

Postcolonial technoscience revisited

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journals.sagepub.com/home/sss**Cameron Hu** 

Abstract

What does a postcolonial inquiry into technoscience do? And what is it for? I develop these questions by reconsidering one powerful idea: that science and technology studies (STS) is postcolonial when it elucidates the hybridity, heterogeneity, and indeterminacy of global technoscientific formations, and does so to falsify colonial fantasies of hegemony expressed in imperious conceptual generalities and sovereign universalisms. Revisiting Warwick Anderson's expositions of postcolonial STS—initiated in this journal two decades ago—I reflect on the form and force of this critical operation. Despite an animating aversion to universalisms, the pursuit of hybridity and heterogeneity may ultimately universalize a liberal metaphysics of agency. This paradox suggests limits to the critical operation that pits hybridity and indeterminacy against hegemony in a postcolonial spirit.

Keywords

postcolonialism, critical theory, hybridity, indeterminacy, agency

This essay raises questions about the means and ends of postcolonial STS. What does a postcolonial inquiry into technoscience *do*—and what is it *for*?

Scholars are currently thinking hard about metatheoretical and methodological questions in the social study of science and colonialism (e.g. Liboiron, 2021; Lowe & Manjapra, 2019; Lyons et al., 2017; Seth, 2017; Subramaniam et al., 2016). The means and ends of our inquiries are up for debate. Postcolonial traditions of science critique today encounter related but non-identical decolonial traditions, and as they cross paths their distinctive political horizons, theoretical lineages, conceptual

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vocabularies, and anchorages in geopolitical space and time come into sharp relief.¹ It is perhaps a consequence of this encounter of the postcolonial and decolonial that the question of what it means to theorize technoscience and empire today feels wide open. I see little point in contriving a pitched battle between such approaches. But perhaps redoubled concern for problems of technoscience and empire invites the application of STS scholars' well-honed reflexivity to our own analytical practices. It is a good time to think through our conventions for critical inquiry into (post)coloniality and technoscience: the sensibilities they express, the circumstances in which they congealed, their urgencies, their presuppositions, their satisfactions, their entailments, and their inevitable constraints.

In this essay, my aim is to think through one move often made in a postcolonial mood. I want to revisit the critical operation that addresses the postcolonial present by elucidating the hybridity, heterogeneity, and indeterminacy of global technoscience—an operation repeatedly thematized by Anderson (2002, 2009a, 2009b, 2012; 2015, 2017, 2020; Anderson & Adams, 2008; Prasad & Anderson, 2017). Considering his account, I ask: How has the illustration of heterogeneity, hybridity, and indeterminacy come to seem indispensable to critical investigations of empire and technoscience? What picture of the political present does this operation target?² Under what conditions, and with what consequences, has this operation been meaningful to scholars? Does it remain meaningful today?

Anderson has energetically labored to define the project of postcolonial STS. Beginning with his introduction to a 2002 special issue of *Social Studies of Science*—titled *Postcolonial Technoscience*³—Anderson has periodically scanned the field to nominate the signature texts, tendencies, and possibilities of postcolonial STS, offering one image of what we do when we do postcolonial STS, where we come from, and where we might go. Anderson has continuously articulated the enterprise of postcolonial STS as one of elucidating the hybridity and heterogeneity of global technoscience in a world disfigured by Euro-American empire.

Consider the first paragraph of Anderson's entry on 'Postcolonial science studies', from the 2015 edition of the *International Encyclopedia of the Social and Behavioral Sciences*:

Since the late 1980s, some postcolonial attitudes, or at least postcolonial premises, have slowly worked their way into science and technology studies, though *their presence often is hidden or even denied*. Studies that contest European and North American hegemony in science, situating and thereby *dismantling global or universal claims*, represent what might be called the postcolonial turn. Recognition of creditable knowledge making beyond North Atlantic shores constitutes a postcolonial approach. *So too does the emphasis on hybridity, heterogeneity, and indeterminacy in what once appeared to be sovereign, uncontaminated categories*. A postcolonial orientation directs attention to the complexities of relations in any contact zone. It re-examines the terrain that empire has tilled across the world, *showing that dominance is never absolute*—that imperial or authoritative knowledge, despite colonial fantasy and amour propre, *must always adapt to local conditions, mix with other traditions, and incorporate difference*. In this sense, the argument that we have never truly been modern (Latour, 1993) is implicitly postcolonial. Thus *an analysis that deconstructs imperial binaries* such as nature–culture, modern–traditional, global–local builds on a postcolonial, or decolonizing, platform. Even if

explicit recourse to postcolonial theory remains rare in science and technology studies, a postcolonial sensibility has infiltrated its critical scholarship. (Anderson, 2015, p. 652, emphasis added)

This is not, I believe, an idiosyncratic series of claims. The aversions Anderson specifies are basic aversions into which I was trained. Equally familiar are the operations that Anderson identifies for undermining and supplanting imperial thought of a binaristic bent, which remain powerful strategies in the critical STS repertoire. I do not anticipate that readers will find them strange.

The operation connects a particular diagnosis of the imperial condition to a particular practice of inquiry aimed at undermining the imperial ideological surround. Its logic goes roughly as follows: It is characteristic of imperial thought to project 'sovereign, uncontaminated' categories onto a complex world in service of a fantasy of absolute dominance that is necessarily unrealized. In response, the insurgency of postcolonial STS is to produce ethnographies and histories that elaborate technoscience's irreducible complex hybridity and heterogeneity, subverting the ideological self-description of imperial reason that arrogates the universal to itself.⁴

Anderson's account does not, of course, exhaust the whole enterprise of postcolonial STS to date. There are other important programmatic discussions and critical surveys (e.g. Harding, 2008, 2011; McNeil, 2005; Seth, 2009; Subramaniam et al., 2016). Further and distinctive conceptions of postcolonial science critique are implied in particular works of ethnography, history, and theory (see Fortun, 2001; Petersen, 2014; Subramaniam, 2019; Sunder Rajan, 2021). I take Anderson's writings not as authoritative or straightforwardly generalizable but rather as exemplary, as useful to think with and against. As a sustained effort to thematize the project of postcolonial STS across two decades, they supply a valuable example with which to reflect upon the conceptual attitudes that shape how we do and do not undertake the study of technoscience in a world of empire.

In what follows, I ask if this particular conceptual operation, in which the 'colonial' is 'deconstructed as a site of contestation, difference, and unstable hybridity', remains the operation most worth advancing (Anderson, 2015, p. 652). Does it still amount to a salient postcolonial operation in the present? Must subversive inquiry forever address itself to an imperial fantasy of absolute dominance? Is it necessarily urgent to falsify 'sovereign, uncontaminated' categories through empirical assertions of 'hybridity'? What are these operations *for*?

I will develop these questions as I reconstruct the operation that posits hybrid, heterogeneous, and indeterminate reality against imperious conceptual over-generality. Focusing on Anderson's accounts of postcolonial technoscience, I observe that preoccupation with hybridity fashions postcolonial STS after a single tendency in the broad field of postcolonial thought, one exemplified in Homi Bhabha's writings.

This operation has significant critical-political force: It asserts the ineluctable *agency* of colonial and postcolonial subjects in other terms. Yet we should find it strange, I suggest, that a critical operation designed to subvert imperious Euro-American universalisms projects the provincial liberal category of 'agency'. I propose we should examine the power of this operation in relation to a recent geopolitical moment. It confronted a post-Cold War ideological milieu in which US empire spun a totalizing story of a whole

planet assimilated into the benevolent ‘flatness’ of world markets, and of the ‘end of history’ spreading uninterrupted from its Euro-American birthplace to former colonies. Yet the geopolitical present may contain rather different predicaments. We may wonder if the elaboration of hybridity, heterogeneity, and indeterminacy remains so subversive. And we may wonder, in turn, how our studies of technoscience and empire might yet illuminate the postcolonial present if we relaxed a habituated aversion to talk of hegemony and determinism.

Even if this operation does, in the end, seem indispensable, it is still good to think about how it has come to seem that way, and what finite satisfactions it provides. As Anderson (2015) observes, a ‘hidden’ postcolonial sensibility has ‘infiltrated’ STS, even if many of the field’s scholars proceed unaware of the broader tradition of postcolonial criticism (p. 652). There is a serious hazard here: We might naturalize critical operations without knowing the specific questions to which those operations supplied an answer, and so without the conceptual resources to evaluate whether those operations remain salient for the (post)colonial present. It is in this way that programs of subversive critique sometimes harden into a methodical enterprise purveying precisely the sort of ‘global or universal claims’ that scholars would abjure. ‘There is’, Fanon (1952/2008, p. 5) wrote, ‘a point at which methods devour themselves’.

Homogeneously heterogeneous

‘The “postcolonial”’, Anderson (2002) writes, ‘does not imply the end of colonialism; rather, it signals a critical engagement with the present effects—intellectual and social—of centuries of “European expansion”, on former colonies and on their colonizers’ (p. 644). My interest is in what follows from this premise. ‘Postcolonial analysis’, Anderson continues, ‘thus offers us a chance of disconcerting conventional accounts of so-called “global” technoscience, revealing and complicating durable dichotomies, produced under colonial regimes, which underpin many of its practices and hegemonic claims.’ Facing the historical present of North Atlantic imperialism, Anderson recommends, quoting Akhil Gupta, that STS attend to ‘the complex border zone of hybridity and impurity’. Such attention can reduce colonialist ‘dichotomies’ and ‘hegemonic claims’ to their proper size.

From a complex field of argumentation, Anderson distills a very specific lesson for STS. His survey consistently esteems writers who assert the heterogeneity and hybridity emerging from particular colonial encounters—and who do so as a rejoinder to *other* postcolonial and anticolonial thinkers they see as overestimating the univocality of colonial knowledge and power, inadvertently reinforcing a colonial worldview. ‘Hybridity’ is the banner of just one of a variety of argumentative possibilities in the multifarious tradition of postcolonial criticism. But in the course of Anderson’s distillation for STS readers, and in his subsequent reflections, hybridity emerges as the final meaning of the postcolonial.

Postcolonial Technoscience establishes a pattern. Anderson stages several disagreements between postcolonial scholars, and each time suggests a winner, the relevant exemplar for STS. He begins with Said’s (1978) *Orientalism*, a founding document of academic postcolonial thought. *Orientalism* probed the construction of the ‘East’ as an

object of European imperial knowledge and power. *Orientalism*'s contribution was to draw scholars to the epistemic dimensions of colonialism, for it showed, Anderson (2002) notes, how 'apparently objective Western knowledge was complicit in colonial power relations' (p. 646). Yet, 'Homi Bhabha and other critics of Said', Anderson continues, 'have argued that [Said] too readily asserts the hegemony of colonial discourse.' Anderson notes with approval that Bhabha's literary analyses emphasize not univocality of colonial discourse, but rather an 'ambivalence or hybridity that is accentuated with culture contact and mimetic performance in a colonial setting'.

Anderson identifies a fundamental opposition of 'hegemony' (Said) with 'hybridity' (Bhabha). A few paragraphs down, Anderson discovers an isomorphic division between literary theorists and social scientists. 'Anthropologists and historians who study colonial cultures', he writes, 'recently have criticized the reductiveness and homogenization that are evident in much postcolonial theory' (Anderson, 2002, p. 647). Instead of generalizing about colonialism as a self-coherent totality, these social scientists invite us to 'fracture presumed authenticities, destabilize imperial and colonial categories, and reconstitute encounters through the concentrated examination of particular historical, political and cultural contexts'. Bhabha's 'hybridity' prevailed over Said's 'hegemony', and now, in the manner of fractals, ethnographic and historiographic particularity prevails over so much broad-strokes theorizing about 'presumed authenticities'. The idea is that theoretical generalization about colonial power affirms 'colonial categories' (Anderson, 2002, p. 647) whereas particular empirical studies can 'destabilize' them.

Anderson also criticizes Harding's vision of postcolonial STS, aimed, in Anderson's (2002) rendering, at 'the strengthening of modern scientific objectivity' (p. 650). This sort of approach risks, as Anderson cites Cohen (1994, p. 35), the 'mapping of difference onto an underlying hegemony'. Anderson contrasts Harding's work unfavorably with that of Nandy and other postcolonial scholars whose work reveals the 'heterogeneity and messiness of technosciences and their attendant "modernities"'. Anderson's (2002) survey of writings on 'multiple modernities' concludes by declaring victory once more for the hybrid over the singular: 'hybrid or incomplete modernities are reticulated everywhere, and no pure source can be found' (p. 650).

'Reticulated everywhere': Note the singularity and universalism of this striking pronouncement. Anderson's survey throws STS's lot together with a single metatheoretical tendency in the wide field of postcolonial argumentation. However, 'hybridity', like the aversion to 'conceptual binaries', does not exhaust the postcolonial field. It is the index of just one postcolonial position that has vied with others. I do not observe this in order to accuse Anderson of oversight. Rather, if we grasp that 'hybridity' marks out just one (provincial, contingent, and situated) possibility for postcolonial criticism, then we may evaluate its particular interpretation of the postcolonial predicament, and the operations of postcolonial STS that it sets in motion.

STS scholars, usually committed to elucidating the context-specific historicity and contingency of any mode of inquiry, may enjoy examining a foundational articulation of 'hybridity' in postcolonial theory: Bhabha's critique of Said's *Orientalism*. If we pursue hybridity in a postcolonial mood, Bhabha's critique arguably set that pursuit afoot. A return to that moment can put our own postcolonial operations in new perspective. And

if we find Bhabha's critique unsatisfactory, then we may have reason to reflect on the satisfactions of what we do.

A few years after Said's *Orientalism* probed the discursive construction of the 'Orient', Bhabha (1983) raised a basic objection in a now-famous essay, 'The other question...'. Bhabha concedes Said's premise that stereotype (generalization about the colonized) was the 'major discursive strategy' (p. 18) of colonial knowledge/power, and therefore a primary target for postcolonial critique. Bhabha's complaint was this:

There is always, in Said, the suggestion that colonial power and discourse is possessed entirely by the colonizer, which is a historical and theoretical simplification. The terms in which Said's *Orientalism* is unified—the intentionality and unidirectionality of colonial power—also unify the subject of colonial enunciation. (Bhabha, 1983, p. 25)

Bhabha charges Said with a fundamental mistake. *Orientalism*, he protests, presupposes that imperial discourse about the 'East' is self-possessed and fully coherent. To Bhabha, *Orientalism* reads as if Europe projects its stereotypes onto Asia without encountering any friction or resistance, and that the meanings of its stereotypes remain self-consistent as they are deployed at different times and spaces, in the metropole or the colony, no matter whose mouths and pens articulate them. Bhabha worries that Said has therefore reified the dualism of 'colonizer' and 'colonized', of subject and object of imperial power—and that in consequence, Said has doubled down on binaristic thought-forms characteristic of colonialism.

The point is that colonial power 'produces conceptual and ideological divisions', and 'to reproduce them in the name of criticism is not only misguided but indeed complicit with that power' (Scott, 2005, p. 395). Bhabha implies that Said entrenches the basic logic of colonial stereotyping as he moves to identify and critique particular colonialist stereotypes. By contrast, Bhabha's (1994) *The Location of Culture* develops the position that effective critique 'overcomes the given grounds of opposition and opens up a place of translation: a place of hybridity, figuratively speaking, where the construction of a political object that is new, *neither the one nor the other*, properly alienates our political expectations' (p. 25).

Bhabha's critique of Said shifts the object of postcolonial criticism up a level of abstraction. Hereafter 'colonial' epistemology will be epitomized not by the particular concepts projected onto the colonized by colonizers, as Said construed it, but by essentialist generalization in general, and not least by putative essentialisms like 'colonized' and 'colonizer'. Bhabha invites readers to see colonial stereotyping and Said's critical analysis of colonial stereotyping as being of a single kind: Both misrecognize complex political realities and obstruct political possibilities when they imprison the inevitable heterogeneity and hybridity of political life in static conceptual generalities.

In this argument, a now-familiar research program may be seen finding its form. Bhabha's objection to *Orientalism* models a critical operation that scholars in the humanities and social sciences—not least in STS—have found attractive and practicable. The postcolonial critic acknowledges instances of hybridity and heterogeneity; in acknowledging them, the postcolonial critic releases the complex historical entanglements of heterogeneous beings from the prison of binaristic categorical reason, a

prison built by colonial power and inadvertently burnished by anticolonial thought in its essentialist mode.

I draw attention to this moment because it helps us explore tacit commitments underlying the deployment of hybridity and similar concepts in postcolonial STS. First, we might see ourselves automatically conceding the same premise that Bhabha concedes to Said: The issue of stereotypical representation is *of course* a matter of fundamental interest for postcolonial criticism. But should we concede this? As Asad noted in his early and otherwise favorable review of *Orientalism*: ‘One might want to disagree with what Said sometimes identifies as the source of orientalism’s distorting authority—the employment of general categories which distort the human particular’ (Asad, 1980, p. 648). It is not at all self-evident, Asad implied, that these issues of representation, stereotype, and over-generalization *should* control the practice of critical social inquiry into colonialism past and present. A few decades later, Scott (2005) would raise resonant doubts that postcolonial critique meets the demands of its day through an orthodox anti-essentialism always dismayed to discover that prior anti-colonial thinkers have been ‘unaccountably naive or ignorant of ambiguities, contingencies, hybridities, and other such subtleties commended by the social constructionist’ (p. 397). There is no consensus among such practitioners and fellow-travelers of postcolonial theory that the debate about representation and stereotype modeled in Bhabha’s complaint against Said—a debate from which hybridity emerges as a conceptual solution—is important, or even coherent. The assertion of hybridity, heterogeneity, and indeterminacy responds to a problem that not everyone with a ‘postcolonial sensibility’ (Anderson, 2015, p. 652) takes as primary. In view of this, STS scholars may wonder what other conceptions of the postcolonial predicament they overlook, what other postcolonial questions go necessarily unaddressed or forgotten, if they commit to the illustration of hybridity and indeterminacy as the task of postcolonial inquiry into technoscience.

Furthermore, in Bhabha’s critique we can see how hybridity arises as a response to the problem of ‘sovereign, uncontaminated categories’ (Anderson, 2015, p. 652). Consider how Bhabha motivates his critique of Said. When Bhabha resists Said’s assumption of the ‘intentionality and unidirectionality’ of colonial discourse, he is accusing Said of something rather like a *scientific mistake* with inadvertent political consequences. Bhabha thinks Said has made an error about the fundamental nature of language. For it is, Bhabha (1994) writes in *The Location of Culture*, in the structure of symbolic representation itself that ‘meaning is never simply mimetic and transparent’ (p. 36), that signs and whatever they signify are continuously disconnected and connected anew by the irreducible contingency that attends their every deployment. The very nature of human language, Bhabha (1994) suggests, ‘ensure[s] that the meaning and symbols of culture have no primordial unity or fixity; that even the same signs can be appropriated, translated, re-historicized and read anew’ (p. 37).

For Bhabha, it is this final universal truth of language that Said has apparently failed to grasp which, as if by logical necessity, falsifies the presumptive ‘intentionality and unidirectionality’ of colonial discourse, and which guarantees that to speak in broad strokes about colonial knowledge/power is to suppress hybridity—on the premise that hybridity necessarily arises from the universal structure of human communication. Bhabha recruits Fanon to this argument, and in doing so squeezes a positive theory of

political agency from a universe of hybridities, itself arising inevitably from the determinate indeterminacy of all signs. 'For Fanon,' Bhabha (1994) writes, 'the liberatory people who initiate the productive instability of revolutionary culture are themselves the bearers of a hybrid identity', as they turn 'the meanings of the colonial inheritance into the liberatory signs of a free people of the future' (p. 38).

Language, Bhabha allows, connects words and meanings. Bhabha worries that Said has presumed the fixity of those connections, and in doing so suppressed the inevitable dynamism, contingency, and ambivalence of all communicative activity. In this way, Said has inadvertently trapped the colonized in the same vise devised by the colonist that denies the potential generativity of all contact zones, the continuous refashioning of meanings that makes the colonized active agents in a hybrid universe rather than passive objects of a 'sovereign, uncontaminated' (Anderson, 2015, p. 652) binaristic discourse. A scientific error about language results in a political mistake about the possibilities of liberation. This mistake will be corrected, and the possibilities for liberation widened, by the acknowledgment and elaboration of hybridity.

STS scholars, with their finely-honed circumspection of political claims made on the unexamined moral authority of science, may want to hesitate here. Has Said failed because he failed to internalize a poststructuralist picture of communication—as if that were the final word in a progressively improving positive science of language?

Looking from Bhabha to Anderson, we can see a pattern of argument traveling across traditions of postcolonial theory and STS, accumulating new political force as it moves. Meaning is *unstable*. One line of postcolonial critics asserts on this basis that colonial domination is *always incomplete*. And in postcolonial STS, scholars in turn advance an empirical operation that demonstrates how global technoscience is *purely hybrid, homogeneously heterogeneous*.

From a distance, 'hybridity' seems to name a liberatory anti-essentialism reasonably pitted against pernicious colonial essentialism. But on closer examination, when we see hybridity brandishing its own universalist scientific conception of language and politics, this all looks rather weird. Here hybridity's version of anti-essentialism betrays an ironic essentialism, on which subsequent scholars will sometimes rely in precisely the manner one might rely on scientific fact. It evokes precisely the sort of 'sovereign, uncontaminated' political thought we might invoke it to dispel.

My concern is not that hybridity stands in relation to the world as yet another inadmissible 'sovereign' concept. Such an objection would presume the same ideology expressed in the anti-essentialist essentialism of hybridity: that words relate to worldly life as captors to captives, and that the horizon of critical political inquiry is to reach toward a non-sovereign language that frees life unto the irreducible particularity and plenitude that makes any category an imperious falsehood. This objection would ultimately come to the same grief. It would find one replacing the dictum that all phenomena are homogeneously heterogeneous with another rather like it (perhaps that they are in fact *heterogeneously* heterogeneous).

My worry, rather, is that there is something awry in grounding postcolonial investigations of technoscience in a sensibility that attacks 'sovereign, uncontaminated categories' as scientific mistakes, as universalist or essentialist falsehoods masking an essentially anti-essentialist world, and thus as categories that can be usefully falsified

through empirical operations of historiography and sociology, as if those empirical operations did not themselves presume universalist political concepts with provincial political histories (like ‘historicity’ or ‘the social’).

The dominant conceptual categories of the imperial present deserve our concerted postcolonial scrutiny. But STS scholars often call for a mode of self-consciously *political* scrutiny compatible with their sense of the internal relation of the ‘scientific’ to the ‘political’ (e.g., Fortun, 2012; Liboiron, 2021; Shadaan & Murphy, 2020). Postcolonial STS might require a critique of categories and concepts that wholeheartedly avows its own political enterprise.

In the following section I take up Scott’s (2005) provocation to postcolonial critics: that they might evaluate conceptual categories in view of their *use*, by asking what they are *for*, rather than in view of their total or incomplete capture of that to which they refer. Scott advocates for a distinctive practice of reflexivity—a critical self-consciousness about the specific historical urgencies and questions that animate styles of critical political inquiry—that complements STS scholars’ concern for the positional situatedness of any proposition. Drawing on Hacking (2000) and Wittgenstein (1953/2010), Scott’s pragmatic approach articulates a different demand on postcolonial criticism. It moves us to ask something else about our categories: not whether they capture empirical circumstance exactly or inexactly, with due particularity or despotic over-generality. Rather: What are they *for* in their moment? To what postcolonial end do we deploy the ineluctable positivities (whether ‘colonist’ or ‘hegemony’ or ‘indeterminacy’ or ‘hybridity’) that we do? What conception of the (post)colonial predicament elicits their provocation? Against what ideological surround do they establish a subversive point of contrast? What, as Scott asks, is their ‘postcolonialist point’? In this spirit of self-reflection, STS scholars might ask of our own categories: What has been, so far, the postcolonial point of elucidating—asserting—the hybridity, heterogeneity, and indeterminacy of global technoscience?

Agency and after

Anderson (2015) writes: ‘The imperial gaze sees smooth, inescapable global flows; postcolonial critics instead see messy, uneven politics and diverse, contending agents amid the historical debris’ (p. 652). ‘Inescapable global flows’ versus ‘diverse contending agents’: This is, I think, a significant clue as to the postcolonial point of discovering and asserting hybridity and heterogeneity. Anderson asserts the irreducible possibility and reality of *escape* from the supposedly unidirectional unfolding of Euro-American technoscientific modernity by apprehending postcoloniality in terms of a multiplicity of heterogeneous and contentious *agencies*. Such is the subversive contrast effect of locating hybridity where others have seen hegemony. If the postcolonial circumstance is one of complex hybridity rather than Manichean homogeneities, then the postcolonial situation must consist of active, world-making subjects rather than passive objects of imperial power, with the logical consequence that so many impersonal ‘global flows’ are not inescapable after all. They are *necessarily* escapable, because the (post)colonized are always potential agents. With the invocation of hybridity comes a tacit argument about the political metaphysics of agency.

This is consistent with the conceptual adaptations I have mapped above. Bhabha invoked hybridity to highlight that signs could always ‘be appropriated, translated, re-historicized and read anew.’ In its signature formulation, ‘hybridity’ already invoked a metaphysics of agency and escape. It indexed an ‘*active* moment of challenge and resistance against a dominant cultural power,’ as Young (1995, p. 21, emphasis added) observes.⁵ It foregrounded the limits of epistemic domination and irrepressible possibility of action—and did so in explicit contrast to Said’s (supposed) overestimation of imperial hegemony and concomitant disinterest in the world-making agency of colonized peoples. As Gandhi (2019) revealingly glosses *Orientalism*, Said’s ‘*disabblingly* one-sided account of the colonial encounter’ failed ‘to theorise adequately the *resistance* of the non-European world to the material and discursive onslaught of colonialism’ (p. 81, emphasis added). It is understandable, then, that by the time STS scholars adapt critiques like Bhabha’s, they too find themselves drawn to expose a messy universe of diverse world-making agencies whose acknowledgment promises to undermine the totalizing fantasies characteristic of imperialists.

So it makes genealogical sense that postcolonial STS should advance a broader postcolonial concern with ‘exposing the negative structure of colonialism’s power and with demonstrating the colonized’s agency in resisting or overcoming these conditions’ (Scott, 2004, p. 6). Yet STS scholars, so alert to the situated character of any logic of inquiry, might still find this curious, not least because the concept of ‘agency’—in particular agency articulated as ‘liberation’, ‘resistance’, and the causal ‘making’ of history—is a distinctive preoccupation of the liberal political tradition cultivated through Euro-American imperialism. That skeptics of ‘sovereign, uncontaminated categories’ should effectively insist on the universal reality and ever-present possibility of ‘agency’ seems especially curious.

Indeed, critical explorations of the liberal grammar of agency—with its characteristic disdain for submission and passivity and its embrace of sovereign self-authorship, efficacy, and creativity—abound across such diverse critical traditions as feminist theory (Berlant, 2007; Davies, 1991; Sedgwick, 1993), secular studies (Agrama, 2012; Asad, 2000; Mahmood, 2005), meta-history (Fasolt, 2004), and the historiography of New World slavery (Johnson, 2003). These explorations vary widely in idiom and spirit. But they have in common the important insight that ‘agency’ is itself a provincial political category, one that writers seek in every corner of the world at the risk of affirming the distinctive cosmological commitments of Euro-American imperial culture, *even when they deploy the concept of agency in a subversive mood*. Taken together, their provocation is not that scholars have yet to account for the true economy of world-making agency in social space—pinning down, for example, how colonizing powers are more or less hegemonic in structuring the worldwide order of things, or that the (post)colonized display more or less agency in resisting and remaking it. Rather, it is to throw doubt onto the basic, deep-seated compulsion to conduct critical empirical inquiry *in terms of agency or its absence*—terms that often presuppose rather than explore dominant Euro-American political visions of historicity, freedom, and self-possession. The idea is not that agency has yet to be measured correctly. Rather, it is to ask if we misuse our moral and political energies measuring it at all.

Such concern to provincialize the human-scientific category of agency is highly compatible with STS's customary concern to provincialize the putatively ahistorical and universal concepts of modern technoscience. And so it might be interesting, and adequate to the spirit of postcolonial science critique, to think through the specificity and situatedness of our own agency-talk, implicit and explicit. If talk of hybridity asserts a universal political theory of agency, then we might reflect on the particular postcolonial conditions and postcolonial satisfactions of speaking its name.

As Scott (2004) observed, following Collingwood (1940), postcolonial assertions are usually answers to unstated postcolonial questions. Those questions explicate the vital political quandaries of their moment. Postcolonial assertions are in consequence always better or worse responses to contemporaneous postcolonial predicaments. Re-reading Anderson's essays, one might see that postcolonial assertions of agency *qua* escapability addressed a geopolitical predicament in which the inevitable and benevolent globalization of liberal capitalist political order was a controlling fantasy for North Atlantic elites. It is meaningful that Anderson first explicated a project of postcolonial STS in the early 2000s, a decade or so after the close of the Cold War, at a time when the mouthpieces of North Atlantic power still loudly declared that an era of global antagonisms and frictions was giving way to the inevitability of capitalist globalization and liberal democracy.

For example: reading Anderson's rejection of 'grandiose claims to sovereignty and hegemony' (Anderson, 2015, p. 656), one may recall Francis Fukuyama's breathless declaration that the end of the Cold War represented the 'end point of mankind's ideological evolution and the universalization of Western liberal democracy as the final form of human government' (Fukuyama, 1989, p. 4). Reading Anderson's related aversion to stories of 'smooth, inescapable global flows' (Anderson, 2015, p. 652) it is difficult to suppress the memory of Thomas Friedman's popular-audience pronouncements that the world was increasingly 'flat': that technology-driven globalization was stitching the totality of the planet together into a 'single global network, which—if politics and terrorism do not get in the way—could usher in an amazing era of prosperity, innovation, and collaboration by companies, communities, and individuals' (Friedman, 2005, p. 8). An often-told story in the 1990s and 2000s was that liberal democracy in the Euro-American style was worldwide destiny, and that capitalist globalization was establishing a frictionless worldwide system of modular prosperity. So went the imperial grand narrative. Postcolonial STS announced itself against this backdrop. It could reasonably mobilize images of hybridity to produce a subversive contrast effect with the moment's prevailing imperial jargon.

It makes sense, then, that postcolonial critics of technoscience should feel called to assert hybridity (and with it agency *qua* escapability) against a re-energized myth of Western modernity's inexorable unidirectional final spread. It makes sense, too, that writers preoccupied with the hegemony of the West and of Western technoscience could seem to have reproduced the ideological self-description of imperialists. After the Cold War, the ideological apparatus of North Atlantic power often claimed that *this* was the final, inevitable, and irresistible world. Postcolonial STS could therefore do important work by convening histories and ethnographies of hybridity and heterogeneity that illustrated the implausibility of that fantasy of hegemony.

When Scott wrote that postcolonial assertions correspond to particular postcolonial questions, implicit or explicit, he was challenging fellow postcolonial theorists to ask themselves if their critical operations remained salient for the political present in which they wrote. Did the questions underlying prevailing modes of criticism—Scott (2005) had in mind varieties of postcolonial constructivism—‘*continue* to be questions worth having answers to in the present?’ (p. 391). ‘It is part of the task of the critic of the present’, Scott continued, ‘to gauge, at any conjuncture, whether this move continues to be a move worth making.’

Twenty years after the publication of *Postcolonial Technoscience*, we could ask a similar question about certain operations of postcolonial STS and the imperial present they address. Does it remain subversive to assert the heterogeneity and hybridity of global technoscience? Do post-Cold War master narratives of a benevolent flat world and the inevitable end of history *still* captivate the political imagination and solicit our critical deflation? At the time of this writing, does anyone continue to expect from global capitalism so many ‘smooth, inescapable global flows’? It is not obvious that the answer is ‘yes’. And if it is not so obvious, then we may wonder if the post-Cold War problem space of empire and technoscience has since mutated. We may ask, in turn, if an empirical research program that undermines fantasies of hegemony by discovering hybridity and heterogeneity still meets an urgent demand.

These may well be different imperial times. It is no longer so common to hear liberal democracy and global capitalism declared the self-evidently final and finest forms of human political and economic organization. After the global financial crisis of 2008, the subsequent ascent of authoritarian right-wing movements and parties, and the failure of American power to secure a liberal geopolitical order through so many foreign wars, even mouthpieces of American empire speak of the end of the end of history (Fukuyama, 2021). It is increasingly common to read that fossil-fueled climate change has falsified the post-Cold War expectation of worldwide economic flourishing through capitalist globalization. Of late, the flat world fantasy of smooth global flows seems compromised by disrupted supply chains and viruses that travel easily in a technologically shrunken world. Critics may no longer confront a formation of empire dressed up in ‘grandiose claims to sovereignty and hegemony’.

What matters here is what developments we take to be exemplary of the imperial present, and what claims we understand those developments to make upon the work of critical inquiry. Contemporary predatory capitalisms do not often garb themselves with the promise of encompassing the whole Earth within a smooth and seamless whole spreading outward, once and for all, from North to South. In recent years, scholars exploring the signature infrastructures of contemporary global capitalism—for example, those of extraction, logistics, and finance—have found themselves confronting deliberately ‘anti-relational’ machines of social separateness (Melamed, 2015), abandonment (Povinelli, 2011), and expulsion (Sassen, 2014) that do not so much flatten heterogeneity but thrive on the intensification and exploitation of social difference (see, e.g., Appel, 2019; Mezzadra & Neilson, 2019). Such developments invite a *gestalt* shift that brings into view not so much the prospect of hegemony *qua* homogenization but political economies of destructive inclusion (Kohlbray, 2023), disruption (Chua, 2023), disconnection (Aung, 2024), and dispossession (Byrd et al., 2018). When the global exercise of North

Atlantic power shifts weight from whole-world fantasies of eroding difference and smoothing friction to less-disguised strategies for exacerbating and arbitrating global hierarchies of race, class, gender, and nation, the exemplary scene for science critique in the imperial historical present might shift in response: from the intimacies of the ‘contact zone’, whose imperial suppression has made rediscovering multi-directional exchange and influence a pressing matter, to the jagged shapes of space that technoscientific capitalism inserts between human communities.

Consider, too, the distinctive ways in which the colonial past presses itself onto contemporary critical consciousness. The material legacies of colonial power that increasingly concern STS scholars are those intractable toxic remains of corporate extraction and militarism that saturate landscapes, waterways, and atmospheres (see, e.g., Fortun, 2014; Masco, 2020; Murphy, 2017; Povinelli, 2016; Puglionesi, 2022). It is notable that, as they survey scenes of irreversibly despoiled water tables, carcinogenic atmospheres, and rising sea levels, such writers have not been moved to speak of escapable imperial formations, nor of the adaptation of colonial enterprise to local social form. When the imperial past manifests itself as profoundly inequitable distribution of irreversible ecological damage and of wealth accrued through that damage, it may not be so potent to highlight the ‘agency’ of the colonized in the making of present conditions. On the contrary, unequal agency in the modern degradation of the planetary environment would seem to be an essential premise of most projects of global environmental justice.

It is not that recent developments empirically falsify conceptual languages of hybridity and heterogeneity. Indeed, nothing could falsify them; they are not the kinds of things that *can* be empirically falsified, because they underwrite critical empiricisms and direct ethnographic and historiographic focus. They are the guiding presuppositions of a style of empirical inquiry. Rather, shifting circumstances compel us to reflect on how the search for hybridity, heterogeneity, and indeterminacy, like the conception of agency to which they are implicitly or explicitly connected, responded to a historically specific political urgency. ‘Hybridity’ answered a question presented by a particular geopolitical moment. At the time of this writing, it is worth asking if that question and that moment remain ours.

One may observe, however enigmatically, that the predicament of empire and technoscience of late seems not only to do with the ‘production’ of technoscience, but with technoscience’s destructive *entailments*—with the world-breaking undertow of certain domineering technoscientific concepts and instruments, whose *force* is perhaps not always so indeterminate, ambivalent, or multiple as we may hope. To give an admittedly extreme example: one could perhaps show that the global proliferation of fracking has ‘adapted itself to local conditions’ (Anderson, 2015, p. 652) and therefore been made and remade as hybrid in a complex worldly encounter. Yet a critique of the unfolding imperial present might equally wish to make sense of the reliably destructive patterns along which fracking disorders the world *whenever and wherever* it travels—especially insofar as adaptation to local conditions is also the explicit *modus operandi* of multinational petroleum corporations determinately oriented toward continuous expansion through fossil fuels.

Concepts like hybridity and heterogeneity guided subversive inquiry into how the world has been constructed. They organized an essential critical intervention when an

imperial master narrative projected the technological homogenization of human existence, a closure of human possibility and creativity through the teleological progress of (presumptively Euro-American) knowledge and technique. Aimed against that pernicious determinism, those concepts turned attention toward the complex, unpredictable, and never-final ways in which the world is made and remade. At present, different concepts may be needed to get a subversive view of the way the world is destroyed.⁶ Perhaps such concepts are yet to be articulated. And they may require opening critical STS to the plausibility and interest of certain determinate and determining aspects of imperial science and technology, aspects that are difficult to identify and express when our critical operations embody a powerful aversion to idioms of determinism and teleology. This would not mean a U-turn toward those imperious 'global or universal claims' against which Anderson warned. But it might mean asking what important things we could see and say if we relaxed the language of hybridity and heterogeneity, much as scholars once came to see and say a great deal by relaxing a language of absolute domination.

In this essay I have developed questions about the things we do when we do post-colonial STS, and why we do them. At the time of this writing, scholars are thinking through questions of technoscience and colonialism with unusual energy and creativity. It is a good time to reconsider the operations with which we have learned to make critical sense of global science and technology, and perhaps to rethink the pragmatics of science critique for the political present. Here, I have worked through one operation in particular: the critical investigation that aims to elucidate the hybridity and heterogeneity of global technoscience, which does so to discredit grandiose fantasies of Euro-American hegemony.

Revisiting Anderson's exemplary writings, I have explored how this operation came to embody an urgent postcolonial enterprise, and I have appreciated its powers alongside its limits. The elucidation of hybridity and heterogeneity undermined pernicious imperial binaries and universalisms, yet it entailed its own totalizing conception of a universal reality of pure hybridity and homogeneous heterogeneity. While it asserted the agency of the colonized, we may ask if such assertions of agency are salient or subversive in the imperial present.

I mean these observations as an engagement with an essential intellectual project. More important than these particular arguments is the broader question they raise. How do our concepts and conventions acknowledge, or fail to acknowledge, the demands of the shifting political present? Any vital tradition of moral and political inquiry keeps such questions alive—not least any vital tradition of STS, for without them we may find ourselves methodically undertaking the very sort of 'normal science' (Kuhn, 1962) that mistakes itself for a final science.

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Notes

1. For a discussion of their tensions, resemblances, and potential convergences, see Bhabra (2014). Bhabra's matrix associates the postcolonial with South Asian and Middle Eastern diasporic intellectuals, a distinguishing concern for the analysis of 'culture', and an historiographic emphasis on the nineteenth and twentieth centuries. In turn, Bhabra identifies decolonial criticism with the Americas, a concern for political economies of development and world-systems geopolitics, and an historiographic scope stretching from the fifteenth century into the present. There is, of course, much more to say about them, as well as their proximity to traditions of North American settler colonial studies and feminist theory (see also Asher & Ramamurthy, 2020; Carey & Silverstein, 2020).
2. Trivedi (2021) has helped me to grasp the practice of the human sciences in terms of their morally saturated pragmatic 'operations'. Trivedi in turn develops ideas in de Certeau (1988).
3. The 2002 issue was co-edited with Gabrielle Hecht. Anderson's remarks are anticipated by earlier writings on the prospect of a postcolonial historiography of medicine (see, for example, Anderson 1998).
4. See, for example, Anderson: 'I think we should instead re-imagine STS as a borderlands, heterogeneous, confusing, incalculable, unpredictably hybrid and mixed. I don't believe in recuperating binaries and attempting to eliminate the in-between, in exercising another form of sovereignty, creating another illusory dominance' (Prasad & Anderson, 2017, p. 142).
5. Young's (1995) genealogy of hybridity explores the continuities and discontinuities of contemporary critical discourse with 19th century racial theory. For another critical discussion of 'hybridity' different from mine see Brah and Coombes (2000). Noting in 2000 that "'hybridity" has acquired the status of a common-sense term, not only in academia but also in the culture more generally,' (Brah & Coombes, 2000, p. 1), their volume moves to complicate any celebration of hybridity as 'transgressive *per se*' by scrutinizing particular historical processes and discourses of hybridization.
6. Anidjar (2019) has written illuminatingly of the difficulties of theorizing destruction given the modern human sciences' emphasis on human collective life as a process of constructive world-making.

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