Article

Social Currents
2022, Vol. 9(2) 159–179

DOI: 10.1177/23294965211043548
journals.sagepub.com/home/scu
SAGE

Capitalism and Sustainability: An Exploratory Content Analysis of Frameworks in Environmental Political Economy

Timothy P. Clark[1], Andrew R. Smolski[2], Jason S. Allen[3], John Hedlund[2], and Heather Sanchez[3]

Abstract

A critical divide within environmental sociology concerns the relationship between capitalism and the environment. Risk society and ecological modernization scholars advance a concept of reflexive political economy, arguing that capitalism will transition from a dirty, industrial stage to a green, eco-friendly stage. In contrast, critical political economy scholars suggest that the core imperatives of capitalist accumulation are fundamentally unsustainable. We conduct a content analysis of 136 journal articles to assess how these frameworks have been implemented in empirical studies. Our analysis provides important commentary about the mechanisms, agents, magnitude, scale, temporality, and outcomes these frameworks analyze and employ, and the development of a hybrid perspective that borrows from both these perspectives. In addition, we reflect on how and why reflexive political economy has not answered key challenges leveled in the early 21st century, mainly the disconnect between greening values and the ongoing coupling of economic growth and environmental destruction. We also reflect on the significance of critical political economy, as the only framework we study that provides analysis of the roots of ecological crisis. Finally, we comment on the emergent hybrid perspective as a framework that attempts to reconcile new socioecological configurations in an era of increasing environmental instability.

Keywords

Reflexivity, environmental sociology, social metabolism, political economy, content analysis

Introduction

As wildfires rage, ecosystem biodiversity deteriorates and global temperatures continue to rise, the tenability of capitalism as an environmentally sustainable form of socioeconomic organization appears less and less assured. A central debate in environmental political economy

[1]University of British Columbia, Vancouver, BC, CA
[2]North Carolina State University, Raleigh, NC, USA
[3]Independent Scholar

Corresponding Author:
Timothy P. Clark, University of British Columbia, 2202 Main Mall, Vancouver, BC VGT 1Z4, Canada.
Email: timothy.clark@ubc.ca

concerns the capacity of the global capitalist system to alter its damaging relationship with the environment. The growing relevance of this question has a long and rich scholarly history within the field of environmental sociology and political economy.

Indeed, the critical divide concerning economy and the environment can be traced to the origins of environmental sociology as a subfield. In the 1980s and 1990s, environmental sociologists formed two competing intellectual traditions: reflexive political economy and critical political economy. In brief, reflexive political economy scholars argued that dominant institutions could incorporate ecological costs and considerations into their thinking and strategies, and that this process would create conditions for economic expansion without ecological degradation (Beck 1992; Giddens 2009; Mol, Spaargaren, and Sonnenfield 2010). Alternatively, critical political economists typically emphasized that dominant institutions lacked the capacity to meaningfully incorporate ecological costs due to the structural contradictions and demands of capitalist imperatives (Schnaiberg and Gould 1994; Dietz and Jorgenson 2013; Longo and Clark 2016).

Given the centrality of this divide and its increasing importance in the 21st century, it is necessary to assess the current state of the debate. Theoretical reviews or extensions of these perspectives were common in the first few years of the 21st century, but typically only emphasized one framework and its research agenda (Buttel 2004; Mol and Spaargaren 2005). Other earlier work described how these different frameworks explained reform or their relevance for organizations (Buttel 2003; Shwom 2009). Other work argued for a conceptual synthesis or made challenges to the theoretical and methodological assumptions of particular frameworks that were never adequately answered (Freudenburg 2006). Yet, none of these prior reviews provide an inventory of the agents, mechanisms, scales, magnitudes, temporalities, or outcomes of these frameworks as used in empirical studies. Nor do they assess whether the parameters of these frameworks have shifted or produced synthetic frameworks.

As such, this study accomplishes two, generally useful aims for the field. One, as a review, it provides an update on the field for environmental sociologists, as well as scholars of political economy and sustainability. Two, our study focuses on empirical and data-driven research. This review accomplishes these goals by focusing on the middle-range theories employed by these competing frameworks, analyzing both quantitative and qualitative research. In doing so, we note that a simple dichotomy between critical and reflexive frameworks cannot account for an emergent hybrid framework that combines and, to some degree, reconfigures these perspectives.

We conducted a content analysis, based off a concept-driven approach that allows us to take stock of the field, the strength of evidence for frameworks, and what avenues are open for future research (Paterson et al. 2001). We performed key word searches in 20 leading journals in sociology and environmental social science to pull a sample of articles. We annotated 136 empirical journal articles to build a corpus, which we coded in NVivo 12, qualitative data analysis software. In the following section, we characterize the original parameters of this debate, which centered on the potential, or lack thereof, for capitalist institutions and forms of social organization to adopt and implement environmental concern in sustainable fashion.

Competing Frameworks: Foundations and History

Reflexive Political Economy

Reflexive political economy stems from the work of ecological modernization and risk society scholars writing in the 1980s, 1990s, and turn of the 21st century. These scholars shared the idea that modern, capitalist society possessed a potential for reflexivity, whereby market mechanisms and voluntary agreements between states and corporations would incorporate ecological costs and environmental planning to sustainably transform industrial production (Huber 1985).

Ecological modernization scholars of the 1990s extended upon Huber's transformation thesis by arguing in favor of "super-industrialization" in order to accelerate the movement towards green or eco-friendly capitalism (Spaargaren and Mol 1992). A more technologically efficient marketplace and ecologically aware state apparatus paired with an ecologically concerned civil society would steer this market-friendly, eco-structural shift (Janicke 1990; Mol 1996). Ultimately, such institutional ecological concern, or reflexivity, would transform even the global, capitalist marketplace into a source of sustainable development (Mol and Spaargaren 2000; Mol 2002). Indeed, these theorists reasoned that expansionary, capitalist development was essential, as increased levels of wealth were needed to invest in state management and more efficient technologies. Reflexivity, then, works as a social force that stimulates decoupling of economic growth from environmental impact. Further, it provides a theoretical justification for eco-modernist optimism surrounding the potential for the market and technology to overcome ecological problems without serious structural change (Lomborg 2001; Shellenberger and Nordhaus 2012).

Importantly, reflexivity signals incorporation of ecological concern at multiple levels within a society. Early reflexive political economy scholars characterized reflexivity as an increasingly important feature of modern capitalist society. For example, Beck argued that reflexivity "seems to be producing a new kind of capitalism," that could potentially manage the growing threat of mega-ecological risk (Beck 2003:2–3; Beck 2000). Similarly, Mol (1996) argued that growing ecological reflexivity characterized modern institutions.

From this standpoint, ecological degradation became a unique force of social change. The growing existential threat posed by heightened ecological risk, what Beck (1992) called mega-hazards, would pressure powerful institutions to better regulate the environment. As Giddens (1990) argued, the "high consequence risks" of contemporary capitalism transcend "all exclusionary divisions of power." Thus, the mega-hazard provides what Beck (1989) called a boomerang effect, where the once "latent side effects" of industrial era capitalism now pose a risk to all classes, nationalities, and identities to the point where "victim and perpetrator (have) become equal" (Beck 1989:38). The transition to what Beck (2010:206) called a "green capitalism" was therefore born from the reality of universalized risk.

It follows that early ecological modernization and risk society scholars suggested that reflexivity would occur within the framework of capitalist society. These reflexive political economy scholars thus advanced an institutional level, ecological risk transcendence thesis, which argued that powerful institutions within a capitalist society would accept the reality of ecological threats and act accordingly to reduce those threats. Reflexive political economy scholars suggested that key institutions within capitalist society, like the state and the private sector, would steer this shift toward eco-friendly capitalism via the greening of markets—what we call positive commodification—and increased development of efficient technological innovations.

Rising cultural and civic demand would support the implementation of ecological protection. As Mol (1996:30) called it, the "ecologisation of the economy," would be steered by the emergence of an increasingly reflexive state but, also, broader social participation in groups like environmental NGO's, as well as rising demand for green consumption (Mol and Spaargaren 2000; Mol and Jänicke 2009). These forces were, it was argued, congealing in the vacuum of state failure, where overly centralized and bureaucratic, hierarchical state functioning would give way to new, more effective and democratic opportunities for green political modernization (Jänicke 1990; Spaargaren 1997). Thus, the state, guided by more critically aware and participatory governance, plays an important role as well.

The shared understanding of growing, socio-cultural reflexivity that permeates across social actors and levels further links ecological modernization and risk society thinking. As

Giddens (1999) noted, there is an emergent, collective realization of ecological risk, where, for example, a consumer must now engage reflexively to answer everyday questions—that is, should I buy organic or not? What Beck (2015:76) called an "existential violation" characterizes this widespread dissemination of ecological risk, whereby everyone, from the individual consumer to the multi-national firm, must now contemplate their actions in conversation with looming ecological implications.

Therefore, reflexivity as a theorized mechanism is a complex and dynamic force that drives change at multiple levels. Conceptually, we understand reflexive political economy's key supposition as follows: capitalist society advances through developmental stages, and advanced capitalist institutions exist in a stage characterized by widespread cultural and material confrontations with ecological risk that provide the motivation to reduce it. At the turn of the 20th century, York and Rosa (2003) challenged ecological modernization (and, hence, reflexive political economy) to go beyond merely suggesting that institutions make allusions to ecological concern and instead demonstrate that such reflexive modification actually leads to real, net ecological improvements. Indeed, at some point, the validity of reflexivity hinges on its power as a force to induce generalizable ecological improvement. It could be that reflexive political economic theory, which largely emanated from Northern and Western Europe, has a bias due to geopolitical origins. This could account for the framework's strong optimism in the capacity of a social democratic state, civil society, and progressively minded populous to ameliorate environmental risk.

A purpose of this study, in relation to reflexive political economy, is to uncover if York and Rosa's (2003) challenge has been consistently answered by reflexive political economic scholarship. A second, related purpose in relation to reflexive political economic scholarship is to provide a conceptual, data-driven discussion of how this framework has been applied over the first two decades of the 21st century. There is a great deal of latitude in conceptualizing and measuring reflexivity—for example, from the consumer level to the nation state. In short, we are curious at what societal level(s) reflexive political economic scholarship—a framework whose belief in capitalist institutions to incorporate concern and enact change was quite optimistic—has been applied in empirical research.

Critical Political Economy

The second over-arching framework we highlight includes work that developed in a similar period to reflexive political economy, but took a fundamentally different approach to conceptualizing the potential of modern, capitalist institutions and society to incorporate ecological concern in sustainable fashion. This approach largely traces its origins to the treadmill of production school, which ecological Marxist scholarship later extended upon. Schnaiberg (1980) in his foundational book *The Environment: From Surplus to Scarcity* argued that institutional bodies formed "growth coalitions" to sustain the treadmill of production, which necessitated environmental degradation in the form of withdrawals and additions (Schnaiberg 1980; Schnaiberg and Gould 1994). In contrast to reflexive political economy scholars, treadmill theorists argued that there was scarce evidence to suggest that the treadmill showed signs of slowing (Gould, Pellow, and Schnaiberg 2004). Thus, ecological degradation was not a stage of capitalist development, as reflexive political economists would suggest, but rather an endemic feature of capitalist development.

Extending upon the critique leveled by the treadmill school, Mészáros (1995), Foster (1999), and Burkett (1999) emphasized a Marxian approach to environmental political economy as a critique of capitalist value relations. Capitalist production not only required withdrawals and additions from nature, these theorists reasoned, but prioritized exchange value to such an extent that the regenerative requirements of ecosystems were disrupted and prone to collapse (Foster 1999). For example, because capital accumulation is predicated on

the expansion of abstract exchange value, Mészáros argued that the capitalist mode of production presented a "spectre of destructive uncontrollability," which made the "post-industrial," green-capitalist optimism expressed by reflexive political economy theorists a fantasy of "magic cleanliness" that the capitalist mode of production could not, in reality, tolerate (Mészáros 1995:151, 171). This underlying contradiction between fetishized, capitalist exchange value and the materially real, regenerative needs of ecosystems obstructed even the more dynamic and innovative attempts to manage or apply market-schemes to ecosystems (Burkett 2003). Thus, critical political economy scholars emphasize what we refer to as negative commodification, or the tendency of marketization and pricing mechanisms to exacerbate ecological problems.

The theoretical groundwork laid by the treadmill of production and ecological Marxists helped give rise to other branches of critical political economy such as unequal ecological exchange and social metabolism. Contrary to the notion that mega-hazards generate a boomerang effect, unequal ecological exchange rejects risk universalization and instead argues that the capitalist world-system is in fact dependent upon the maintenance of stratified ecological risk (Jorgenson and Rice 2007; Frey, Gellert and Dahms 2018). This critique, which largely draws from Bunker's (1984; 1985) analysis of ecological underdevelopment and extractivism in the Amazon, also stems in part from critical social metabolic theory, such as the notion that the capitalist mode of production and its geo-political ordering mediate the distribution of material flows (energy, natural resources, and pollution) in order to reproduce the global economic order (Fischer-Kowalski and Haberl 1998; Fischer-Kowalski 1997). In the 21st century, social metabolic scholars have empirically explored how structural tendencies of capitalist production tend to produce ecological contradictions and metabolic rifts that the system cannot fully mitigate with technological innovation, market mechanisms, or state reforms (Clausen and Clark 2005; Longo, Clausen, and Clark 2015; Holleman 2017).

In sum, critical political economy scholarship originated from neo-Marxist perspectives that emphasized how the core imperatives of capital accumulation obstructed the full realization of a decoupling effect—what ecological modernization scholars hypothesized as the coming ecologisation of the economy, or the notion that capitalistic, economic growth would no longer harm the environment. Buttel (2004) demonstrates that variation exists within these frameworks overtime, as later iterations of the treadmill framework shifted away from more Marxian critiques of capitalism, state, and internal contradictions toward a focus on local contestation of environmental degradation and the impacts of transnational institutional changes to global trade. As the treadmill emphases shifted, ecological Marxism emerged more forcefully in the 1990s with scholarly focus on social metabolism. In recent years, more scholarship has emphasized the imperialistic nature of capital's failure to ecologize the economy, noting that inequality across class, race, and nationality are endemic to ecologically uneven development (Austin and Clark 2012; Holleman 2017; Clark 2020). Thus, we are curious to explore the extent to which critical political economy has empirically expanded upon the neo-Marxist foundations laid in the 1980s and 1990s. Further, this study explores how critical political economy has specified the agents and mechanisms that drive socioecological outcomes in the context of an increasingly precarious planetary system.

Summary

These foundational frameworks are far from archaic. They support a generation of empirical research, whose work has come of age during a period of increasing ecological risk and degradation. However, reviews of these perspectives are increasingly dated and lack a data-driven approach to assessing the field. For example, Buttel's (2003) critical essay on environmental change mechanisms posited how environmental sociologists advocate for reform, but this review did not include a method's section or systematic analysis of the field. Our

study thus supplies environmental political economy and sociology scholars with a recent and empirically substantive update of the field. In doing so, we assess how reflexive political economy responded to new socioecological conditions and challenges raised by environmental sociologists (York and Rosa 2003). In addition, we explore how critical political economy has applied a macro-structural perspective to empirical phenomena.

At this juncture, it is worth noting that the orientations and foundational arguments of these frameworks have, to some extent, experienced convergence. On that note, our finding of a hybrid framework was a surprise, as we went into the coding process without the intention of uncovering syntheses between these two largely oppositional frameworks. We discuss the qualities and implications of this framework in great detail through the rest of the manuscript. Here, we will note that the emergence of such hybrid scholarship conforms to aspects of Fisher and Jorgenson's (2019) explication of the anthro-shift, or the notion that changes in the society-environment dynamic correspond with shifts in state, market, and civil society sector responses to increasing environmental risk. This perspective emphasizes how and why state, market, and civil society's orientation to ecologies are dynamic over time. As such, we posit that further risk associated with entrenchment in a neoliberal political economic order, in conjunction with rising ecological calamity, can result in efforts to reconfigure environmental political economic research. We explore this and other relevant findings more in the discussion and conclusion sections. In the section that follows, we detail the methodological approach utilized to address these issues.

Data and Method

A content analysis is a qualitative method for systematically analyzing textual data. Content analysis is a powerful tool for conducting a literature review through distilling the information into discrete codes (Onwuegbuzie, Leech, and Collins 2012). These codes can then be grouped together to reveal a general trend within a framework as well as differences between frameworks. As such, content analysis develops a codebook and categorization schema, partially through an inductive, grounded approach whereby codes arise from the analysis process (Mayring 2000). This can be an iterative process, whereby certain general codes are set prior, and then more particular codes arise through the analysis process.

Data

We followed a "concept-driven" search model for collecting our data. Our data collection relied upon key words originated from the strains of literature discussed above; specifically, treadmill of production, treadmill of destruction, social metabolism, ecological unequal exchange, ecological modernization, and risk society. We chose these key words based on our knowledge of the literature and because of their ability to incorporate a wide enough sample of articles. We then selected 14 sociology journals and six interdisciplinary, environmental social science journals from which to pull articles that utilized at least one of these key words. First, as a research team, we selected these journals based on our collective knowledge of the field. Specifically, we chose journals where we knew important, environmental sociological and political economic debates had occurred in recent years. Because environmental sociology is an interdisciplinary field, we applied this lens to sociology and environmental social science journals. We also supplemented our knowledge-based approach with Google Scholar's metric function, so as to make sure to include articles from high-impact, generalist sociology journals. We depict these journals in Table 1.

From these journals, we pulled articles published between 2000 and 2018 because prior reviews focused on the 1980s and 1990s (Buttel 2003; Mol and Spaargaren 2005). In total, our initial search yielded 167 articles from these 20 journals over this period. These articles represent the collective work of 215 researchers. One journal, *European Sociological Review*, yielded no articles. Because of this, we

Table 1. Journals Utilized in Analysis, with Number of Articles in Parentheses.

Sociology	Environmental social science
Environmental Sociology (18)	*Organization and Environment* (5)
American Sociology Review (4)	*Society and Natural Resources* (12)
Critical Sociology (5)	*Human Ecology Review* (5)
The Sociological Quarterly (10)	*Journal of Peasant Studies* (8)
Social Problems (4)	*Journal of Agrarian Change* (5)
Sociological Theory	*Journal of Rural Studies* (16)
Rural Sociology (11)	
Sociological Inquiry (15)	
Social Currents (3)	
Sociology (2)	
Current Sociology (6)	
The British Journal of Sociology (3)	

omitted it from Table 1. We reviewed the articles to assure that they are empirical studies, as opposed to review articles. *Sociological Theory* and *American Journal of Sociology* were removed due to a lack of empirical articles that utilize these key words and are not present in Table 1. After removing conceptual or exclusively theoretical articles, the total number of articles was 136 from 17 journals. Our team of five researchers then divided up the articles by journal and annotated each of the articles, which resulted in an extensive data corpus for our qualitative analysis. Annotations summarized theory, actors, process, and outcomes. All annotations were then merged into a master document, which is the qualitative corpus used for analysis.

Data Limitations

Our data selection method is a limitation for our study in terms of coverage. As a concept-driven meta-study, it is not an exhaustive review of all environmental political economy literature. Rather, it is a sample of studies that emphasize some foundational environmental political economic perspectives. Additionally, the selection of journals is a convenience sample, even accounting for the use of the metric function to support inclusion of generalist journals. Yet, we note here that our analysis revealed consistent, strong, and saturated thematic tendencies within our corpus. We thus reason that findings from this sample of journals are broadly applicable. Also, this approach may not include all environmental political economy articles within these journals, or even pieces that may borrow from these perspectives, meaning literature was likely omitted. However, we note that authors who identify these perspectives as keywords for their studies likely draw more heavily upon them than authors who do not. Still, because of these limitations, we provide the full bibliography for our NVivo corpus as a supplemental file. Future researchers can use that to expand the content analysis into a larger meta-study.

Data Analysis

We develop a coding strategy based on analyzing the middle-range theoretical claims and outcomes employed by general frameworks. Middle-range theoretical claims are testable abstractions emphasizing specific social phenomena (Merton 1949). One type of middle-range theorizing is a social mechanism approach, where mechanisms are processes initiated by agents leading to certain outcomes (Hedström and Swedberg 1998). Furthermore, social mechanisms are dynamic, time-based operations, occurring at different scales and with varied magnitudes of effect (Verslý and Smith 2008). Thus, a social mechanism

approach provides a coding strategy that analyzes how and to what extent change happens, who or what makes change happen, and what are the effects of the change in empirical studies.

We organized the following as general categories in NVivo to guide coding: outcomes, mechanisms, agents, magnitude, scale, and temporality (see Table 2). Additionally, for temporality we settled on two particular codes, cross-sectional and longitudinal, which we operationalized quantitatively and qualitatively. In the latter case, we treat a case study focusing on a brief moment in time, such as a year, as a cross-sectional study, while longer historical studies we treat as longitudinal.

We performed two rounds of coding on the annotation corpus, an initial open round and a second, focused round. Open coding is a process whereby any code can emerge through an analysis of the data, and focused coding utilizes a refined set of codes to code the data without permitting new codes to be produced (Berg 2009). The initial round of open coding provided a set of sub-codes within the broader codes. For instance, open coding led to the development of structural, institutional, and individual magnitudes as codes. Further, through open coding we discovered an emergent hybrid framework that synthesizes agents, mechanisms, and outcomes from both reflexive political economy and critical political economy.

In the second round of focused coding, we refined the number of codes to be mutually exclusive of one another and have sufficient presence across the annotations. Following the construction of our full set of nodes, or coding categories, we performed a round of focused coding that utilized our article annotations to group each article into its sub-nodes. We then compiled a random sample of 20% of the corpus by pulling every fifth article to recode in order to address inter-observer disagreements and ensure inter-coder reliability based on a test-test design, whereby there is agreement for the results of coding overtime (Krippendorf 2004). Our inter-coder reliability scores were high and exceeded 95% agreement for all categories of nodes. In total, across 136 articles there were 56 different codes and 1294 references. This provided us with a set of descriptive statistics with which to assess the literature and develop results for each theoretical framework. We provide the node glossary as a supplemental file.

We then utilized NVivo to construct patterns of node association across each framework to determine the nature of the claims made by each of the three frameworks. We accomplished this using the cluster analysis function in NVivo, which provides a Pearson's correlation coefficient between each of the sub-nodes. Cluster analysis is a tool to group together the different components, allowing us to demonstrate the links between different sets of outcomes, mechanisms, agents, magnitude, scale, and temporality and frameworks. There is higher covariance between sub-nodes that were more likely to be coded together. That covariance provides evidence for whether or not a sub-node, or coding category, is an important part of a framework.

We present associations that have a correlation coefficient of greater than or equal to .5.

Table 2. Nodes and Conceptual Definitions Used for Focused Coding.

Nodes	Conceptual definitions
Frameworks	The meta-theoretical orientation utilized in the article
Outcomes	The substantive results of the study
Mechanisms	The social processes that drove the outcomes
Agents	The actors (e.g., firm, state, and consumer) the study emphasized as drivers of mechanisms
Magnitude	The level of impact of the study's results
Scale	The level of analysis of the study
Temporality	The time period or span of the study

Our reasoning is that the Pearson correlation coefficient, or *r*, ranges from −1 to 1, with a coefficient (r) closer to zero representing a weaker to non-existent association between codes. Additionally, an *r* of .5 to .7 is generally considered a moderate association and an *r* greater than or equal *to* .7 is generally considered a strong association (Ratner 2009). Thus, we report moderate and strong correlations of node associations in Tables 3 and 4. In presenting node associations across these frameworks, these tables show which coding categories are emphasized within frameworks and how these perspectives are typically utilized to construct analyses and frame findings.

Findings

A Shared Core Across All Frameworks

According to Tables 3 and 4, all frameworks at least moderately emphasized business and government as agents of change. Similarly, each framework also showed at least moderate association with institutional reflexivity as a mechanism for change. Institutional reflexivity suggests that powerful institutions, usually states or large firms, reform their values or policies with the goal to address environmental externalities and ecological concerns. All frameworks posited that civil society, mobilized through civic engagement, corresponded with institutional reflexivity. The frameworks agree that this process leads to environmental planning as an outcome. Considering environmental political economy's over-arching question on the capacity for reform, this finding suggests that modern social systems embedded within nation-states are increasingly devoting energy toward environmental planning. However, there was little agreeance that this agent–mechanism relation led to environmentally positive outcomes.

Divergence and Convergence Around Hybrid

The hybrid synthesis indicates shared concerns with reflexive political economy's outcome of

Table 3. Nodes With Strong Covariance.

Nodes with strong covariance (>.69)						
Framework	Agents	Mechanisms	Outcomes	Magnitude	Scale	Temporality
CPE	Business, government, civil society	Anti-reflexivity, negative commodification, techno-fix, risk stratification	Ecosystem disruption, environmental neglect, environmental injustice	Structural, institutional	Global, national	Historical, cross-sectional
RPE	———	Institutional reflexivity	Environmental values, environmental planning	Institutional, individual		Cross-sectional
Hybrid	Business	———	Environmental planning	———		Cross-sectional

Table 4. Nodes With Moderate Covariance.

	Nodes with moderate covariance (>.49)					
Framework	Agents	Mechanisms	Outcomes	Magnitude	Scale	Temporality
CPE	Citizens, social movements, scientists, labor, racially minoritized	Institutional reflexivity, collective action, civic engagement, decommodification, population growth	Environmental neglect	_____	Local	_____
RPE	Business, government, civil society, citizens, international orgs, small farmers	Civic engagement, civic reflexivity, positive commodification, organizational reflexivity, techno-innovation	Post-normal science	Institutional, individual	Global, national	Historical
Hybrid	Government, civil society, citizens	Anti-reflexivity, institutional reflexivity, negative commodification, risk stratification, techno-fix, collective action, civic engagement, consumer reflexivity	Environmental values, environmental injustice, environmental neglect, decoupling	Structural, institutional	Global, national	Historical

environmental values, as indicated by hybrid and reflexive political economy's moderate to strong association with this outcome. Studies that reveal environmental values are typically cross-sectional, or non-historical, in their temporality. Hybrid and reflexive political economy also converge in their tendency to avoid analyses of ecosystem disruption; indeed, critical political economy was the only framework associated with this outcome. Hybrid and reflexive political economy are both strongly associated with environmental planning, suggesting that these frameworks both focus on institutional level processes more so than material outcomes.

Furthermore, both critical political economy and hybrid emphasize the mechanism of risk stratification. Risk stratification implies that the negative impacts of environmental degradation are unequally distributed across populations. Theoretically, then, it makes sense that these perspectives also converge around the outcome of environmental injustice. Notably, critical political economy articles showed strong convergence on this outcome, while hybrid pieces reported only a moderate association with the environmental injustice outcome. Here, we note that tensions within the hybrid framework—environmental planning (strong association) and environmental injustice (moderate)—exist. Nevertheless, these results show that reflexive modernization clearly articulates a different conception of risk—one that is a universalized experience that affects all, with the potential to promote increased environmental values or planning. Meanwhile, this framework does not account for environmental injustice outcomes.

Critical Political Economy: Charting the Paths to Unsustainability

For critical political economy, a diversity of agents and mechanisms bring about outcomes of environmental planning, ecosystem disruption, environmental injustice, and environmental neglect. This suggests that, as a framework, critical political economy emphasizes policy change (e.g., environmental planning) but does so alongside deleterious environmental outcomes (ecosystem disruption and environmental neglect). Thus, we reason, critical political economy also theorizes on why and how policy does not always lead to desirable outcomes. We also note differentiation with social movements as an agent of change, which was moderately associated with critical political economy. The apparent paucity of attention toward social movement actors in hybrid and reflexive political economy is curious, especially within frameworks that emphasize the necessity for social change. Additionally, critical political economy is the only framework associated with labor and racially minoritized persons as agents of change, which suggests that critical political economy emphasizes class and race dynamics at a more substantive level.

The correlation analyses also indicate that critical political economy analyses generally focus more on historical development—which could include quantitative, longitudinal analyses, or historical case studies—at a broader level of analysis. Accordingly, historical reviews, case studies, and longitudinal work are all more common within the critical political economy framework. This suggests that critical political economy provides more broad and nomothetic insight, while reflexive political economy and hybrid frameworks provide a different, more meso, or focused layer of contextual detail. In addition, critical political economy is the only over-arching framework in our analysis associated with ecosystem disruption.

Reflexive Political Economy: Reflexivity Toward Planning and Values

For reflexive political economy, business and government rely on institutional reflexivity to bring about environmental values and environmental planning and, to a lesser extent, post-normal science. Post-normal science suggests that experts and expertise are becoming more diffused and challenged by non-experts; thus, contemporary reflexive political economy still emphasizes what foundational risk society

thinkers, especially Beck and Giddens, conceived of as a growing skepticism of scientific experts in the post-nuclear, post-industrial age. Reflexive political economy also emphasizes international organizations (such as the United Nations and other supranational institutions), which also follows ecological modernization's emphasis on the importance of global institutions for steering reflexivity. Reflexive political economy is also moderately associated with peasants and small farmers (in the data, this is generally small farmers participating in sustainable agriculture). However, the lack of a strong association from the cluster analysis in the agent category for reflexive modernization suggests that these studies have not firmly established which type of actors drive change. Thus, reflexivity remains a nebulous concept.

Additionally, reflexive political economy is moderately associated with mechanisms that focus on the capacity for commodification and technology to have a beneficial relationship with the environment, such as techno-innovation and positive commodification, along with civic and organizational reflexivity. However, we found it surprising that these mechanisms were not strongly or moderately associated with decoupling; instead, these mechanisms tended to bring about outcomes of management (planning) and attitudes (values). In addition, reflexive political economy studies tend focus more on micro level and localized case studies. These findings suggest that environmental sociologists and social scientists who utilize reflexive political economy has avoided generalizable and structural socioecological processes, and has not found much support for sustainable economic growth at broad levels.

Hybrid, Seeking New Avenues in Environmental Political Economy

Hybrid pieces conceptualize business, government, civil society, and citizens as agents that tend to rely on a multitude of mechanisms (at least at moderate association levels), leading to a diversity of contradictory outcomes. The only strongly associated outcome within hybrid pieces was environmental planning, suggesting that these pieces often emphasize environmental policy. Interestingly, hybrid was the only framework to find at least a moderate association with the decoupling outcome.

This singularity perhaps stems from the hybrid framework's wide range of mechanisms and outcomes. This broadening points to the hybrid category functioning as both a synthesis and as an expansionary terrain of scholarship. Indeed, across these categories, we found moderate to strong covariances within the hybrid framework that echo foundational tenets of both critical and reflexive political economy. For example, it was also the only category to show consistent association with the consumer reflexivity mechanism. This suggests that hybrid scholarship is seeking new avenues that forward sustainability.

Discussion

Is Reflexive Political Economy a Theory of Eco-Structural Change?

Our analysis reveals some important considerations for properly understanding how the foundational tenets of reflexive political economy have been applied in contemporary, empirical scholarship. The foundation of the reflexive political economy perspective originally focused on structural shifts in the nature of capitalism, spurred by reflexivity. These shifts would correspond with the creation of a green, ecologically benign or even ecologically beneficial capitalism. However, contemporary reflexive political economy does not emphasize material, economic, or ecological outcomes. While the framework, in its origins, did not necessarily stress environmental problems as the *focus* of study, both ecological modernization and risk society thinkers did emphasize that such reflexive processes would produce outcomes related to ecological sustainability. This is not to say that such articles do not exist (e.g., Shandra et al. 2004), but that such articles are both infrequent and, thus, have a weak covariance with our sample of reflexive political economy articles. Figure 1 indicates how infrequently environmentally deleterious outcomes

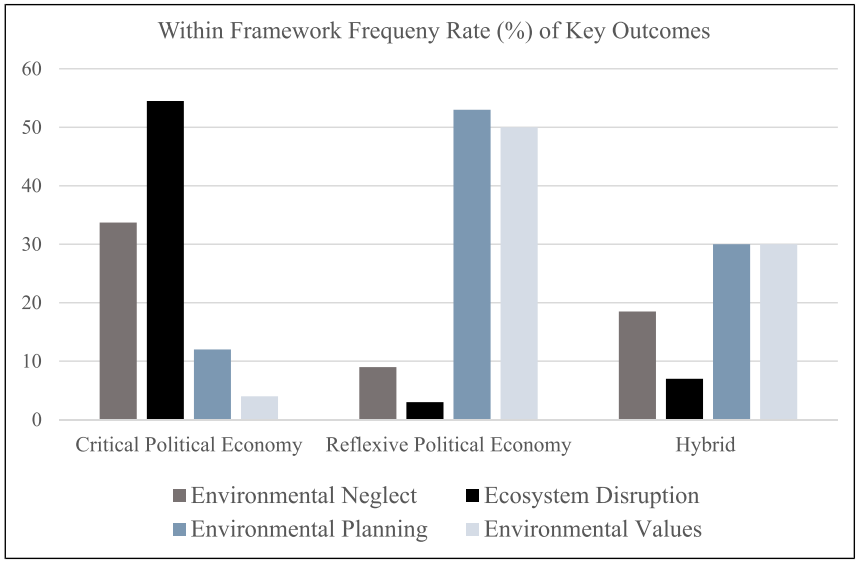

Figure 1. Within framework frequency of key outcomes.

(neglect, injustice, and disruption) are emphasized by reflexive political economy, especially in comparison to critical political economy.

Reflexive political economy more frequently emphasizes environmental planning and values. Again, while this follows the nature of the framework's origins to an extent, with the focus placed on reflexivity itself, it is interesting that environmental planning and values are so frequently discussed independently from material, ecological outcomes. The implications of this theoretic pattern are evident in this passage from an RM coded piece (Zahran et al. 2007:50):

> Consistent with ecological modernization theory, results indicate that societies characterized by extensive civil liberties and political rights, high energy efficiency, low carbon dioxide emissions per capita, high education levels (reflecting the presence of an environmentally aware and concerned public), and records of international cooperation on other transboundary environmental issues are significantly more likely to commit to the [Kyoto] protocol.

Here, the outcome—stimulated by various reflexivity mechanisms—is the ratification of the Kyoto Protocol. It is not the efficacy of the Protocol, but simply the Protocol itself, that becomes evidence for ecological modernization theory.

The focus on the growth of environmental values suggests that reflexive political economy is predominantly a theory of values, planning, and management across micro and meso levels of social organization. For instance, Scanu (2015) demonstrates how municipalities are adopting a low-carbon development model but not whether that model actually reduces carbon dioxide emissions. Similarly, Magnani et al. (2017) identify a novel type of entrepreneur—the ecopreneur—who is motivated by both economic and ecological concerns, but not whether the business practices of those ecopreneurs lead to a decoupling of production from degradation. Our study thus reveals that reflexive political economy scholarship has not, at a substantive level, answered the core challenge issued by York and Rosa (2003), that reflexivity, if it is to be understood as a force of sustainable development, must be connected to reductions in environmental harm at institutional and structural scales.

These examples also reveal some interesting details about the drivers of change, or

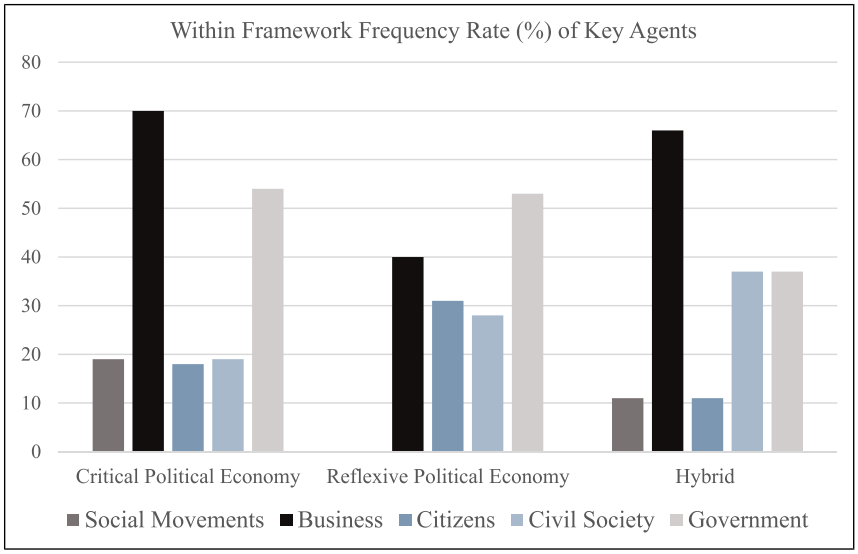

Figure 2. Within framework frequency of key agents relative to frameworks.

mechanisms, for reflexive political economy. Given the foundational scholarship of the reflexive political economy framework, we were surprised that this perspective did not show stronger emphasis on consumer reflexivity and positive commodification as mechanisms, which were originally posited as essential components for the transition to a "green capitalism." Today, either due to a paucity of empirical evidence or new directions of scholarly interests, as indicated via the emergence of a hybrid framework, reflexive political economy now appears more suited for developing casual chains that lead to environmental values and planning.

Critical Political Economy, Socio-Structural Obstacles to Ecological Sustainability

Critical political economy still emphasizes the negative environmental impacts of the economy and the state, at far stronger rates than the other frameworks. We therefore reason that this framework is, of the three studied here, the most geared toward assessing broad scale dynamics of modern capitalism and its society/nature mediations. The nature of this association within the literature is evidenced by business' and government's strong correlation with negative commodification, or the mechanism which highlights the expansionary, treadmill tendencies of capitalist markets. In a case example of these agents and mechanisms at work, Allen et al. (2018) illustrate how state regulatory institutions were repeatedly held captive by economic interests, which prevented a state regulatory agency from addressing sea level rise. Even absent specifically economic imperatives, the state has geo-political imperatives that tend to produce environmentally deleterious impacts (Hooks and Smith 2004). Thus, critical political economy scholarship has continued to stress that a capitalist political economy poses immutable obstacles toward a more sustainable society, as presently organized.

Critical political economy also discusses relevant agents outside of the state and business, as Figure 2 makes clear, like social movements, citizens, and civil society. However, these agents often encounter obstacles towards realizing positive environmental change. This is first expressed in the frequency of the anti-reflexivity mechanism, or the appearance of structural impediments against the

enactment of sustainable aims at the institutional, organizational, communal, or even individual level. For example, Pellow (2001) stresses that links between political actors and economic organizations subvert social movements' efforts at environmental regulation. Critical political economy's emphasis on citizens, civil society, and social movements suggests that institutional reflexivity, if and when it occurs, may be the result of political pressure. For example, Lewis (2019) demonstrates the role of social movements in Ecuador to bring about an alternative development model, buen vivir. Martinez-Alier et al. (2016) point to the existence of a radical and intersectional, global environmental justice movement. These and other pieces suggest a more politically contentious struggle for ecological sustainability and that alternative models of development may be necessary. This characterization of political struggle follows prior environmental sociological emphases that social movement pressure is a necessary, but not sufficient, condition for bringing about environmental reform (Buttel 2003).

Critical political economy also leans toward more historical and broader (i.e., cross-national, global scale) studies than the other frameworks. For example, Austin and Clark (2012) show a continuous negative environmental impact from coal extraction in Appalachia, and Bonds (2016) demonstrates corporate planning in conjunction with the national-security state for future extractive industries in the Artic. The growth of unequal ecological exchange literature signifies critical political economy's growing attention to global environmental injustice, especially as it pertains to race, class, colonialism, and ethnicity (Clark, Auerbach, and Zhang 2018; Holleman 2017).

Therefore, according to our results, critical political economy emphasizes that the agents and mechanisms proposed by reflexive political economy and employed by the hybrid framework, may bring about changes to a polity's values, but that this does not substantively alter the structural relationship between the economy and the environment. Even more, the negative impacts of environmental degradation are not equally distributed, instead harming most those with the least resources and power to make decisions. This calls into question the assertion that values have a transformational role and instead posits that material restructuring of foundational structures and institutions are necessary to avert ecological disasters in the 21st century.

Emergence of Hybrid Framework

Hybrid articles are moderately associated with the agent "civil society." In our coding, civil society could include any formal organization working on a specific political economic issue, such as NGO's, IGO's, and public-private partnerships. Often, these groups are posited as a compromising or moderating force for otherwise unmitigated environmental neglect or harm. For example, Mayer (2009:236) explains that a community-level organization dubbed "the Alliance," "demonstrated awareness of labor views by focusing on eliminating chemicals with less economic implications than others." Hybrid pieces on global environmental change have argued that the development of a global polity through the rise of IGO's can lessen the presence of organic water pollution and moderate carbon emission growth (Jorgenson et al. 2011).

Furthermore, the hybrid articles examine the contestation between anti-reflexivity and institutional reflexivity. As Figure 3 illustrates, hybrid articles have a wider distribution of reflexivity mechanisms. Furthermore, in spite of several reflexivity mechanisms emerging in hybrid pieces, anti-reflexivity is nearly as common in hybrid pieces as critical political economy pieces.

Because of this tension, hybrid articles often reveal that well-intended actors and projects are trapped within competing imperatives. This also leads to an important argument that decoupling and positive commodification are reversible, or that progress is not always linear. For instance, Gould (2017) shows how ecotourism in Belize did lead to a decoupling of economic development and environmental impact. Although, when the opportunity arose

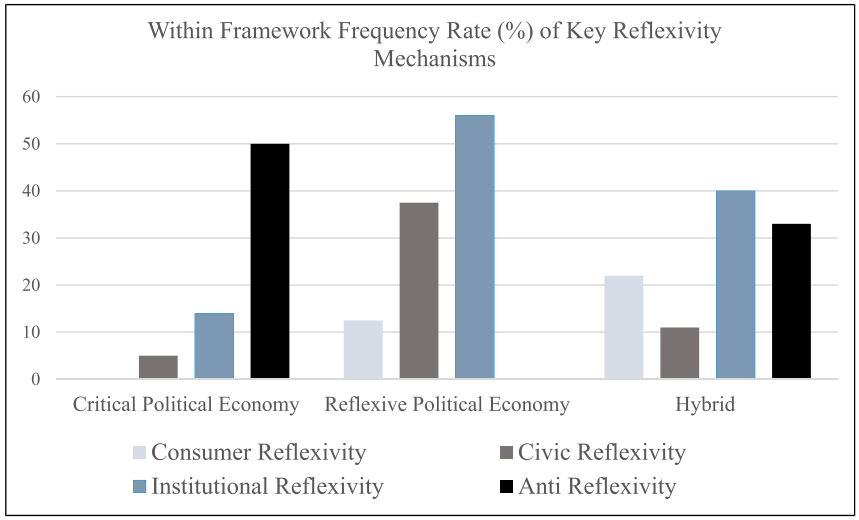

Figure 3. Within framework frequency rate of key reflexivity mechanisms.

to rely on oil extraction for capital accumulation, the eco-tourist model of development faltered (Gould 2017).

Additionally, the hybrid framework echoes reflexive political economy arguments about environmental values, or broader cultural understanding within society, on the environment. These hybrid articles typically acknowledge systemic problems and emphasize the need for socio-cultural shifts to solve them. For example, Thorpe and Jacobson (2013:101) advocate for what they call a "reflexive ethical orientation of life politics" to address issues like climate change. However, attempts to frame debates in environmentally healthy and more sustainable terms are rebuffed, as polluting industries create counter-frames to protect extractive industries and externalize liability (Shriver, Cable, and Kennedy 2008).

Scholarship within the hybrid framework has increasingly sought out non-state and non-business actors, perhaps in hopes to find alternative paths to sustainability during a period characterized by inadequate state action on climate and other ecological problems. Indeed, the hybrid category was the only category to have even a moderate association with the mechanism consumer reflexivity, which suggests that scholars who apply a hybrid framework are expanding their focus to explore how green consumption may affect socioecological outcomes. For instance, Nyberg and Wright (2013) demonstrate how corporations adapt to consumer reflexivity through the development of roles, such as sustainability managers, as a way to protect profits.

Hybrid scholarship, which picked up in frequency around 2007 in our sample, perhaps represents an attempt grasp what Fisher and Jorgenson (2019) refer to as the anthro-shift. The anthro-shift captures the notion that environmental risk "increasingly permeates society," and "drives a reconfiguration among social actors," that can affect nature-society relations across multiple levels (Fisher and Jorgenson 2019:10–11). Indeed, it is certain that new configurations between consumers, civil society, the state, and business exist now that did not exist a generation ago—and these differences, in this context, are largely driven by changing ecological realities. We also note that scholars themselves are actors in the research process, and not only measure new phenomena but also search for it themselves. Thus, it is reasonable to assert that increased ecological precarity would stimulate new directions for scholarship within environmental political economy.

Conclusion

Our analysis in this exploratory content analysis provides a useful overview of the debate in environmental political economy on the relationship between a capitalist social order, environmental degradation, and the possibilities for a more sustainable future. To reiterate, our study suggests that reflexive political economy is not a theory of ecological change, at least as it has been applied in sociology and environmental sociology adjacent journals. Indeed, ecological change—be it signs of environmental harm or improvement—are not moderately or strongly associated in our sample of reflexive political economy articles. Within the emergent hybrid framework, decoupling is also only moderately associated as an outcome. Thus, reflexive political economy and, as well, hybrid are predominantly theories of management and attitudes. The enactment of necessary environmental reform certainly depends upon better management practices and value shifts. Understanding what triggers these changes is important. Yet the long-term validity of reflexivity ultimately depends on its capacity to affect sustainability in a material sense. Here, it is important to note that if outcomes stray too far from assessing ecological sustainability, reflexive political economic scholarship risks becoming increasingly dematerialized, or disconnected from the larger conversation about the need to seriously mitigate ecological risk. Thus, future scholarship in this area should consider their findings' relevance in relation to the foundational debates in environmental sociology concerning capitalism, the environment, and sustainability.

It is noteworthy that, even with the emergence of a hybrid framework, critical political economy is the only framework we assessed that consistently addresses the causes of environmental harm. This perhaps explains why, in more recent years when there has been no shortage of environmental catastrophes, critical political economy articles are more frequent. To further theorize on how ecological disruptions can be mitigated, we encourage critical political economy scholars to develop more praxis-oriented scholarship. At this time, it is necessary to highlight and help imagine alternatives. Some critical political economy scholars have laid important foundations in this regard (Pellow and Brehm 2015; Sbicca 2014; Gerber and Veuthey 2010). These studies point toward a radical restructuring of social relations to address ecological crisis and oppression that is globally driven by grassroots social movements, people of color, workers, and unpaid laborers. Future work can test the success of organized struggles to overcome the limitations of a capitalist political economic structure.

Finally, we encourage additional theorizing to unpack the emergent hybrid perspective that combines and reconfigures critical and reflexive political economy, as evidenced by its diversity of mechanisms and outcomes. This range of mechanisms and outcomes suggest that, in an era of increasing ecological risk and society/nature imbalances, hybrid scholars are trying to find answers and new directions for sustainability. Future hybrid scholarship could enter into more direct engagement with critical political economy's structural analyses of ongoing environmental degradation. By engaging with foundational environmental political economic theory, the hybrid synthesis may deepen its challenge of modern capitalism's reflexive capacity, while maintaining focus on avenues for environmental reform within the present structural arrangement through reconfigured institutions and novel actors. Ultimately, York and Rosa's (2003) challenges to ecological modernization should also apply to hybrid scholarship. In other words, do emergent forms of reflexivity, environmental planning, and values produce sustained and generalizable ecological improvements? At present, the evidence is limited. In the effort to uncover paths to sustainability in the 21st century, this question matters greatly.

Overall, our study indicates that the field of environmental political economy is vibrant, dynamic, and rife with opportunity for continued intellectual development. At this critical juncture of planetary history, it is essential that environmental sociologists continue to explore how unsustainable social forces can be

overcome at various levels. We encourage more testing of claims made in extant literature and believe that this task is especially necessary for a field concerned with understanding and forecasting change. We look forward to the next 20 years of scholarship in this area and are hopeful that it will help foster a more sustainable form of human development that mitigates the growing threat of ecological degradation.

Declaration of Conflicting Interests

The author(s) declared no potential conflicts of interest with respect to the research, authorship, and/or publication of this article.

Funding

The author(s) received no financial support for the research, authorship, and/or publication of this article.

Supplementary Material

Supplementary material for this article is available online.

References

Allen, Jason S., Stefano, B. Longo, and Thomas, E. Shriver. 2018. "Politics, the State, and Sea Level Rise: The Treadmill of Production and Structural Selectivity in North Carolina's Coastal Resource Commission." *The Sociological Quarterly* 59(2):320–337.

Austin, Kelly and Brett, Clark. 2012. "Tearing Down Mountains: Using Spatial and Metabolic Analysis to Investigate the Socio-Ecological Contradictions of Coal Extraction in Appalachia." *Critical Sociology* 38(3):437–57.

Beck, Ulrich. 1989. "On the Way to the Industrial Risk-Society? Outline of an Argument." *Thesis Eleven*. 23(1):86–103.

Beck, Ulrich. 1992. "From Industrial Society to the Risk Society: Questions of Survival, Social Structure, and Ecological Enlightenment." *Theory, Culture, and Society.* 9:97–513.

Beck, Ulrich. 2000. "The Cosmopolitan Perspective: Sociology of the Second Age of Modernity." *The British Journal of Sociology* 51(1):79–105.

Beck, Ulrich. 2003. "Toward a New Critical Theory with a Cosmopolitan Intent." *Constellations*. 10(4):453–468.

Berg, Bruce L. 2009. *Qualitative Research Methods for the Social Sciences*, 7th edition. New York: Allyn & Bacon.

Bonds, Erc. 2016. "Losing the Arctic: The U.S. Corporate Community, The National-Security State, and Climate Change." *Environmental Sociology* 2(1):5–17.

Burkett, Paul. 1999. *Marx and Nature: A Red and Green Perspective*. New York: St. Martin's Press.

Burkett, Paul. 2003. "The Value Problem in Ecological Economics: Lessons from the Physiocrats and Marx." *Organization and Environment*. 16(2):137–167.

Bunker, Stephen G. 1984. "Modes of Extraction, Unequal Exchange, and the Progressive Underdevelopment of an Extreme Periphery: The Brazilian Amazon, 1600-1980." *American Journal of Sociology* 89(5):1017–64.

Bunker, Stephen G. 1985. "*Underdeveloping the Amazon. Extraction, Unequal Exchange, and the Failure of the Modern State*." Chicago: University of Chicago Press.

Buttel, Frederick H. 2003. "Environmental Sociology and the Explanation of Environmental Reform." *Organization & Environment*. 16(3): 306–44.

Buttel, Frederick H. 2004. "The Treadmill of Production: An Appreciation, Assessment and Agenda for Research." *Organization & Environment*. 17(3):323–36.

Clark, Brett, Daniel, Auerbach, and Zhang, Karen Xuan. 2018. "The Du Bois Nexus: Intersectionalist, Political Economy, and Environmental Injustice in the Peruvian Guano Trade in the 1800s." *Environmental Sociology* 4(1):54–66.

Clark, Timothy P. 2020. "Mining the Sea: A Within-Case Comparative Analysis of the Atlantic Menhaden Fishery in the Age of Capital." *Sociology of Development* 6(2):222–249.

Clausen, Rebecca and Brett, Clark. 2005. "The Metabolic Rift and Marine Ecology: An Analysis of the Ocean Crisis within Capitalist Production." *Organization & Environment* 18(4):422–44.

Dietz, Thomas and Andrew, Jorgenson (eds.) 2013. *Structural Human Ecology: New Essays in Risk, Energy, and Sustainability*. Pullman, WA: Washington University Press.

Fischer-Kowalski, M. and H. Haberl 1998. "Tons, Joules and Money: Modes of Production and Their Sustainability Problems." *Society and Natural Resources* 10(1):61–85.

Fischer-Kowalski, Marina. 1997. "Society's Metabolism: The Intellectual History of Materials Flow Analysis, Part 1, 1860-1970." *Journal of Industrial Ecology* 2(1):61–78.

Fisher, Dana R. and Andrew K. Jorgenson. 2019. "Ending the Stalemate: Toward a Theory of Anthro-Shift." *Sociological Theory* 37(4): 342–62.

Foster, John Bellamy. 1999. "Marx's Theory of Metabolic Rift: Classical Foundations for Environmental Sociology." *American Journal of Sociology* 105(2):366–405.

Freudenburg, William R. 2006. "Environmental Degradation, Disproportionality, and the Double Diversion: Reaching Out, Reaching Ahead, and Reaching Beyond." *Rural Sociology* 71(1): 3–32.

Frey, R. Scott, Paul K. Gellert, and Harry F. Dahms (eds.). 2018. *Ecologically Unequal Exchange: Environmental Injustice in Comparative Historical Perspective*. Springer.

Gerber, Julien-Francois and Sandra, Veuthey. 2010. "Plantations, Resistance and the Greening of the Agrarian Question in Coastal Ecuador." *Journal of Agrarian Change* 10(4):455–81.

Giddens, Anthony. 1990. *The Consequences of Modernity*. Stanford University Press.

Giddens, Anthony. 1999. *Runaway World: How Globalization is Reshaping our Lives*. London: Profile Books

Giddens, Anthony. 2009. *Politics of Climate Change*. Polity.

Gould, Kenneth A., Pellow, David N., Schnaiberg, Allan, 2004. "Interrogating the Treadmill of Production. Everything You Wanted to Know about the Treadmill but Were Afraid to Ask." *Organization and Environment* 17 (3):296–316.

Gould, Kenneth. 2017. "Ecotourism under Pressure: The Political Economy of Oil Extraction and Cruise Ship Tourism Threats to Sustainable Development in Belize." *Environmental Sociology* 3(3):237–47.

Hedström, Peter and Richard, Swedberg. 1998. "Social Mechanisms: An Introductory Essay" in Social Mechanisms: *An Analytical Approach to Social Theory Peter Hedström and Richard Swedberg* (eds.) Cambridge: Cambridge University Press

Holleman, Hannah. 2017. "De-Naturalizing Ecological Disaster: Colonialism, Racism and the Global Dust Bowl of the 1930s." *Journal of Peasant Studies* 44(1):234–60.

Hooks, Gregory and Chad L. Smith. 2004. "The Treadmill of Destruction: National Sacrifice Areas and Native Americans." *American Sociological Review* 69:558–75.

Huber, Joseph (1985). *Die Regenbogengesellschaft. Ökologie and Sozialpolitik [The Rainbow Society: Ecology and Social Policy]*. Frankfurt: Fisher.

Jänicke, Martin. 1990. *State Failure: The Impotence of Politics in Industrial Society*. PA: Polity Press.

Jorgenson, Andrew K. and James, Rice. 2007. "Uneven Ecological Exchange and Consumption-Based Environmental Impacts: A Cross-National Investigation." *Rethinking Environmental History: World-System History and Global Environmental Change 273-288.*

Jorgenson, Andrew, Christopher, Dick, and John M., Shandra. 2011. "World Economy, World Society, and Environmental Harms in Less Developed." *Sociological Inquiry* 81(1): 53–87.

Krippendorf, Klaus. 2004. *Content Analysis: An Introduction to Its Methodology*. Thousand Oaks: Sage.

Lewis, Tammy L. 2019. "Globalizing the Treadmill of Production: A Solutions-Oriented Application to Ecuador." *Environmental Sociology* 5(3):219–31.

Lomborg, Bjorn. 2001. "The Truth about the Environment." https://www.economist.com/science-and-technology/2001/08/02/the-truth-about-the-environment

Longo, Stefano, Rebecca, Clausen, and Brett, Clark. 2015. *The Tragedy of the Commodity*. New Brunswick: Rutgers University Press.

Longo, Stefano B. and Brett, Clark. 2016. An Ocean of Troubles: Advancing Marine Sociology. *Social Problems* 63(4):463–79.

Magnani, Natalia, Mara, Maretti, Rita, Salvatore, and Ivano, Scotti. 2017. "Ecopreneurs, Rural ,

and Alternative Socio-Technical Arrangements for Community Renewable Energy." *Journal of Rural Studies* 52:33–41.

Martinez-Alier, Joan, Leah, Temper, Daniela, Del Bene, and Arnim, Scheidel. 2016. "Is there a global environmental justice movement?" *Journal of Peasant Studies* 43(3): 731–55.

Mayer, Brian. 2009. "Cross-Movement Coalition Formation: Bridging the Labor-Environment Divide." *Sociological Inquiry* 79(2):219–39.

Mayring, Philipp. 2000. "Qualitative Content Analysis." *Forum: Qualitative Social Research* 1(2): 20. DOI: 10.17169/fqs-1.2.1089.

Merton, Robert K. 1949. *Social Theory and Social Structure*. New York: Simon & Schuster.

Mészáros, Istvan. 1995. *Beyond Capital*. New York: Monthly Review Press.

Mol, Arthur P. J. and Spaargaren, Gert. 2000. "Ecological Modernisation Theory in Debate: A Review." *Environmental Politics* 9(1): 17v49.

Mol, Arthur P. J., and Gert, Spaargaren. 2005. "From Additions and Withdrawals to Environmental Flows: Reframing Debates in the Environmental Social Sciences." *Organization & Environment*. 18(1):91–107.

Mol, Arthur P. J. and Martin Janicke. 2009. "The Origins and Theoretical Foundations of Ecological Modernisation Theory." In *The Ecological Modernisation Reader. Environmental Reform in Theory and Practice*. 17–27. Routledge.

Mol, Arthur P. J., Spaargaren, Gert, and David A. Sonnenfeld. 2010. "Ecological Modernisation: Three Decades of Policy, Practice, and Theoretical Reflection" Pp. 3–14 in *The Ecological Modernisation Reader: Environmental Reform in Theory and Practice*, edited by Arthur P. J. Mol, David A. Sonnenfeld, and Gert Spaargaren, New York, NY: Routledge.

Mol, Arthur. 1996. "Ecological Modernisation and Institutional Reflexivity: Environmental Reform in the Late Modern Age." *Environmental Politics*. 5(2):302–23. DOI: 10.1080/09644019608414266

Mol, Arthur P. J. 2002. "Ecological Modernization and the Global Economy."*Global Environmental Politics* 2:92–115.

Mol, Arthur P. J. and David A. Sonnenfeld. 2000. *Ecological Modernisation Around the World: Perspectives and Critical Debates*. Psychology Press.

Nyberg, Daniel and Christopher, Wright. 2013. "Corporate corruption of the environment: sustainability as a process of compromise." *The British Journal of Sociology* 64(3):405–24.

Onwuegbuzie, Anthony J., Nancy L. Leech, and Kathleen, M. T. Collins. 2012. "Qualitative Analysis Techniques for the Review of the Literature." *The Qualitative Report* 17:1–28. Retrieved from https://nsuworks.nova.edu/tqr/vol17/iss28/2

Paterson, Barbara L., Sally, E. Thorne, Connie, Canam, and Carol, Jillings. 2001. *Meta-Study of Qualitative Health Research: A Practical Guide to Meta-Analysis and Meta Synthesis*. Sage.

Pellow, David N. 2001. "Environmental Justice and the Political Process: Movements, Corporations and the State." *The Sociological Quarterly* 42(1):47–67.

Pellow, David N. and Hollie, Nyseth Brehm. 2015. "From the New Ecological Paradigm to Total Liberation: The Emergence of a Social Movement Frame." *The Sociological Quarterly* 56(1):185–212.

Ratner, Bruce. 2009. "The Correlation Coefficient: Its Values Range Between +1/-1, Or Do They?" *Journal of Targeting, Measurement, and Analysis for Marketing* 17:139–42.

Sbicca, Joshua. 2014. "The need to feed: Urban metabolic struggles of actually existing radical projects." *Critical Sociology* 40(6):817–34.

Scanu, Emiliano. 2015. "Climate Governance in the Post-Industrial City: The Urban Side of Ecological Modernisation." *Environmental Sociology* 1(2):102–15.

Schnaiberg, Alan. 1980. *The Environment: from Surplus to Scarcity*. Oxford University Press: New York.

Schnaiberg, Alan and Kenneth, Gould. 1994. *Environment and Society: The Enduring Conflict*. Blackburn Press.

Shandra, John M., Bruce, London, Owen P. Whoolsey, and John B. Williamson. 2004. "International Nongovernmental Organizations and Carbon Dioxide Emissions in the

Developing World: A Quantitative, Cross-National Analysis." *Sociological Inquiry.* 74(4):520–45.

Shellenberger, Michael and Ted, Nordhaus. 2012. "Evolve. The Case for Modernization as the Road to Salvation." https://thebreakthrough.org/journal/issue-2/evolve.

Shriver, Thomas E., Sherry, Cable, and Dennis, Kennedy. 2008. "Mining for Conflict and Staking Claims: Contested Illness at the Tarcreek Superfund Site." *Sociological Inquiry* 78(4):558–79.

Shwom, Rachael. 2009. "Strengthening Sociological Perspectives on Organizations and the Environment." *Organization and Environment* 22(3):271–292.

Spaaragaren, Gert and Arthur P. J. Mol. 1992. "Sociology, Environment, and Modernity: Ecological Modernization as a Theory of Social Change" *Society and Natural Resources* 5(4): 323–44.

Spaargaren, Gert. 1997. "The Ecological Modernization of Production and Consumption: Essays in Environmental Sociology."

Smith, Chad L., Vicente L. Lopes, and Frank M. Carrejo. 2011. "Recasating Paradigm Shift: "True Sustainability" and Complex Systems." *Human Ecology Review* 18(1):67–74.

Thorpe, Charles and Brynna, Jacobson. 2013. "Life Politics, Nature and the State: Giddens' Sociological Theory and The Politics of Climate Change." *The British Journal of Sociology* 64(1):99–122.

York, Richard and Eugene A. Rosa. 2003. "Key Challenges to Ecological Modernization Theory: Institutional Efficacy, Case Study Evidence, Units of Analysis, and the Pace of Eco-Efficiency." *Organization and Environment* 16(3):273–88.

Zahran, Sammy, Eunyi, Kim, Xi, Chen, and Mark, Lubell. 2007. "Ecological Development and Global Climate Change: A Cross-National Study of Kyoto Protocol Ratification." *Society and Natural Resources* 20(1):37–55.