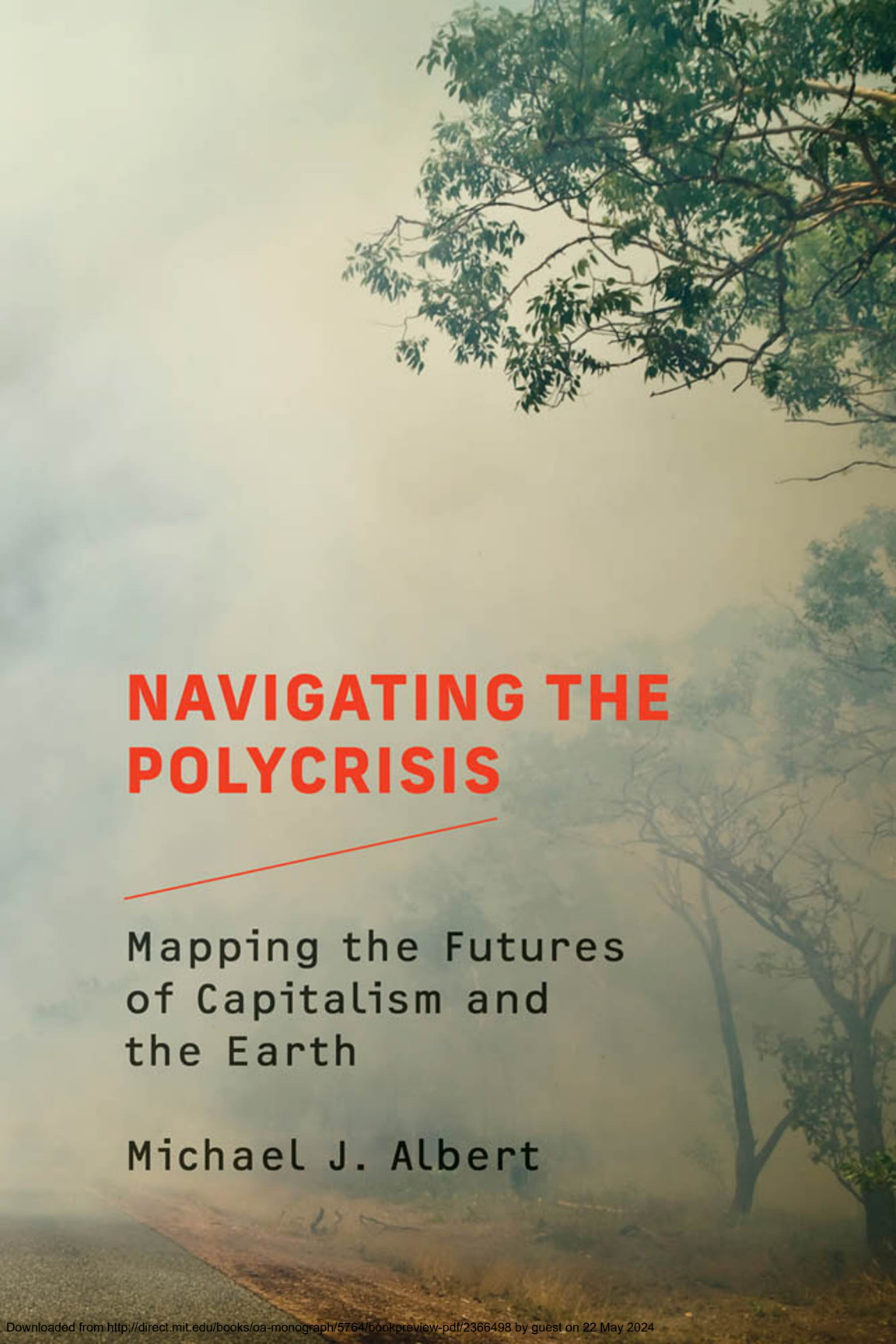

NAVIGATING THE POLYCRISIS

Mapping the Futures of Capitalism and the Earth

Michael J. Albert

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THE MIT PRESS CAMBRIDGE, MASSACHUSETTS LONDON, ENGLAND

The MIT Press would like to thank the anonymous peer reviewers who provided comments on drafts of this book. The generous work of academic experts is essential for establishing the authority and quality of our publications. We acknowledge with gratitude the contributions of these otherwise uncredited readers.

This book was set in Stone Serif and Stone Sans by Westchester Publishing Services.

Library of Congress Cataloging-in-Publication Data

Names: Albert, Michael J., author.
Title: Navigating the polycrisis : mapping the futures of capitalism and the Earth / Michael J. Albert.
Description: Cambridge, Massachusetts : The MIT Press, [2024] | Includes bibliographical references and index.
Identifiers: LCCN 2023021165 (print) | LCCN 2023021166 (ebook) | ISBN 9780262547758 (paperback) | ISBN 9780262378277 (epub) | ISBN 9780262378260 (pdf)
Subjects: LCSH: Forecasting. | Civilization, Modern—21st century.
Classification: LCC CB161 .A43 2024 (print) | LCC CB161 (ebook) | DDC 909.83/0112—dc23/eng/20230822
LC record available at https://lccn.loc.gov/2023021165
LC ebook record available at https://lccn.loc.gov/2023021166

To my parents,
who gave me a future

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ACKNOWLEDGMENTS

There are many humans and nonhumans who made this book possible, though I'll focus mainly on the humans. This book was born from a dissertation project that would not have been possible without the support and guidance of Dan Deudney, Bentley Allan, and William Connolly. Few would have allowed such a sprawling and overambitious project to move forward under their supervision, and I have them to thank for believing in it and helping it come to fruition. Jane Bennett, Sam Chambers, and Jennifer Culbert had a significant influence on the evolution of my thinking during my time at Johns Hopkins as well, and I'm grateful to them for their input and support over the years. Beverly Silver, Simon Dalby, and David Scott also deserve thanks for their feedback and insights on the project. And I owe Mason Rayner, Jishnu Guha, Jay Mohorcich, Gregg Tourville, Nils Kupzok, Stephanie Erev, Jacob Kripp, Quinn Lester, CJ Higgins, Beth Mendenhall, Nathan Gies, and Casey McNeill deep gratitude for our friendship and wide-ranging conversations over the years, which made me a smarter human than I would have been otherwise.

This book was sharpened by workshops held at SOAS University of London in November 2021 and the University of Edinburgh in April 2023. I am deeply grateful to Meera Sabaratnam, Nick Srnicek, Alex Williams, Kerem Nisancioglu, Mathew Paterson, Phil Clark, Mathias Thaler, Troy Vettese, Claire Duncanson, and Thomas Homer-Dixon for taking the time to read

and give feedback on the manuscript. Felix Berenskoetter and Fiona Adamson provided much-needed help on the book proposal, and I'm deeply grateful to them for their support during my time at SOAS. Conversations with Taylor Borowetz, Chris Smaje, Gabriela Cabaña, Iñigo Capellán-Pérez, John Barry, Nafeez Ahmed, Carolyn Baker, Mihaela Mihai, Elizabeth Bomberg, Oliver Turner, and Cedric Durand also shaped my thinking and made the book better than it would have otherwise been. I also owe a big thanks to Beth Clevenger for her support for the project, to the MIT Press editorial team, and to Benedikt Büchel for his assistance with the index.

To close, I first want to thank my parents. The unconditional love and support they gave me, and their encouragement for me to find my own path through all its twists and turns, has been all that any human could hope for. I also owe the world and more to Taylor, who is simultaneously a loving partner, intellectual companion, and artistic genius who gave detailed comments on the manuscript and provided much needed help with the visuals in this book. Finally, some of the key nonhumans whose inspiration and energy helped me get through the book-writing process include Thea, Cadbury, and Grahams; the oak trees of Primrose Hill and Hampstead Heath; the Water of Leith; and (last but not least) the Earth.

Michael J. Albert
June 2023

LIST OF ABBREVIATIONS

AI	Artificial intelligence
BAU	Business-as-usual
BECCS	Bioenergy plus carbon capture and storage
BIS	Bank of International Settlements
CCP	Chinese Communist Party
CDR	Carbon dioxide removal
CL	Climate leviathan
DAC	Direct air capture
EP	Existential problematic
EROI	Energy return on energy investment
FAO	Food and Agriculture Organization
FF	Fossil fuels
FIR	Fourth industrial revolution
GFANZ	Glasgow Financial Alliance for Net Zero
GM	Genetically modified
IAMs	Integrated assessment models
IEA	International Energy Agency
IoT	Internet-of-Things
IPCC	Intergovernmental Panel on Climate Change
LNG	Liquified natural gas
LtG	Limits to Growth

MEDEAS	modeling energy system development under environmental and socioeconomic constraints
NAS	National Academies of Sciences
NC3	Nuclear weapons command, control, and communication
NDCs	Nationally Determined Contributions
NIC	National Intelligence Council
PBs	Planetary boundaries
RE	Renewable energy
SEP	Socioecological problematic
SRM	Solar radiation management
SSPs	Shared Socioeconomic Pathways
UBI	Universal Basic Income
VI	Violence-interdependence
VP	Violence problematic
WMD	Weapons of Mass Destruction
WMO	World Meteorological Association

INTRODUCTION

The 2020s have gotten off to a rocky start (to put it mildly). Words like "permacrisis" and "polycrisis" have become common currency, reflecting a broadening awareness that ours is an age of interconnected systemic crises with no clear end in sight.[1] The year 2021 was already a year of stress in global energy and food markets, ratcheting geopolitical rivalries, record levels of global military spending, and accumulating risks for the world economy—trends that were all turbocharged by Vladimir Putin's February 2022 invasion of Ukraine. It remains far from certain how these ongoing crises will unfold. But we know that deeper challenges loom on the horizon, from the climate and mass extinction crises to future pandemics, "net energy decline" for fossil fuels, an unsustainable and unstable global food system, the brewing new cold war between the United States and China, the simmering specter of far-right populism, the nascent threat of weaponized synthetic biology, and the destabilizing impacts of artificial intelligence on work, war, and human freedom.

This book asks where the world-system is headed as a result of these intersecting challenges. It makes three overarching arguments. First, I argue that that we must devote more systematic attention to the question of possible futures. "Business-as-usual" will come to an end—whether by choice or by disaster. Thus we need more future-oriented scholarship that can illuminate the possible roads ahead, their branching pathways, the

dangers that lurk, and the opportunities that may emerge for progressive transformation. Second, I argue that to illuminate the space of possible planetary futures, we need a holistic approach that highlights the relations and feedbacks between the numerous challenges that compose our planetary predicament. As more and more analysts recognize, we confront not simply a climate crisis, nor simply a collection of numerous isolatable problems that can be studied by separate disciplines, but rather a "polycrisis" or nexus of reciprocally entwined crises characterized by complex feedback loops, blurred boundaries, cascade effects, and (in many cases) mutual amplification.[2] Third, I argue that a theoretical framework informed by complexity theory and world-systems theory can provide a new form of critical-futures analysis capable of grappling with the polycrisis condition. But the point here is not to claim superiority for a single theoretical approach, but rather to develop a conceptual framework that can facilitate synthesis across numerous disciplines and theoretical traditions—including international relations (IR), critical political economy, ecological economics, energy studies, the earth system sciences, critical security studies, and many others.

The goal of this book is thus to develop a new way of thinking about planetary futures that can help us create more useful and comprehensive maps of the possibility space. Such an approach must be planetary in scope, voraciously synthetic, and utterly indifferent toward disciplinary boundaries. In a word, it must be "transdisciplinary," in the sense of pragmatist scholarship that emerges directly from problems in the world demanding response (rather than from stale disciplinary debates) and that synthesizes knowledge across numerous disciplinary, theoretical, and methodological traditions.[3] In this sense, as Sanders van der Leeuw writes, transdisciplinary research analyzes "that which is at once between the disciplines, across the different disciplines, and beyond each individual discipline."[4] Transdisciplinary research has its risks (as I elaborate below). But it is also the necessary precondition of rigorous futures analysis that can inform contemporary strategies for progressive socioecological transformation. As the late Immanuel Wallerstein wrote more than forty years ago, our "ability to participate intelligently in the evolution" of the world-system is "dependent on [our] ability to perceive the whole. The more difficult we acknowledge the task to be, the more urgent it is

that we start sooner rather than later."[5] In short, if we think the task is daunting, this is all the more reason to get started now.

PLANETARY FUTURES AND NAVIGATIONAL PRAXIS

In contrast to the vast majority of approaches in the social sciences, this book takes the future seriously as a focus of analysis. Most social scientific scholarship focuses overwhelmingly on the past and present, while occasionally making some speculations about the future (typically, if at all, in a book's conclusion). This tendency is reasonable to some extent, since we cannot corroborate or falsify our present-day hypotheses about the future, and our future speculations always run the risk of making us look foolish in the long run.[6] But this stance is far too limiting. Humans are temporally situated beings that act in relation to a future or set of possible futures that infuse the present and shape our hopes, fears, and projects.[7] As Jens Beckert argues, "'History matters,' but the future matters just as much."[8] Heikki Patomäki develops a similar argument: "Anticipation of the future is a necessary part of social action. . . . Consequently, if the social sciences are to be relevant they should be able to also say something about possible and likely futures."[9] The majority of social scientists who do investigate futures are typically less interested in "the future" itself than in techniques through which powerful actors imaginatively construct and act on possible futures.[10] This work is very important, and I also explore such futurological exercises (in chapter 2). But this book instead primarily follows Patomäki and others who develop what could be called a "realist" approach to planetary futures. From this view, the future is not solely made actual in the present through discursive construction, but also exists as a real though not-yet-actual possibility space composed of multiple possible trajectories and latent potentials.[11] The openness, uncertainty, and indeterminacy of the future is the main reason that social scientists tend to shy away from studying it directly, yet this indeterminacy is *precisely* why futures analysis is so important. As Patomäki writes, "Actions anticipating possible futures . . . shape the present and thereby also contribute toward the materialisation of a particular line of development in world history."[12]

Following Patomäki, this book is less concerned with "predicting" the future than with illuminating possible lines of world historical development

in order to inform present-day strategies that can help shape the future in more progressive (or at least less catastrophic) directions. As I discuss in chapter 2, militaries, intelligence agencies, central banks, and corporations are all deeply engaged in various forms of future-scenario analysis, which they use to develop strategies that may "perform well under a range of future conditions."[13] Rather than allowing powerful actors to monopolize these techniques in their efforts to preempt and constrain the future possibility space, scholars and activists should engage in counter-hegemonic futures analyses in order to widen our imaginaries of possible futures and develop strategies to bring about more just futures. As John Urry says, the terrain of futures studies "is too important to be left to states, corporations and technologists, . . . and social science needs to be central in disentangling, debating and delivering those futures."[14]

There are at least two main tasks for counter-hegemonic futures analysis. The first is to illuminate the most likely futures that may emerge following current tendencies and trends. As Mathias Thaler discusses, this involves "if-this-goes-on"-style scenarios that are common in dystopian science fiction.[15] In the jargon of climate scientists and energy modelers, these are "business-as-usual" or "current-policies" scenarios in which trends in political economy, power relations, culture, energy consumption, greenhouse gas emissions, and technological change continue to follow their recent historical patterns.[16] As should be evident to any clear-sighted analyst of our planetary predicament, these pathways would result in increasingly "dystopian" futures over time—at least for the majority of humanity—whether they take the form of deepening climate apartheid, techno-authoritarianism, social and ecological collapse, or (at their worst extreme) human extinction. As I show in chapters 4 and 5, even more ambitious policy reforms and technological breakthroughs—if constrained within a profit- and growth-oriented "ecomodernist" framework—would likely push the world-system down a dystopian trajectory (or at best a "ustopian" future, in Margaret Atwood's sense, combining utopian and dystopian elements).[17] From a counter-hegemonic perspective, the purpose of exploring these futures is to understand the mechanisms and elite strategies that may prevent global capitalism from decisively shifting away from its increasingly catastrophic trajectory, anticipate the different kinds of systemic crises and disruptions that would emerge, highlight both the

challenges and opportunities that these crises would create for progressive movements, and warn of the dangerous amplifying feedbacks that could make such trajectories self-reinforcing.

But this is obviously not the sole task of counter-hegemonic futures analysis. The second task is the work of developing "concrete utopias," which involves the imagination of desirable futures that are "genuinely possible"—or that may plausibly emerge through the conjunction of ongoing structural trends and counter-hegemonic struggles seeking to transform the world-system.[18] Concrete utopias are not idealized worlds in which all conflicts, inequalities, and forms of injustice have been eradicated. They are better understood, as Thaler puts it, as "temporary stations on a continuous, yet rocky journey" toward more just and sustainable futures.[19] In Wallerstein's terms, they are not "the face of the perfect (and inevitable) future, but the face of an alternative, credibly better, and historically possible (but far from certain) future."[20] Concrete utopian speculation must negotiate the tension between radical imagination and rigorous social, political, and ecological analysis of the possible. In other words, it emerges from the always fraught encounter between utopianism and realism.[21] The tension between utopianism and realism—or between our imagination of the desirable and clear-sighted analysis of the realistically achievable—is inescapable; it is simply impossible to objectively determine what is possible or impossible in any given political conjuncture.[22] But unlike many utopian scholars and visionaries, I place a bit more emphasis on the *realist* side of the equation. In particular, in this book I am less interested in the precise contours of concrete utopian destinations than the *processes and mechanisms* by which they might emerge in practice. In the words of Kim Stanley Robinson, we must "imagine the bridge over the Great Trench, given the world we're in and the massively entrenched power of the institutions that shape our lives."[23] This is easily the most challenging aspect of concrete utopian speculation, but it is nonetheless essential if we want to truly inspire belief in the potential for new worlds. To do this well, in a way that moderates (but does not entirely avoid) the risk of wishful thinking, we need a rigorous, transdisciplinary approach that can illuminate the constraints, obstacles, opportunities, and mechanisms of change that structure the future possibility space. As Erik Olin Wright emphasizes, "Any plausible project of emancipatory transformation must adopt

a long time horizon" that explores "not simply the obstacles and openings for strategies in the present, but how those obstacles and opportunities are likely to develop over time."[24] In this sense, one of the key goals of this book is to provide a futures map and "methodology"—one whose affirmation of the role of intuition, imagination, and speculation would make it hardly count as a "methodology" for most social scientists—that can deepen our understanding of how the obstacles and opportunities for progressive transformation are likely to evolve over time in an age of intersecting crises.

The main function of the futures analysis developed in this book can thus be described as a form of "navigational praxis"—praxis in the sense of combining thought and action. This concept is influenced by the work of Nick Srnicek and Alex Williams,[25] who understand "navigation" as a praxis of mapping and exercising agency within complex socioecological systems, a praxis that must constantly update itself as events in the world unfold and new information comes to light. Navigation requires modifying and adapting not just our maps, strategies, and tactics, but also the specific goals of counter-hegemonic praxis as opportunities for transformative agency arise, subside, and reemerge. Counter-hegemonic movements must navigate a constantly evolving planetary-political possibility space, seeking either to dislodge hegemonic configurations and navigate toward concrete utopian potentials, or to mitigate harm and prevent the worst-case scenarios from materializing if it seems we are caught in the whirlpool of a dystopian pathway. In other words, even if we are unlikely to avoid the more dystopian regions of the possibility space, we can at least take steps to make these futures less catastrophic—for instance, by fighting for a 2.5°C rather than a 3°C or 4°C world, or by creating systems of mutual aid to reduce suffering among those of us whose lives are deemed "disposable" to the state and capital, or organizing across political differences to reduce the risks of untrammeled techno-authoritarianism or (eco)fascism. Thus, navigation is not all or nothing—not "revolution or bust"—but a praxis of continuously struggling to realize the best possible future that is within "our" power. Of course, this must transpire across a geographically and intersectionally differentiated landscape of social justice movements in the global north and south, with highly uneven degrees of vulnerability and at times conflicting values and strategies

(including conflicts between more reformist and revolutionary, universalist and particularist, techno-modernist and degrowth factions or tendencies). To speak of social justice movements as a "we" is therefore both invitational and aspirational, expressing both potential and hope for a "movement of movements" that can become a planetary force capable of galvanizing and enacting global socioecological transformation.[26]

While future-oriented scholarship is depressingly sparse, I am of course far from the first to investigate planetary futures. It is therefore worth clarifying in general terms how this book builds on and differs from existing approaches. The different futures or "world-system pathways" I discuss in chapters 4 and 5—which include variants of green Keynesianism, collapse, ecosocialism, and what I call "techno-leviathan"—can in many ways be understood as variations of "archetypal" futures that occur in the realms of utopian/dystopian literature and transdisciplinary scenario work.[27] But this book goes further than existing approaches by developing a more deeply synthetic and transdisciplinary approach to planetary futures, perhaps in a way that may be too "eclectic" for some. Rigorously mapping the future calls for nothing less than a pluralist and synthetic methodology that can include as many problems, processes, and systems as possible in our analysis while carefully investigating the relations and feedbacks between them. Yet most futures analyses leave out one or more crucial elements of our planetary predicament—whether climate change, the evolution of capitalism, energy markets, energy "transition minerals" like lithium and copper, food systems, AI and synthetic biology, far-right populism, war and geopolitics, or others. Of course all futures analyses must be selective, and this book is no different. But it goes further than existing approaches toward a more comprehensive analysis of the intersecting problems that structure the future possibility space. (To those who would criticize me in turn for not including every relevant variable, I would merely say: I agree, go further please!) The core challenge of futures thinking is to follow the coevolution of many different variables simultaneously; if we leave out a crucial problem or process, our analysis of the future possibility space remains at best narrow and one-sided, and at worst compromised.

Existing work on planetary futures is also limited by inadequate integration between critical social theory and political economy, on one side, and

quantitative modeling, on the other. On one hand, critical social theorists and political economists too often ignore quantitative modeling projections of integrated climate-food-energy-economic trajectories, thereby limiting their understanding of how these systems may coevolve and the constraints they place on the future possibility space. Quantitative models, on the other hand, are by their very nature unable to integrate variables of interest to critical social theorists—particularly the evolution of power relations and counter-hegemonic struggles, as well as other qualitative factors like geopolitical conflict, militarization, police power, race and racism, gender and hypermasculinity, emerging technological risks, identities and structures of feeling, and many others. Models also struggle to capture complex systemic risks that emerge from nonlinear feedback processes in socioecological systems—such as the risk of "domino-like cascades" of earth system tipping points—which means that many if not most of them likely have a "gradualist" bias that underestimates the risks we face (though this should not always be assumed, since many models also leave out sociotechnical innovations and adaptations that may reduce these risks).[28] We should certainly not take the projections of climate, energy, and other models as holy writ: as the common refrain goes, *all models are wrong, but some are useful*. Rather, like science fiction at its best (which I also draw on), models can be a "machine for thinking."[29] In particular, they can deepen social scientific analyses of the climate, energy, food, land-use, and other parameters that constrain the future possibility space; the coevolutionary dynamics of different variables of interest; and the alternative futures that may unfold under a range of different "what if" assumptions and contingencies.[30] In sum, if we are to deepen our analysis of the future possibility space, we need to build bridges between seemingly incompatible theories and methodologies across the sciences and humanities.[31] A theoretical framework that can facilitate transdisciplinary synthesis is thus required.

MARXISM, COMPLEXITY THEORY, AND PLANETARY SYSTEMS THINKING

The theoretical framework developed in this book is situated at the intersection of Marxism and complexity theory. It begins with the recognition that no comprehensive analysis of the polycrisis condition can be done without

going through the Marxist tradition. Few thinkers have been as prescient as Marx in anticipating the broad contours of the evolution of capitalist modernity and its tendency toward cumulative political-economic and ecological crises. Rather than reducing Marxism to a teleological and economistic reading of history, or a rigid theoretical framework with a set of preestablished theses, we should instead view it as an open-ended investigation of the dynamics, historical patterns, internal tensions and struggles, mechanisms of reproduction, and possible futures of global capitalism.[32] Marxists instinctively grasp the fact that, as Nancy Fraser puts it, we face "not just a set of discrete punctual problems, but a deep-structural dysfunction lodged at the very heart of our form of life."[33] Furthermore, with its synthetic ambition to study the "totality" of global socioecological relations—or the overarching system of planetary metabolism shaped and constrained by global capital—a Marxist framework alerts us to the inherent limits of isolationist analyses and proposed "solutions" that merely defer or displace various problems and contradictions, both in space and time, without genuinely resolving them.[34]

However, while Marxist approaches are vital to the analytic task before us, they are insufficient on their own. Too often they perpetuate a form of what William Connolly calls "socio-centrism," or the tendency to focus on political and economic factors alone—at best acknowledging but without deeply engaging with the earth system sciences, energy studies, ecological economics, and other fields that highlight the geophysical parameters that will constrain the possible futures of capitalism.[35] Ecological Marxists, on the other hand, go much further in this direction by foregrounding the socioecological relations of capitalist (re)production and their planetary consequences. Yet they give us only part of the story. At best these approaches analyze the links between the crises of capitalism and the earth system, at times integrating other problems like pandemic disease and the global food crisis. But they rarely investigate *how* these multiple crises will converge and amplify each other, instead focusing primarily on how capitalism fuels crises in different subsystems.[36] Furthermore, ecological Marxists typically ignore problems like net energy decline, digital surveillance, policing, and emerging technological risks in the realms of AI, synthetic biology, and nuclear weapons. This gives them only a partial glimpse of the planetary predicament as a whole, which is

fine for the purposes of more isolationist studies, but not if we want to rigorously investigate planetary futures.

In sum, while Marxist approaches are indispensable, I suggest that an alternative theoretical approach that is nonetheless indebted to Marxist frameworks can provide deeper insight into planetary futures. In particular, our framework should enable us to do the following: (1) situate global capitalism as merely one complex system that coevolves with a broader landscape of self-organizing systems (including ecological, security, ideological, and technological systems or assemblages), (2) map competing hegemonic and counter-hegemonic projects that advance opposed framings of and solutions to the crises we confront, and (3) develop a "methodology" (if that is the right word) that combines theory, history, modeling projections, and imagination to project a range of possible futures for the world-system.

These are the key goals of the theoretical framework that I call "planetary systems thinking." This approach falls under the broad umbrella of what is often called "complexity theory." But we should emphasize that there is not one single form of complexity theory, but rather a set of related approaches aiming to transcend the analytic reductionism, disciplinary isolationism, human/nature dualisms, and assumptions of linear change and causality that dominate the Newtonian scientific worldview.[37] Planetary systems thinking can thus be considered a variant of complexity theory—one that is particularly inspired by world-systems theory, ecological Marxism, Manuel Delanda's framework of "assemblage theory,"[38] Edgar Morin's notion of "planetary thinking,"[39] and the neo-Gramscian "complex hegemony" approach developed by Alex Williams.[40] Planetary systems thinking is the subject of chapter 3, but for now I'll briefly elaborate two of the key concepts that form the foundation of this approach.

The first is the concept of a *complex system*: an open and dynamic system that emerges from a set of feedbacks between component parts but without negating the autonomy of the parts. Rather than the closed or tightly controlled homeostatic systems conceived in the traditions of cybernetics, Parsonian social theory, and Hegelian Marxism,[41] complex systems should be understood as open systems or "dissipative structures" that are continuously exchanging matter and energy with their surrounding environments.[42] They exhibit provisional and often fragile forms of stability that are reproduced through negative feedback mechanisms, though they are

liable to rapidly shift between alternative states in response to external shocks or slow shifts in key system parameters.[43] Complex systems also range on a *spectrum of systematicity*: from more heterogeneous and networked "assemblages" on one side, in which the parts retain a high degree autonomy (e.g., ecosystems), to more tightly integrated and hierarchically ordered systems on the other (e.g., biological organisms).[44] Throughout this book I often use the term *assemblage* to refer to complex systems that are on the more loosely integrated and heterogeneous side of the spectrum (such as when I speak of security and ideological assemblages). But all complex systems in reality fall somewhere between these two poles, and over time they may shift in one direction or other. The capitalist world-system, for instance, became a more tightly integrated global system during the corporate-led hyperglobalization drive of the 1990s, though rising geopolitical tensions and calls for "decoupling" between the US and Chinese economies may be starting to reverse this trend.[45]

The second key concept is less familiar but equally important to the argument of this book as a whole. This is the concept of the *problematic*, which refers to a nexus of problems that shape and constrain the possible trajectories of a complex system. My use of this concept comes from the work of Manuel Delanda,[46] though he borrows it from the philosopher Gilles Deleuze. I am interested in how Delanda's reworking of this concept can deepen our understanding of the widely used but undertheorized notion of "problematique." The Club of Rome, for instance, in its infamous *Limits to Growth* report spoke of a "World Problematique": a conjunction of intersecting ecological and economic problems that constrains the possible trajectories of the world-system.[47] As William Watts wrote in his foreword to the report, "We continue to examine single items in the problematique without understanding that the whole is more than the sum of its parts, that change in one element means change in the others."[48] Edgar Morin shares this notion of problematique when he writes that there "is no single vital problem, but many vital problems, and it is this complex intersolidarity of problems, antagonisms, crises, uncontrolled processes, and the general crisis of the planet that constitutes the number one vital problem."[49]

Following Delanda, Morin, and the Club of Rome, the concept of the problematique or problematic gives us a way to think about problem-spaces composed of numerous reciprocally determining dimensions. This

is exactly the sort of concept we need to analyze the unfolding polycrisis and understand the constraints it places on the possible futures of global capitalism and the earth system. The planetary polycrisis—or what I later call the "planetary problematic"—is the simultaneously singular and multiple crisis that emerges from the interlocking challenges we confront. It is the field of problems that collectively structure the future possibility space, though the future that ultimately emerges will be determined by struggles between competing hegemonic projects to frame, narrate, and provide "solutions" to the problematic. Like the Marxist concept of "totality," the planetary problematic is an abstraction that can guide theoretical and empirical analysis, though its substantive content can emerge, as in Marx's method, only by "ascending from the abstract to the concrete," thereby elaborating the problematic as a "rich totality of many determinations and relations."[50] This book will illuminate the intricate architecture of the planetary problematic in order to inform a counter-hegemonic praxis of navigation. The point is not to try to include everything in our analysis, but rather to highlight the key dimensions of the problematic that are most causally relevant to the planetary future, analyze the positive and negative feedbacks between them, and explore future trajectories that are "coherent" in the sense of following the feedback structure that entangles them.[51]

We should, however, acknowledge that this sort of transdisciplinary futures analysis carries risks. On one hand, there is the risk of oversimplification and mistakes as we venture into fields beyond our disciplinary expertise. The risks are real, but I make no apologies for taking them. To use an expression popularized by Dan Gardner,[52] the "foxes" among us (rather than the "hedgehogs") are more likely to successfully anticipate the broad contours of the future. In other words, rather than ultra-specialized experts, it is the agile and curious—those who venture far outside their disciplinary comfort zones, seeking out new insights from other fields and opposing perspectives that challenge their thinking—who are best placed to connect the dots and develop more realistic maps of the future.[53] Martin Wolf—the chief economics commentator at the *Financial Times*, and a recent convert to systems thinking—makes the point well: "We need to analyse within the [disciplinary] siloes, while also analysing across them. . . . It is bound to irritate professional experts working comfortably in their silos. But . . . it has become clear that such narrowness is folly. It is to be precisely wrong

rather than dare to be roughly right."[54] In other words, specialization is still necessary; it provides the raw material with which the foxes among us can build a more synthetic narrative. But to develop more useful and comprehensive maps that will help us navigate the planetary polycrisis, we must get outside of our disciplinary comfort zones, remain agile, take risks, and be willing to continuously address our blind spots—no matter which fields of knowledge this forces us into—and revise our maps accordingly. If we "dare to be roughly right" about the future, then there is no other option.

But there is also a second key risk we must be mindful of: that by focusing on the "big picture" of world-system and planetary-scale futures, we may ignore or subsume diverse experiences and temporalities within a homogenized planetary narrative. As Carl Death writes, the risk is that analyses of planetary futures produce "visions of universal, homogeneous time," which can close down "a sense of hetero-topic time, in which multiple timescales and trajectories exist simultaneously."[55] Put differently, we do not want to pretend as if "the future" will involve one universally shared trajectory, or that the planetary problematic means the same thing for all peoples and places. Far from it. Instead we must emphasize, following Alex Anievas and Kerem Nisancioglu, that global historical processes "are always the outcome of a *multiplicity of spatially diverse nonlinear causal chains* that combine in any given conjuncture."[56] In other words, the future—like the history of global capitalism—will be spatiotemporally uneven *and* combined, involving a multiplicity of local struggles and trajectories across the world-system *as well as* a planetary trajectory that emerges from the combination between them. This means, as Stefanie Fishel and company write, that our analysis of the planetary problematic should be "simultaneously singular and plural, combining the universality of a common entangled existence on planet Earth and the particular and multiple differences of culture, gender, privilege, location, species and temporality."[57] Of course, in practice this is easier said than done. This book places a bit more accent on the *combined* rather than the *uneven* nature of the planetary problematic, which is in part simply the result of my own cognitive constraints, though it is also justified by the globally integrative tendencies of capitalism and the deepening reality of planetary entanglement. I also focus primarily on developments in the world-system "core"—mainly the US, China, and Europe—since what happens in the core will probably have

the most influence over the planetary future as a whole. I counterbalance this by showing how trajectories in the core will be shaped and constrained by political struggles across the periphery and semi-periphery (or global south). But this is a limitation of the present study, and further scholarship is needed to develop more fine-grained narratives of possible futures in diverse states, regions, and localities across the world-system.

OUTLINE OF THE BOOK

Chapter 1 explains the concept of the "planetary polycrisis" and provides an overview of its key dimensions, including crises of the earth system, capitalism, energy, food, global security, and identity (or what I call "existential crises"). It provides an empirical foundation that the subsequent tasks of theory construction and future-scenario analysis build upon.

Chapter 2 explores different approaches to the study of planetary futures. It begins by examining the use of quantitative models to develop scenarios—focusing in particular on the *Limits to Growth*, integrated assessment models, and the shared socioeconomic pathways. Next, it explores the role of qualitative scenario exercises in the military, intelligence, and corporate sectors—focusing mainly on the National Intelligence Council's *Global Trends* reports. Finally, it engages with what I call "critical social science futures," or approaches that use the tools of social science and critical theory to explore possible, probable, and desirable futures. The chapter argues that we need a theoretical approach that allows us to develop more synthetic and transdisciplinary futures methodologies, bringing together quantitative modeling projections with qualitative analyses of global political economy, power, and resistance.

Chapter 3 develops the conceptual foundations of planetary systems thinking. The chapter elaborates the book's key concept—the planetary problematic—while also analytically distinguishing between three sets of problems within the overarching problematic: (1) the "socioecological problematic," which refers to the nexus of problems encompassing the earth system crisis, the structural crisis of capitalism, net energy decline, food crises, and pandemic risk; (2) the "violence problematic," which refers to the nexus of war, militarism, policing, "terrorism," and emerging technological risks; and (3) the "existential problematic," referring to the

problem of creating shared meaning and belonging, which is generative of problems like nationalism, race and racism, gender and hypermasculinity, and far-right populism. The chapter concludes by describing the futures "methodology" that I call "mapping," which involves qualitative analysis of the key parameters and relations that structure the planetary problematic, using theory and model projections to anticipate how these parameters may coevolve, and imaginatively constructing possible future trajectories that are coherent in the sense of respecting the relations and feedbacks among these parameters. Readers who are less interested in theory may skip this chapter, but they would run the risk of confusion regarding my use of particular concepts in subsequent chapters.

Chapter 4 shifts to a direct investigation of the future possibility space by focusing on the socioecological problematic (SEP). The chapter unfolds in a way analogous to system dynamics models: First, it creates a qualitative "model" of the SEP by describing the relations and feedbacks between ecological, political-economic, energy, and food crises. Second, it develops multiple scenarios for how these crises may unfold following a series of "what if" questions. The chapter shows that both business-as-usual as well as green Keynesian reform trajectories would most likely end up in global collapse—that is, *unless* dramatic technological breakthroughs occur. On the other hand, if revolutionary technological breakthroughs *do* occur, then this would likely drive the emergence of what I call techno-leviathan[58] (elaborated more in chapter 5). The chapter thus challenges the conventional wisdom, at least among mainstream analysts, that policies to accelerate the renewable energy transition and catalyze a "green industrial revolution" would be sufficient to resolve our planetary predicament, even if they help stabilize global temperature increases at 2°C or below. It concludes by shifting to the concrete utopian mode by exploring how deepening crises of capitalism could also create the conditions for ecosocialist transitions, whether in the next fifteen to twenty years or later this century.

Chapter 5 investigates the intersections between the violence, socioecological, and existential problematics. As in chapter 4, I begin by describing the causal relationships between their key components and then explore how they may coevolve in the future. The chapter shows that worsening geopolitical tensions, militarization, and police repression would coincide with socioecological crises to push business-as-usual trajectories further

toward collapse. On the other hand, if both green Keynesian reforms *and* revolutionary technological innovations occur, I show that this would likely fuel the emergence of techno-leviathan by unleashing a vicious spiral between increasing insecurity (driven mainly by "democratized" weapons of mass destruction) and intensified military-police repression. Finally, the chapter again shifts to the concrete utopian mode by exploring the potential for what I call "abolitionist" security assemblages in an ecosocialist trajectory, which would entail new practices of security that focus on reducing the root causes of violence rather than relying on military-police responses.

The conclusion summarizes the trajectories sketched in chapters 4 and 5 by encapsulating them in seven main scenarios (what I call the "uneven and combined world-system pathways"), considers their implications for counter-hegemonic praxis, and concludes with some reflections on the role of hope and pessimism in collectively navigating our planetary predicament.

NOTES

INTRODUCTION

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CHAPTER 1

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CHAPTER 5

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