified and contingent) object of science. As such, narrative would not only serve as a representational tool but as a form of theory-making that

can make the entanglements of science and power and connections between science and other forms of knowledge visible. At the same time, the contributions in the first section show the specific situatedness of narratives and certain narrative practices (such as eco-narratives) as well as the ambiguities, limitations, and risks associated with too indiscriminate and de-problematized conceptions of narrative. In this context, the disciplinary expertise of literary criticism can be utilized to differentiate and assess the forms and effects of different narratives and types of narratives, pointing out both what they make visible but also what they may obscure, and displaying the tensions and complications that may attend the specific instances of narrative practice.

Josie Gill's programmatic contribution, "Black Literature and Science in the Age of Coronavirus," takes the conjunction of the COVID-19 pandemic and the 'Colston Must Fall' protests in Bristol as an entry point for interrogating the role of literature and science studies and the medical humanities in the context of what we have termed the constitutive postcoloniality of modern societies. Both the uneven exposure of Black and minority health workers in the UK during the COVID-19 crisis and the entanglement of institutions of higher education in the UK and beyond with the transatlantic slave trade speak to an unacknowledged legacy of racism within 'modern science.' These continuities, Gill argues, not only call for an expansion of the canon of texts that literature and science studies investigates but necessitate a different methodology. Drawing on Katherine McKittrick's *Dear Science and Other Stories* (2021), Gill proposes a Black literature and science studies that rejects the dichotomy between the data-driven, quantitative logic of science and the narrative-driven discourse of humanities scholarship. Gill highlights the importance of storytelling for an interdisciplinary methodology that is attendant to "interdisciplinary tales that might otherwise pass us by, stories in which we, through our institutions, cities and communities, are deeply embedded" (in this volume).

Graham Huggan's contribution, "What's a Colony? Scattered Speculations on Invasion Science, Eco-Narrative, and the Misuses of Alien Species," offers an incisive analysis of the modalities and functions of eco-narrative in an interdisciplinary dialogue with the field of invasion biology. The discourse surrounding invasive species is not only, as Huggan points out, a "perilous" transfer of cultural terms into the realm of biology: as his analysis of the discourse surrounding the European spruce bark beetle shows, invasion biology raises deeply problematic questions about who defines species as 'native' or 'foreign.' It also points to the limits of environmentalist storytelling as a template for interspecies empathy, as Huggan shows in an analysis of Germaine Greer's memoir *White Beech*. Greer's

attempt to restore a piece of southern Queensland rainforest creates a double bind: constituting the forest as a refuge for endangered "native" species requires her intervention, which is framed in explicitly colonialist terms: hotspots of native biodiversity have to be "defended," races of indigenous plants have to be kept "pure." The interspecies sympathy that provides the ethical animus of Greer's text is thus, by necessity, limited to some species only. Huggan is careful not to frame this as a disqualifying aporia of Greer's text but, rather, as a paradigmatic example of the challenges that eco-narrative faces when confronting the complexities of real-world ecological challenges. Nevertheless, Huggan insists on the possibility of a productive dialogue between the humanities and the sciences and retains an optimistic outlook for the possibility of working towards common languages.

A similar concern about the role of eco-narrative in contemporary debates informs Dominic O'Key's contribution, "The Sixth Extinction and Postcolonial Literature: Dairy Production, Vulture Extinction, and Arundhati Roy's *The Ministry of Utmost Happiness*." The notion of a 'sixth extinction' posits that anthropogenic extinction has reached geo-historical levels on par, for instance, with the extinction of the dinosaurs. O'Key complicates this idea, highlighting the speculative dimensions of the conception without diminishing the seriousness of individual phenomena that are linked to it. O'Key's essay itself is structured along a narrative framing that makes his own position as author visible, a strategy he borrows from ethnographic approaches to extinction studies developed by scholars such as Thom van Dooren and Deborah Bird Rose. However, O'Key also cautions that extinction studies' conception of storytelling "risks uncritically privileging storytelling as a site of individual ethical development" and that "it leaves undertheorized the question of narrative itself as a fundamentally *literary* act." O'Key demonstrates this with an insightful reading of the way in which Arundhati Roy's *Ministry of Utmost Happiness* engages with the near-extinction of the white-backed vulture in India. Roy works the phenomenon—an unintended consequence of industrial dairy farming in India—into the novel's opening passage. While this would position the novel as an act of act of witnessing in line with the ethical commitments of extinction studies, O'Key's analysis also works out how ambivalent the novel is about the efficacy of storytelling as an ethical response. O'Key thus underlines a need to keep a differentiated and critical perspective on the different types and functions of narrative in the context of extinctions studies and of eco-narratives in general.

While the first section thus revolves around a problematization of the role of narrative in relation to science, the second section turns to narrative

representations of science in fiction and the way that texts engage with the geopolitical history and institutional reality of science in colonial and postcolonial contexts. The papers in this section build on the previous essays' concern with a multi-perspectival account of the potentials and limitations of narrative. All contributions, in their own way, are interested in how their primary texts undercut the seeming uniformity and cultural authority of 'the sign of science'—by introducing a historical perspective or through an ethnographic description of the institutional practice of science and the way that its global structures and universalist aspirations intersect with local structures of power. Despite the range of material, including both Western and postcolonial authors as well as contemporary and historical material, all of them taken together point the way to what an emerging field of postcolonial literature and science studies may look like.

Opening the section, Wolfgang Funk's contribution, "'They Were All Blondes': Intersections of Racism, Feminism and Eugenics in Mary Bradley Lane's *Mizora,*" introduces an important historical perspective on the function of speculative texts as epistemological laboratories. Lane's 1880 novel depicts an all-female utopia hidden within a hollow Earth, populated by blond "Aryans" who reproduce through parthenogenesis. Like Charlotte Perkins Gilman's more famous *Herland* (1915), *Mizora* belongs to a tradition of eugenicist thinking in late nineteenth- and early twentieth-century feminism whose progressive politics on gender and class seem difficult to square with its racist implications. *Mizora, Herland,* and eugenic feminism in general demonstrate how the emancipatory potential of science in Western societies could be simultaneously entangled with an imperial politics of race; the novel thus questions the dichotomy of viewing science either as the instrument of repression or as an inherently progressive, emancipatory force. While *Mizora* seems to suggest the desirability of its all-blonde society by invoking the narrative template of the utopian novel, Funk demonstrates that the novel's ambiguous ending opens a critical perspective on the politics of eugenic purity that is missing from its more famous spiritual successor *Herland*.

Anton Kirchhofer's essay, "Beyond the Cultural Stereotyping of Science: Michael Ondaatje's *Anil's Ghost* and the Postcolonial Science Novel," explores the contribution which postcolonial fiction may make to critiquing, shaping, and revising the cultural narratives about science and related knowledge practices in diverse geopolitical settings. It shows how postcolonial fiction can take the narrative representation of science and related knowledge practices beyond the cultural stereotyping whose formative influence has by no means been completely superseded in popular perceptions and even critical accounts of the cultural place of science.

Set against the background of a spectrum of Anglo-American and South Asian 'science novels,' and drawing on Ong's concepts of 'science as global assemblage' and 'Euro-American cosmopolitan science,' the essay offers a detailed reading of science and related knowledge practices in Michael Ondaatje's *Anil's Ghost*. The essay specifically highlights three related textual strategies that inform the dynamics of plot, character constellations, and narration and make *Anil's Ghost* stand out among postcolonial science novels: the detail and intensity with which the novel works to establish and profile an alternative, culturally and geopolitically sensitive, perspective on science.

Karsten Levihn-Kutzler's contribution, "Entangled Modernities and Locations of Knowledge in Amitav Ghosh's Science Novels," finds similar dynamics in his reading of Amitav Ghosh's novels *The Hungry Tide* and *The Calcutta Chromosome*. Both initially seem to suggest an encounter between science and other, indigenous, knowledge systems in rather straightforward, if not antagonistic terms only to then subvert stereotypical constructions of 'native informants' and simplistic assumptions about 'indigenous knowledge.' In *The Hungry Tide*, a Western-trained marine biologist relies on the local knowledge of an illiterate fisherman who, it turns out, is not a font of traditional local knowledge but a patient, scientifically precise observer. In *The Calcutta Chromosome*, a cult-like conspiracy is secretly manipulating colonial medical research to their ends, but rather than being stalwarts of some ancient occult knowledge, these "counter-scientists" are a thoroughly modern force working within and through modern science and technology. Both novels, however, seem to struggle with the question of how such knowledge practices can be articulated within the form of the anglophone novel. In *The Hungry Tide*, the native informant's knowledge is ultimately assimilated by the global science system, while in *The Calcutta Chromosome*, the counter-scientists remain outside the system as a menacing, but silent, spectre.

Fabian Hempel and Krutika Patri's contribution, "Resentment from Below: Manu Joseph's *Serious Men* as a Subaltern Prism on Indian Modernity," represents a genuinely interdisciplinary endeavour at the interface of literary studies and sociology. Joseph's novel portrays how different actors within an elite Indian research institute jockey for position, including a Dalit assistant, who tries to place his son in the institute, and a female researcher struggling against her colleagues' entrenched sexism. Hempel and Patri leverage Joseph's novel to explore how gender inequalities and caste hierarchies persist within institutionalized science in contemporary India, despite science's professed egalitarian ethos and official efforts to promote scheduled castes. Perhaps counterintuitively, the novel's satirical

edge helps the authors in this sociological reading because the exaggerated characterization of individual actors positions them as paradigmatic stand-ins for larger ideological and institutional forces within the Indian science system. The purported autonomy and meritocracy of scientific institutions, the novel suggests, provides a cover for persistent racist, casteist, and sexist structures of exclusion. The novel's marginalized subjects can gain or maintain access to the institutional spaces of Indian science only by leveraging its internal rivalries, thus exploiting the system without ultimately questioning its exclusionary structures.

In her contribution, "'Our Doing and Undoing': Anthropological Encounters and the Cultural Limits of Narrative in Lily King's *Euphoria*," Anna Auguscik explores the use of literary narrative for a critical engagement with the disciplinary history of ethnography. King's novel explores the professional and romantic dynamics between fictionalized versions of the historical anthropologists Margaret Mead, Reo Fortune, and Gregory Bateson whilst in the field in New Guinea, a pivotal moment in the development of the discipline from an objectivist colonial science towards a more interpretative, dialogic practice. The novel makes clear that the ethnographic encounter remains one-sided and potentially exploitative nonetheless and highlights how ethnographic research can be used against its subjects by imperial power. Yet the novel itself remains ultimately one-sided, too; its gaze is directed inwards, with the romantic and psychological foibles of the central *ménage à trois* taking centre stage; moments of irritation in which indigenous people gaze back at the protagonists are quickly streamlined back into a romance plot presumably more attractive in a global commercial book market.

While the novels analysed in the second section might all be said to have an analytical angle on the role of science in colonial and postcolonial cultures, the narratives that the contributions in the third and final section of this volume engage with are more exploratory in nature. The novels under scrutiny in Part 2 deal with science in specific institutional or historical settings that allow for the possibility of an analytical perspective from the outside looking in. The texts considered in the following contributions, however, portray worlds so completely suffused with science that there is no outside that offers a stable vantage point of critique. In other words, whereas the previous section highlighted that there is no science outside culture, the following section explores what it means when there is no culture outside science. The vexed position of science in postcolonial societies makes this ubiquity an extremely ambivalent prospect: on the one hand, these texts depict bodies and environments permanently transfigured by colonial and neocolonial technologies; on the other hand,

science and technology also offer the potential for appropriation and resistance. A preponderance of the contributions in the following section deals with speculative scenarios, but some address issues that are very much present-day realities, such as climate change or global commercialized surrogacy. Yet even where these texts speak to past or present realities, they engage with scenarios that undermine fundamental tenets of the modern novel, such as the integrity of the human self and the distinction between self and environment or between a natural and a human-made sphere; thus, all of them are, in one way or another, exploring how new kinds of narrative can help us understand a post-natural and post-human world.

Kanak Yadav's contribution, "Writing the 'Terrestrial': Shubhangi Swarup's *Latitudes of Longing* and the Postcolonial Environment," draws on Amitav Ghosh's assertion that the conventional realist novel is unable to address climate change and the Anthropocene due to its focus on individual human agency and localized setting. By contrast, *Latitudes of Longing* connects stories across vast distances, programmatically disregarding political borders and focusing instead on geological ones: its four constituent parts, which are set on the Andaman Islands and in Myanmar, Nepal, and Kashmir, respectively, are connected by the margin of the Indian tectonic plate. The novel intertwines the fate of its human characters with geological forces and non-human entities, which Yadav describes with Bruno Latour's notion of the terrestrial. However, while the novel uses geological knowledge as its structuring principle, it also draws out the limitations of Western geological knowledge by depicting 'nature' not as an inanimate environment but as a set of active forces that the novel's protagonists have to confront and that is best comprehended though other forms and sites of knowledge. The novel thus employs narrative techniques and specific character constellations in order to juxtapose different orders of knowledge and to reposition these within a reconceptualized relationship of humans and the non-human environment.

In their contribution, "Scientists and Their Discoveries: A Postcolonial Reading of Ted Chiang's Science Fiction," Victoria Herche and David Kern demonstrate how Chiang refracts the colonialist implications of science fiction's genre tropes. Science fiction's traditional rhetoric of scientific 'progress,' 'discovery,' and new 'frontiers,' they argue, betrays a "colonial, Eurocentric fantasy of advancement, progress, development, and imperial appropriation." Herche and Kern demonstrate how Chiang's short stories "Exhalation" and "Story of Your Life" fold this rhetoric of historical and spatial advancement in on itself: in "Exhalation," it is not a new frontier in a munificent, exploitable universe that is discovered; instead, the protagonist comes to understand that they live in a finite universe in which

every action, including the protagonists' own scientific pursuits, bring the universe closer to a final, entropic equilibrium. The only object worth investigating in this context seems to be the protagonist itself, so that science becomes a "solipsistic periscope." "Story of Your Life," meanwhile, reworks the colonial trope of the first-contact narrative. Normally conceived as an antagonistic confrontation of an "advanced" and a "primitive" culture (see Rieder 2008, 5–6), Chiang's contact narrative abrogates the notion of historical progression itself. "Against the linearity of discovery," Herche and Kern conclude, Chiang's stories "privilege circularity and illuminate the inescapability of subjectivity at the heart of scientific inquiry."

Alessandra Boller's contribution, "'I'm a Patented New Fucking Life Form': Scientific Knowledge-Making Practices and Practices of Knowing in Larissa Lai's Ustopian Fiction," also traces the juxtaposition of different forms of knowing in speculative texts. Looking at Lai's novels *The Tiger Flu* (2018) and *Salt Fish Girl* (2002), Boller shows how Lai juxtaposes the abstract, objectifying production of knowledge and embodied practices of knowing. The former lends the texts a distinctly dystopian quality, as scientific practice is used for biocolonialist and biocapitalist projects that commodify the human body and mind; the latter offers utopian possibilities by imagining communal forms of knowledge production and dissemination and alternative forms of reproduction outside of patriarchal and biocapitalist control.

Christina Slopek-Hauff's contribution, "Specious Species Taxonomies: Porosity and Interspecies Constellations in Nalo Hopkinson's *Midnight Robber*," explores the uses of postcolonial science fiction—especially Afrofuturist narrative—to renegotiate black subjectivity beyond the dichotomy of human and non-human. This might seem a counterintuitive interest at a time when global debates about decolonization and institutional racism have foregrounded the struggle of black and indigenous people to claim equal humanity, i.e. recognition as full legal and political subjects. But as Kathryn Yusoff has recently argued, "the inhuman" is not an antonym of the human, nor its historical antecedent; the non-human is a "subcategory" of the human and "historically relational to a discourse of settler-colonial rights and the material practices of extraction" (2018, 2). Speculative narrative thus provides a space in which Black people do not need to be rescued from a state of primordial rightlessness by the march of progress, only to be opposed to an inanimate, exploitable environment. Instead, the intimate connections with technological entities and non-human species portrayed in *Midnight Robber* suggest a taxonomic porosity in which the distinction between human subjecthood and non-human environment is blurred. Hopkinson's protagonist is initiated into this 'porous' multispecies

community through a process reminiscent of the Bildungsroman, a generic tradition whose anthropocentric, individualist connotation may ultimately undermine the novel's emancipatory stance: the novel ends, as Slopek-Hauff points out, with the reconstitution of a human nuclear family.

Rounding off the volume, Julia Wurr's contribution, "Reproducing Inequality: Commercial Surrogacy in Joanne Ramos' *The Farm*," returns us once more to the question of 'unnatural' reproduction as an intersection of science with hierarchies of race and class. Ramos portrays a just-around-the-corner society in which female reproductive capacities are commercialized through surrogacy, stratified according to racist criteria, and intensely monitored through the application of medical technology. Surrogacy thus takes on a distinctively dystopian guise in *The Farm*, which Ramos contrasts with evocations of 'natural' motherhood. Wurr rightly calls out this simplistic dichotomy, but precisely because the novel paints the opposition of 'natural' and 'unnatural' forms of reproduction with such broad brushstrokes, it can help to better understand the blind spots of wider debates about surrogacy and the exploitation of racialized women's bodies within a commodified global surrogacy industry. Despite the novel's speculative setting, it ultimately cannot look beyond the limitations of these debates, Wurr argues, because it remains entangled in what she calls, with Mark Fischer, "capitalist realism." Within the ideological conventions of a globalized economy, any non-commercialized, oppositional, or emancipatory use of reproductive technology is unthinkable. Like the protagonists in Manu Joseph's *Serious Men*, Ramos' characters must acquiesce to exploitative structures of power that determine who has access to scientific knowledge and the ability to utilize it to their advantage.

ORCID®
Anton Kirchhofer https://orcid.org/0000-0003-3375-3642
Karsten Levihn-Kutzler https://orcid.org/0000-0001-9203-3915

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