# A PRACTITIONER'S GUIDE TO APPLIED SUSTAINABILITY: INITIAL EXPLORATIONS

A Thesis
by
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**Abstract**

A PRACTITIONER'S GUIDE TO APPLIED SUSTAINABILITY:
INITIAL EXPLORATIONS

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For decades, coal has been king in central Appalachia. The people of this region have devoted their lives to providing energy to the nation, fueling the first and second industrial revolutions and providing nearly 40 percent of the energy used in the United States today. Known as one of the unhealthiest communities in the nation, the city of Williamson, located in southern West Virginia, is working to encourage healthy living by diversifying its energy portfolio, providing new economic opportunities for businesses, creating a strong workforce with competitive skill sets, growing local food systems to encourage healthy living, and increasing the quality of life for this community. Operating under the banner of "Sustainable Williamson" and utilizing the emerging concept of applied sustainability, this community is developing a "praxis of theory" approach with a specific focus upon the socio-economic effects of ideology. This thesis explores the theoretical intersections between ideology and new materialism in order to provide existing and emerging practitioners of applied sustainability with an initial framework for developing successful projects in central Appalachia and beyond.

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## Dedication

To my loving mother and grandmother who, if not for their continued support, neither this thesis nor my last five years in the coalfields would have been possible. Additionally, I have and will continue to dedicate my life to serving those whom have given me so much: central Appalachian coalminers, their families and the communities that support them. Finally, to emerging practitioners may you forever be present within the divine.

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## Introduction

For decades, coal has been king in central Appalachia. The people of this region have devoted their lives to providing energy to the nation, fueling the first and second industrial revolutions and providing nearly 40 percent of the energy used in the United States today. As a result of Lyndon B. Johnson's War on Poverty and top-down strategies for poverty relief, these communities have struggled to transcend government based strategies. Known as one of the unhealthiest communities in the nation, the city of Williamson, located in southern West Virginia, is working to encourage healthy living by diversifying its energy portfolio, providing new economic opportunities for businesses, creating a strong workforce with competitive skill sets, growing local food systems, and increasing the quality of life for its residents. Sustainable Williamson's goal is to create a replicable model of market-based sustainability for the economically distressed communities throughout central Appalachia. Local residents have become active agents in redefining the economic landscape of coal country and their vision will help to develop a Central Appalachian Sustainable Economies (CASE) network.

With that goal in mind, this thesis will enrich the socio-ecological centric models presently being deployed in central Appalachia. It will bring the economic component to the forefront by demonstrating that any approach to sustainability has to begin with a market-based strategy or applied sustainability. For this purpose, many southern West Virginia

residents have collaboratively initiated real-world projects to position Williamson as a hub for applied sustainability throughout the coalfields of central Appalachia. Though unconventional, this thesis seeks to serve as a primer for further research in developing the conceptual field of applied sustainability that emphasizes a market-based approach to economic revitalization. Chapter 1 provides a theoretical overview on how the theories of New Materialism provide a useful framework for situating my proposed historical or embodied synthesis within actual practices of applied sustainability. Chapter 2 explores the symbolic and connective processes that continue to define the actual realities of central Appalachia. With a specific focus on developing a new theory of community action, Chapter 3 sheds insight on the roles that symbolic and connective processes played in the War on Poverty. Chapter 4 develops some of the necessary theoretical tools for creating the market-based approach for revitalizing the economies of central Appalachia. In the conclusion, I provide both a theoretical synthesis of my present research as well as practical applications for my future work as a practitioner of applied sustainability in the coalfields of Appalachia. In short, this thesis serves as a primer for developing a new model for social change beginning in the so-called Heart of the Billion Dollar Coalfield: Williamson, West Virginia.

Development in Appalachia has typically been a one way relationship between America's progress and Appalachia's decline. For instance, in a 1962 study on development in Appalachia, American sociologist Rupert Vance stated that "if the problem of Appalachia is to be met, it must be interpreted in the context of national development."[1] Yet, in that same decade, contemporary Appalachian historian Thomas Kiffmeyer, in *Reformers to Radicals: The Appalachian Volunteers and the War on Poverty*, noted that "the trajectory of activism –

[1] Rupert B. Vance, "The Region: A New Survey," In *The Southern Appalachian Region: A Survey*, edited by Thomas R. Ford, (Lexington: University of Kentucky Press, 1962), 4.

the self-serving nature of many of the participants and their attitudes toward those they came to help – reveals the shortcomings of America's reform tradition."[2] Kiffmeyer proceeded to critique a development model that sought to interpret Appalachia in the context of a 1960's version of community action, arguing that the "War on Poverty planners and participants adopted, as did many of their civil rights counterparts, a reform philosophy that saw victims as the source of poverty and ignored attempts to better their own conditions."[3]

I have had the privilege, however, of seeing a different Appalachia where local residents have begun to collaboratively engineer a new approach to sustainability. In an attempt to build some of the most innovative approaches to sustainability in the United States, Sustainable Williamson is at the forefront of developing a comprehensive model that is not limited to simply "greening" the city of Williamson, but ensuring that the boundaries of sustainability include health and wellness at the center of its strategy. To this end, a new Appalachian story is beginning to unfold that includes the national context of sustainability and the importance that many counties, states, corporations, and universities are making on the front line in defining the parameters of this term and its application. In this new story, Appalachia endeavors to lead the nation as opposed to follow it, which has often been the case since Americans became concerned with development in Appalachia. Echoing Ronald Eller's words in *Uneven Ground: Appalachia Since 1945*, this thesis seeks to transform what many scholars, activists, and practitioners of community development have often viewed as "barriers to growth" into regenerative gateways to applied sustainability. Eller states:

> If Appalachia's struggle with development has been uneven and has failed to meet our expectations and dreams, it is because Appalachia's problems are not those of

[2] Thomas Kiffmeyer, *Reformers to Radicals: The Appalachian Volunteers and the War on Poverty* (Lexington: University Press of Kentucky, 2008), 15.
[3] Ibid.

> Appalachia alone. They will not be solved in isolation from the dilemmas facing the rest of modern society.[4]

In his critique of the War on Poverty's concept of community action, Daniel Moynihan clearly defines the role that New York foundations and, more specifically, the Ford Foundation played in distributing middle-class value systems of experts imbued with what Elliott A. Krause called the "citizen participation ideology."[5] But, as Moynihan noted, "the contrast between the shaggy, inexact communitarian anarchism of the Paul Goodman variety, which characterized the [community action] aspect of the Ford Foundation … with the shiny, no nonsense, city-as-a-system, Robert S. McNamara style of the other part, need not distract anyone" from the inherent problems of this top-down approach that ultimately moves from concepts to reality.[6] These middle-class values provide "bureaucratic elites" with the conceptual framework to, as economist Fredrich Hayek warned, act on the "belief that [they] possess the knowledge and the power which enable [them] to shape the processes of society entirely to [their] liking, knowledge which in fact [they did] not possess, is likely to make [them] do much harm."[7] For Moynihan, this top-down approach of foundations fails "to enhance the capacity of [our government] to deal with the complex social science ideas that now routinely come to it for enhancement, [and which] most normally as part of an Executive initiative."[8]

My critique of symbolic community actions initiated by many activist groups during the War on Poverty is not situated within the same dualistic oppositions rooted in conflict or

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[4] Ronald D. Eller, *Uneven Ground: Appalachia since 1945* (Lexington: University Press of Kentucky, 2008), 8.
[5] Daniel P. Moynihan, *Maximum Feasible Misunderstanding: Community Action in the War on Poverty* (New York: Free Press, 1970), xx.
[6] Ibid., xiv.
[7] "The Pretense of Knowledge," last modified October 27, 2013, http://www.nobelprize.org/nobel_prizes/economic-sciences/laureates/1974/hayek-lecture.html (accessed January 1, 2014)
[8] Moynihan, *Maximum Feasible Misunderstanding*, xiv.

the dialectics of negation. On the contrary, I propose a model of applied sustainability that is founded upon American visionary Buckminster Fuller's famous quote: "You never change things by fighting the existing reality. To change something, build a new model that makes the existing model obsolete." Along with this proactive approach, practitioners should integrate New Materialism into their development strategies in central Appalachia and beyond. This praxis of theory responds to symbolic actions of negation through the action itself by creating realities that are tangible-lived expressions of a world "where individual beings do exist but only as the outcome of becomings, that is, individual processes of individuation."[9] To put it another way, a practitioner of applied sustainability acts within a field of heterogeneous connectivity because the conditions for actualization are true for "most circumstances," whereas a practitioner of conflict operates within a field of homogeneity where actualization "is a highly unlikely state which may be brought about only under very specific selection pressures."[10] In short, this project of applied sustainability seeks to complexify sustainability theory in the light of the habit of dualisms.[11]

This thesis highlights specific successes that have emphasized integration or building from local community interests into a model for developing connective community action in central Appalachia. One such model for connective community action in the region is outlined in Huey Perry's *They'll Cut Off Your Project: A Mingo County Chronicle*. This book describes Mingo County citizens' attempts to collectively drive President Lyndon B. Johnson's Office of Economic Commission's purpose to its logical extreme. For Perry and his supporters, a Community Action Partnership (CAP) is "organized for the purpose of

[9] Manuel DeLanda, *Intensive Science & Virtual Philosophy* (London: Continuum International Publishing Group, 2005), 106.
[10] Ibid., 59.
[11] Rick Dolphijn and Iris van der Tuin, *New Materialism: Interviews and Cartographies* (Ann Arbor: Open Humanities Press, 2012), 99.

identifying community problems and then seeking a solution."[12] For Perry, CAPs "are obligated to provide assistance to the groups in solving their problems."[13] This strategy of community action was presented to the Johnson by his advisers in late 1963. The concept of community action by the poor, despite sounding "brand new and even faintly radical," as Johnson's memoir, *The Vantage Point*, later put it, "was based on one of the oldest ideas of our democracy, as old as the New England town meeting – self-determination at the local level."[14]

Indeed, this thesis follows in the same footsteps laid for us by the architects of America's experiment in democracy, that is, self-determination at the local level. It also provides an important contribution to a new Appalachian story that has begun to unfold in some of the most economically distressed regions in America. Sustainable Williamson has recently witnessed the installation of the largest Renewable Energy system in the Southern coalfields, the construction of one of the nation's most advanced community gardens, the planning and implementation of a Federally Qualified Health Center, the development of a preventative health and wellness program in the heart of the "Diabetes Belt," and the initial construction of one of the most sustainable offices in the country. Perhaps more importantly, these programs have emerged due to the collaboration and support of community stakeholders, elected officials, state and federal agencies, and regional and national experts. Hopefully, this thesis will provide a small reflection on central Appalachia's emerging transition that may one day come to define a national transition towards applied sustainability

[12] Huey Perry, *They'll Cut Off Your Project: A Mingo County Chronicle* (Morgantown: University of West Virginia Press, 2011), 68.
[13] Ibid.
[14] Lyndon Baines Johnson, *The Vantage Point: Perspectives of the Presidency, 1963-1969* (New York: Holt, Rinehart, and Winston, 1971), 73-74.

founded upon the ideals of this republic, that is, to collaboratively construct a government of the people, by the people, and for the people.

# 1

## Applied Sustainability and the New Historical Synthesis

*"In some philosophical circles, to say that the world exists independently of our minds is tantamount to a capital crime."*

***– Manuel DeLanda –***

For many onlookers, the War on Poverty wears a distinct number of masks that spell out the shortcomings of top-down government programs that aimed, among other things, to combat poverty in Appalachia. However, this chapter will take the reader down a different path. As opposed to one perceived through an idealistic prism that splits the historical and present realities of Appalachia into a simple black and white lens where a practitioner's questions becomes 1) which side are you on and 2) are you going to work within or outside of the so-called "system," I argue that a binary lens of left/right or inside/outside, defined by elite/poor, us/them, company/community, or socialist/capitalist, has swayed many social reformers in a singular direction of negation or conflict. In turn, this disposition of conflict limits the opportunities available to emerging practitioners of applied sustainability. In the end, many of these reformers, although well-intentioned and left with few options, adopt a strategic disposition of simplifying Appalachia's realities. The simplification occurs through the obfuscation of the region's complexities through the replacement of what is actually real with a semblance of a perceived reality. Once hailed as poverty warriors during Lyndon B.

Johnson's War on Poverty, some reformers may have only changed in name and not in practice.

Some modern day eco-warriors, for instance, engage in similar practices of saving something, anything, other than those whom we have come to know as Appalachians. Their strategic disposition has rendered the context of Appalachia as fixed and situates the reformers as the engineers of change. The eco-warriors' idealistic approach utilizes what I call a "symbolic disposition" of *working for* as opposed to a "connective disposition" of *working with* communities. Modern strategies and methodologies for inducing social change have not diverged much from those developed during the War on Poverty in the 1960s. In his critique of War on Poverty, Appalachian historian Thomas Kiffmeyer provides a lucid conclusion of the planners' and activists' symbolic disposition of *working for* rather than their immersion within communities:

> [T]he trajectory of the activism of the decade – the self-serving nature of many of the participants and their attitudes toward those they came to help – reveals the shortcomings of America's reform tradition. By focusing on vague notions of community development and education (something seen as necessarily accompanying community development), War on Poverty planners and participants adopted, as did many of their civil rights counterparts, a reform philosophy that saw victims as the source of poverty and ignored attempts to better their own condition.[1]

In this chapter, I will construct a novel approach to social change by utilizing New Materialism as my theoretical framework. What follows should establish a type of synergistic whole that will allow the reader to begin identifying how the remaining chapters and sub-sections operate to form a part to whole relationship. Employing a methodology that accounts for the morphogenesis of form, this chapter assumes that self-organizing matter is a given. To clarify, morphogenesis is a direct response to hylomorphism, the notion that matter requires a

[1] Thomas Kiffmeyer, *Reformers to Radicals: The Appalachian Volunteers and the War on Poverty* (Lexington: University Press of Kentucky, 2008), 15.

transcendent form to organize its assumed inert state or indeterminancy. In my attempt to sketch a morphogenetic theory of social change, I depart from the one single component that operates as the glue for contemporary theories of societal change, equality. In the same vein as contemporary philosopher Manuel DeLanda's readings of Gilles Deleuze on the topic of thermodynamics, I argue that similar components of equilibrium exist within the social sciences, where a state of equilibrium is the end goal. This goal-oriented disposition towards equality ultimately conceals the generative forces found in states of non-equilibrium that are arguably the energetic forces behind all social movements.

In "Deleuze and the Open Ended Becoming of the World," DeLanda states that it is only in these non-equilibrium conditions and "this singular zone of intensity, that difference-driven morphogenesis comes into its own, and that matter becomes an active material agent, one which does not need form to come and impose itself from the outside."[2] This chapter will provide a glimpse into my developing theory of social change. It is divided into the following sections:

> "New Materialism" provides a general overview of this emerging school of thought and the ways in which it operates within certain parameters of action, those that I call "applied sustainability."
>
> "Role of Marxism" illustrates my method of analyzing a school of thought that has dominated theories of social movements since the twentieth-century. My method accounts for the moral dispositions of Marx and Engels that will be applied in Chapters 2 and 3 in my analysis of similar dispositions in social movements both inside and outside of Appalachia.
>
> "Role of Capitalism" argues that the term "Capitalism" has become obsolete and perhaps its state of ambiguity is irreconcilable. I argue that this is due to the nature of this concept, as it functions to generalize market dynamics instead of uncovering the complexities of the forces at play within these dynamics.

[2] Manuel DeLanda, "Deleuze and the Open Ended Becoming of the World," *Dialogues* 11 (2005): 5, http://dephasage.ocular-witness.com/pdf/delanda_mettalurgy.pdf (accessed January 1, 2014)

> "Historical Synthesis" outlines an embodied approach to engaging history by providing a bridge to the present. I argue that the process of bridge building between the past and the present will provide a rich heterogeneous context of opportunities regarding societal change. The results will enable a practitioner to develop successful projects in the present that may provide a possible future outcome that aligns with the underlying ethics of applied sustainability: inter-generational ethics.
>
> "Applied Sustainability: An Emerging Concept" lays out the initial developments of a new field in sustainability. This field is informed by bottom-up strategies that ensure the long-term sustainability of communities with an emphasis on integrating market dynamics to achieve this goal.
>
> "Sustainable Williamson in Brief" provides a real-world example of applied sustainability currently developing in the heart of central Appalachian coal country.

Given that New Materialism is in its infancy, this chapter should also be considered less a contribution than an exercise of defining the parameters of New Materialism in terms of its broader applications in the field of sustainability. My research provides something yet to be fully demonstrated by New Materialism within the social sciences – praxis in the highest order. By creating practical applications for both history and sustainability, this chapter builds a real-world example of praxis based upon New Materialism's underlying premise, what I will call "connective community action."

The War on Poverty's concept of community action was chosen for one simple reason: As noted in Rick Dolphijn and Iris van der Tuin's *New Materialism: Interviews & Cartographies*, "it is in the action itself that New Materialism announces itself."[3] Building from that same spirit of action, Chapter 1 emerges as a collection of practices with material-discursive assemblages that I have intuitively synthesized during my experiences as a practitioner of applied sustainability in Williamson, West Virginia. In fact, this thesis is a recursive action traversing a variety of boundaries, the most general being the normative

[3] Rick Dolphijn and Iris van der Tuin, *New Materialism: Interviews and Cartographies* (Ann Arbor: Open Humanities Press, 2012), 15.

distinction between the past and the present, hence my contribution to the development of a new historical synthesis, or what I deem an "embodies synthesis."

While many scholars, including Manuel DeLanda, Karen Barad, Donna Haraway, Rosi Braidotti, and (in many ways) Slavoj Žižek, have pointed towards examples of what it means to engage in new materialist practices, I have yet to identify any attempt at synthesizing these examples within a real-world context that functions in a similar fashion as a living lab. A living lab is a situation wherein a practitioner engages in a series of collaborative experimentations with communities in which she/he is presently working.[4] The ultimate goal of such experimentations is to produce concrete examples of what it means to apply sustainability in the real world. As a practitioner of applied sustainability, I am concerned with the obvious gaps and historical residues left by numerous social experiments in Appalachia. The most prevalent of these are situated within the very place that a new model for development is emerging today, the coalfields of central Appalachia. In brief, this thesis informs a new approach to the development of applied sustainability, which is built upon a comprehensive understanding of past experiments, most notably the infamous War on Poverty, in addressing poverty.

Given that I wish to initially explore the theoretical foundation for creating a usable guide for the practitioners of applied sustainability, my research also carries profound ethical implications. Such a practical guide is informed by what Rosi Braidott calls a "post-secular turn" that carries with it a "notion that agency, or political subjectivity, can actually be

[4] This research is performed very much in the same manner as what DeLanda refers to as an "intuition synthesizer" when he describes the importance of virtual environments. (See http://www.cddc.vt.edu/host/delanda/pages/intuition.htm)

conveyed through and supported by religious piety and may even involve significant amounts of spirituality."[5] Braidott explains:

> The post secular position on the affirmative force of oppositional consciousness inevitably raises the question of faith in possible futures, which is one of the aspects of … residual spirituality … Faith in progress itself is a vote of confidence in the future. Ultimately, it is a belief in the perfectibility of Wo/Man, albeit it in a much more grounded, accountable mode that privileges partial perspectives, as Haraway (1988) put it. It is a post secular position in that it is an immanent, not transcendental theory, which posits generous bonds of cosmopolitanism, solidarity and community across locations and generations. It also expresses sizeable doses of residual spirituality in its yearning for social justice and sustainability.[6]

My work with many brilliant and energetic visionaries in the coalfields of central Appalachia is spiritually alive and well and, for the most part, is replicating at a high rate with the recent creation of Sustainable Williamson's first affiliate organization, Sustainable Pike County. Given the theoretical intentions of this research, Sustainable Williamson acts as a concrete example of applied sustainability that has begun to be adopted by several communities across central Appalachia. The replication signifies a sort of spiritual "yearning for social justice and sustainability" that is emerging from within the region as opposed to the region relying upon some transcendental form-generating agency from the outside.

Without digressing into an exhaustive list of the causative links supporting the above claim of applied sustainability going viral, I would like to turn the discussion towards assessing the merits of adopting a new materialist framework for ensuring the long term sustainability of the region's many emerging projects. These projects signify local experimentations with community revitalization regardless of their direct connections to or emergence from the concept of applied sustainability and its manifestation through Sustainable Williamson. The new materialist approach I am proposing in both the material

[5] Dolphijn, *New Materialism*, 31
[6] Ibid., 30.

(connective) and discursive (symbolic) manifestations of applied sustainability begins with building new networks by enriching existing networks across the region to form a collaborative whole, or, a CASE network.

**New Materialism**

Contemporary philosopher Manuel DeLanda defined several characteristics of New Materialism as well as the properties of the above CASE network (i.e., being collaborative whole). In response to "linguistic idealism," he emphasizes the importance of drawing a strict demarcation between idealism and realism.[7] For DeLanda, those involved in manipulating symbols, calling their actions a truth, or ascribing to this activity some semblance of material agency by calling it an action, are in fact laying down on the job, so to speak. The idealist's reality is "uniformly populated by appearances or phenomena, structured by linguistic representations or social conventions, so they can feel safe to engage in metaphysical speculation knowing that the elements of their world have been settled in advance."[8] For example, when engaging in a direct action that already assumes that the "elite," the target of the said "action," will not respond to demands that tend to reinforce the idealist's worldview (e.g., entrenched interest prevent social change from occurring). Meanwhile, practitioners or realists are simply those getting the job done. The realists, DeLanda contends, "are committed to assert the autonomy of reality from the human mind." Realists can only attribute truth to "*immanent* entities, that is, entities that may not subsist without some connection to a material or energetic substratum."[9]

[7] Henri Bergson makes a similar distinction between analysis and intuition where the idealist may be understood as utilizing a method or analysis and the realist uses intuition.
[8] Manuel DeLanda, *Deleuze: History and Science* (New York: Atropos, 2010), 81.
[9] Ibid.

A realist or practitioner concerned with immanent entities also has the daunting task of weeding out *transcendental* principles that typically accompany the top-down planning processes involved in sustainable development.[10] More often than not, these principles provide little applicability towards enacting localized social change. Instead, identifying endogenous (locally developed) innovations leads to long-term and, more importantly, scalable sustainability that requires the inclusion of market dynamics. The connectivity of principles to a local situation is broken given that the majority of sustainable development principles are generated outside of the community (i.e., transcendental form). Once a practitioner adopts a new materialist framework, she/he quickly realizes that a set of generalized principles for "sustainable development" does not exist. There only remains a population of individual processes of applied sustainability, one "that is not converging on a final truth but rather growing and diverging as it tracks a reality that is itself divergent."[11]

DeLanda directly confronts one of the most pervasive theoretical underpinnings of contemporary materialist philosophy that produces such generalized principles as the aforementioned tenets of "Sustainable Development." Dialectics, the progenitor of philosophy and the mind's relationship to the material world, can be considered a fixing of change and/or a cognitive freezing of the dynamic flows imbued within reality itself.

To provide an alternative to the mind-dependent nature of dialectics, DeLanda proposes a radically imminent synthesis of form: morphogenesis. Supporting a mind-

[10] For more information concerning sustainability principles, see Andres R. Edwards, *The Sustainability Revolution: Portrait of a Paradigm Shift* (British Columbia: New Society Pub, 2005). Edwards describes the following models: The Ontario Round Table on Environment and Economy (ORTEE) Model Principles (local); the Minnesota Planning Environmental Quality Board's Principles of Sustainable Development for Minnesota (regional); The Netherlands National Environmental Policy Plan (NEPP) (national); and the Earth Charter Commission's Earth Charter (international). Note that none of the aforementioned principles include any market-based principles. Additionally, these principles did not emerge locally but from very centralized processes.

[11] DeLanda, *Deleuze*, 93.

independent material world, DeLanda argues that the crucial task "is to explain the more or less stable identity of the entities that inhabit the world" by way of a generative synthesis or morphogenetic process.[12] A morphogenetic process "gets rid of all *transcendent* factors using exclusively form-generating resources which are *immanent* to the material world."[13] He continues by warning that if this identity is explained outside of its temporal context and/or inherent tendency to change, then "all one has done is to reintroduce idealism through the back door."[14] Thus, New Materialism must place historical synthesis – the processes involved in generating form through *actualization* – at the center of the practitioner's methodology.[15] This accounts for the dynamic flows within a specific system that "must have as its main tool a concept of *objective synthesis*."[16] DeLanda elaborates:

> In traditional forms of materialism, those associated with Marxism, this concept was borrowed from Hegelian idealism but turned right side up, so to speak. The synthetic process in question was, of course, the negation of the negation, the synthesis of opposites. This concept was thought to apply not only to human affairs, the synthesis of new institutions in the cauldron of social conflict, but to also represent a general approach to the dialectics of nature itself. Unfortunately, an apriori concept of synthesis is bound to fail to capture all the different processes through which identity is generated, even if it is turned on its head.[17]

I will examine this "turning on its head" process through the lens of New Materialism's most prominent figure, Gilles Deleuze. When addressing Henri Bergson's

[12] Ibid., 31.
[13] Manuel DeLanda, *Intensive Science & Virtual Philosophy* (New York: Continuum International Publishing Group, 2005), 10.
[14] DeLanda, *Deleuze*, 31.
[15] Deleuze makes an important step in developing a connection between a new materialist philosophy founded upon the regenerative qualities of reality and the importance that networks play in the process of actualization. While considering embryology, he asks: "How does actualization occur in things themselves?... Beneath the actual qualities and extensities [of things themselves] there are spatio-temporal dynamisms. They must be surveyed in every domain, even though they are ordinarily hidden by the constituted qualities and extensities. Embryology shows that the division of the egg is secondary in relation to a more significant morphogenetic movements: the augmentation of free surfaces, stretching of cellular layers, invagination by folding, regional displacement of groups. A whole kinematics of the egg appears which implies a dynamic." See Deleuze, *A Thousand Plateaus*, 214**.**
[16] DeLanda, *Deleuze*, 31.
[17] Ibid.

critique of dialectics, Deleuze provides elucidation: the precise problem of Marx's inversion of Hegelian dialectics is the sleight of hand whereby idealism replaces material processes, leaving generalized abstractions as the conceptual framework for being in the world. In short, Marx was more of a sleight of hand magician than a materialist. Instead of material reality, Marx places his moral disposition at the center of his social theory. Accordingly, the "Capitalist System" maintains its general, abstract characteristics by supporting a host of opposing concepts, namely, the bourgeoisie/proletariat and working-class/capitalist dichotomies. Marx believes that the body of the capitalist system is somehow infected by a so-called "internal contraction" that will one day rip its structure apart through a communist revolution. "In such cases," Deleuze adds, "the real is recomposed with abstracts; but what use is a dialectic that believes itself to be reunited with the real when it compensates for the inadequacy of a concept that is too broad or too general by invoking the opposite concept, which is no less broad?"[18] Like DeLanda's shift from idealism to realism, Deleuze defines the inherent problems with the dialectic and its tendency to obfuscate the form-generating forces of the material world, especially given that the dialectic "will never be attained by correcting generality with another generality." As such, Bergson "criticizes the dialectic for being a *false movement*, that is, a movement of the abstract concept, which goes from one opposite to the other only by means of imprecision."[19]

Perhaps some critics of dialectics – informed by residual post-modern tendencies – should not overemphasize dualisms. There are many practical dualisms, for example, active/reactive and realism/idealism are two dualisms that I will use throughout this thesis. These dualisms, among others, provide practical tools for developing post-anthropocentric

[18] Gilles Deleuze, *Bergsonism* (New York: Zone, 1991), 44.
[19] Ibid.

theory of social change. By adopting these useful dualisms, critics can shift their research in the direction of replacing "reified generalities with concrete assemblages." This strategic shift may allow the theorist to focus specifically on the manner in which individual desires relate to symbolic forms of affirmation (i.e., active force) within concrete processes presently being structured/maintained by way of negating (i.e., reactive force) the connective.[20] Here, both Marxism and DeLanda's infamous straightjacket of the left come to mind.[21] "Once we break with the idea of the capitalist system, a system that you must replace as a whole via a Revolution, many options open up."[22]

Both Marxism and Capitalism take many forms. For simplicity, I will define both within a framework of centralized vs. decentralized power. Most contemporary economists and political theorists qualify centralized power as "bad." However, they disagree on the terms and meanings associated with the particular concepts in question, which I find largely meaningless due to the overemphasis upon language. For example, a conspiracy theorist (paranoia set aside) tends to only correlate concepts in a fashion that merely associates specific terms within a field of linguistic meanings and does not fully account for the material conditions from which the particular phenomenon or concept in question emerges. As such, the concept of *sustainability* should emerge from actual practices or "good works" occurring in the real world rather than developing from moral dispositions and "good intentions." The task here is not to understand the concepts in question (conjunctive linkages), but to comprehend how they function to incentivize the emergence of centralized or decentralized power in a specific/concrete context.

[20] The active/reactive dualism plays an important role in my analysis of community action in Chapter 3.
[21] Dolphijn and Tuin, *New Materialism*, 44.
[22] Manuel DeLanda, "Manuel DeLanda in Conversation with Timur Si-Qin," *Societe* (2012): 1, http://timursiqin.com/2012/siqin_inside_070612_final_NEU_web-spreads.pdf (accessed January 1, 2014)

**Role of Marxism**

In its basic form, Marxism signifies the centralization of power within a state, such as in the former Soviet Union or contemporary China. Although this form of communism deprives individuals of personal freedoms, perhaps a more implicit form is at work in contemporary politics that attempts to draw a false distinction between politics and economics. For Milton Friedman, "the chief manifestation of this idea is the advocacy of '*democratic socialism*' by many who condemn out of hand the restrictions of individual freedom imposed by 'totalitarian socialism' in Russia and who are persuaded that it is possible for a country to adopt the essential features of Russian economic arrangements and yet to ensure individual freedom through political arrangements."[23] Friedman goes on to state that a socialist society "cannot also be democratic, in the sense of guaranteeing individual freedom."[24] Providing more clarity, he writes that the market "enables distribution to occur impersonally without the need for 'authority' – a special facet for the general role of the market in effecting co-operation and co-ordination without coercion."[25]

By assuming a strict meaning of democratic socialism, Friedman establishes a reified generality that fails to account for the moral dispositions that generate its meaning(s). Moreover, upon closer examination of the various meanings of democratic socialism, a strict definition becomes ambiguous and sometimes contradictory. As a solution, we should situate how democratic socialism functions within the framework of economics. This provides a mechanism for teasing out what ensures individual liberties through a bottom-up process (co-ordination without coercion) as well as what supplants the role that market dynamics play in a need for a central authority, thus signifying a top-down process.

[23] Milton Friedman, *Capitalism and Freedom* (Chicago: University of Chicago Press, 2009), 7.
[24] Ibid., 8.
[25] Ibid., 168.

As Marx and Engels state, "The directing motive, the end and aim of capitalist production is to extract the greatest possible amount of surplus value, and consequently to exploit labor power to the greatest possible extent," essentially rendering capitalism and the market forces thereof as unethical.[26] Marx and Engels also use capitalism and the "bourgeois society" in a synonymous fashion (e.g., elite vs. the people/workers), whereby all things "elite" become "evil" and all things "people/workers" become "good."

For Marx and Engels, all things "capitalism" converge on a singular notion of the labor theory of value and, in a more general fashion, the full integration of a dialectics throughout their entire theory where history is an unfolding series of revolutions or historical tensions. The convergence of both the labor theory of value and the significance that Marx and Engels place on revolution is important because it outlines a frame of reference for teasing out how Marxism is essentially an anti-market lens that seeks to absolve the perceived ethical shortcomings of capitalism. Markets are inherently oppressive because the only way the "market system" produces value is through exploiting labor. Attempting to grapple with Marx, Friedman writes:

> Even if the statements of fact implicit in this assertion were accepted, the value judgment follows only if one accepts the capitalist ethic. Labor is "exploited" only if labor is entitled to what it produces. If one accepts instead the socialist premise, "to each according to his need, from each according to his ability" – whatever that may mean – it is necessary to compare what labor produces, not with what it gets but with its "ability," and to compare what labor gets, not with what it produces but with its "need."[27]

Concerning the labor theory of value, Tristram Hunt, in *Marx's General: The Revolutionary Life of Friedrich Engels*, complains that volume 2 of *Das Capital* "did not address the questions Engels had first asked in 1867 and that Marx had promised to answer at

[26] Karl Marx, *Capital, Volume One: A Critique of Political Economy* (New York: Dover Publications, 2012), 442.
[27] Friedman, *Capitalism and Freedom*, 167.

a later stage: whether constant capital (machinery) was able to generate profits through surplus value and, given the different ratios of variable to constant capital (of labor to machinery) at work in any factory, how profit rates could be determined across different capitals."[28] Hunt continues:

> In other words, in Meghnad Desai's formulation, "was (non-labor) capital relevant to profitability or not?" Instead of providing a solution, Engels weakly threw back the issue at Marx's critics: "If they can show how an equal average rate of profit can and must come about, not only without a violation of the law of value, but rather on the basis of it, we are willing to discuss the matter further with them." And moreover in volume 3 Engels changed Marx's intent on some occasions, most obviously in the much debated part 3. "The Law of Tendency of the Rate of Profit to Fall," in which Marx outlined how profits tend to decline under capitalism as labor-saving technology progressively reduces the scope for extracting surplus value from living labor. Marx connected this falling profitability to the vulnerability of capitalism itself."[29]

This tendency of "falling profitability" is an attempt to predict a future moment when capitalism – caused by its internal contradictions – would collapse and usher in a communist state. Considering the multitude of sources within the market that produce surplus value that Marx and Engels ignored (e.g., Total Quality Management, Modular Design, Economies of Agglomeration, Margins, and Debt), their moral dispositions should also be considered when reading their work. In lieu of the shortcomings associated with the labor theory of value, DeLanda states: "Marxism … added to these models intermediate scale phenomena, like class struggle, and with it conflictive dynamics. But the specific way in which it introduced conflict, via the labor theory of value, has now been shown by Sraffa to be redundant, added

[28] Tristram Hunt, *Marx's General: The Revolutionary Life of Friedrich Engels* (London: Macmillan Publishers, 2010), 299.
[29] Ibid., 299-300.

from the top, so to speak, and not emerging from the bottom, from real struggles over wages, or the length of the working day, or for control over the production process."[30]

The top-down nature of the labor theory of value essentially reveals its anthropocentric reliance upon modeling conflict that says little about economic forces themselves – "emerging from the bottom" – and more about the hopes and desires of the writers themselves. In other words, Marx and Engels's engineer the concept of capitalism to develop a much larger goal in response to the perceived ethical shortcomings of the "market system." They build their moral disposition into the labor theory of value in the hopes of inciting a revolution that would bring about a communist state, their nineteenth-century version of present environmentalist's ecotopia.

Marx and Engels (as well as many contemporary "leftists") believe that a communist form of government ensures personal freedom and liberation from the oppressive forces of capitalism. But, as we now know, it did the opposite (e.g., Stalinism and Maoism). These same dispositions of inciting a revolution, whether it be a radical overturning of the state or subtle, strategic reforms that eventually led up to "revolution," express hopes and desires that Marx and Engels have regarding their ethical framing of capitalism. The philosophers' intentions are especially evident when one assesses the ethical intentions espoused by the left, that is, ensuring personal freedom and liberation from poverty in central Appalachia in the 1960s (e.g., Michael Harrington's *The Other America*). Unfortunately, by continuing to evaluate market forces from the perspective of hopes and desires and, in a more general form, as being inherently exploitative, practitioners of applied sustainability will never accurately assess how specific market forces actually ensure personal freedom and

[30] Manuel DeLanda, "Markets and Anti-Markets in the World Economy," in *Technoscience and Cyberculture*, eds. Stanley Aronowitz, Barbara Marhnsons, and Michael Merser (New York: Routledge, 1996), 187.

sustainability. In short, desire does not equate to science. To use a common American proverb: "Hell is full of good meanings, but heaven is full of good works."

DeLanda identifies various productive road signs for navigating through this complex milieu of hopes and desires. As he notes, the extraordinarily scientific and detailed analysis of Fernand Braudel takes a different position than Marx by creating a distinction between markets and anti-markets. Such a distinction allows for a more comprehensive analysis of surplus value that accounts for the form-generating resources of markets outside of the scope of labor.

**Role of Capitalism**

Marx and Engels are not alone. The moral disposition of equating all things "market" to "oppression" continues to influence social reformers in considerable ways. "Beginning in the late nineteenth century, and especially after 1930 in the United States, the term "liberalism" came to be associated with a very different emphasis, particularly in economic policy," Friedman explains in *Capitalism and Freedom*. "It came to be associated with a readiness to rely primarily on the state rather than on private voluntary arrangements to achieve objectives regarded as desirable. The catch words became welfare and equality rather than freedom."[31] Friedman goes on to say that "the nineteenth-century liberal was a radical, both in the etymological sense of going to the root of the matter, and in the political sense of favoring major changes in social institutions. So too must be his modern heir."[32]

Situating this research within the purview of nineteenth-century radicalism, I propose a simple casting away of the term "Capitalism" and, with it, the self-identifier of "Capitalist"

[31] Friedman, *Capitalism and Freedom*, 5.
[32] Ibid., 6.

all together.[33] I will use the designators of markets and anti-markets to navigate through the complex world of the political economy, and I will also revive the once forgotten "nineteenth-century liberal."

The normative term capitalism, for the most part, has been corrupted. The multiple meanings attached to the word vary so much that it is almost impossible to convey any meaning whatsoever to others. More often than not, when discussing economics, I typically have to locate the source from which I am building meaning (Friedman, Marx, Smith, and Keen) in order to ensure that "the download" (i.e., the translation) is complete between all parties participating in said conversation. DeLanda further elucidates this problem when assessing Fernand Braudel's distinction between markets and anti-markets. He writes:

> If capitalism has always relied on non-competitive practices, if the prices for its commodities have never been objectively set by demand/supply dynamics, but imposed from above by powerful economic decision-makers, then capitalism and the market have always been different entities. To use a term introduced by Braudel, capitalism has always been an "anti-market." This, of course, would seem to go against the very meaning of the word "capitalism," regardless of whether the word is used by Karl Marx or Ronald Reagan. For both nineteenth century radicals and twentieth century conservatives, capitalism is identified with an economy driven by market forces, whether one finds this desirable or not. Today, for example, one speaks of the former Soviet Union's "transition to a market economy," even though what was really supposed to happen was a transition to an anti-market: to large scale enterprises, with several layers of managerial strata, in which prices are set not taken. This conceptual confusion is so entrenched that I believe the only solution is to abandon the term "capitalism" completely, and to begin speaking of markets and anti-markets and their dynamics.[34]

By providing a brief critique of "Marxism" and "Capitalism" and situating the moral disposition of this research within the tradition of nineteenth-century radical liberalism, I will steer the concept of "sustainability" in a direction that aligns with DeLanda's new-

[33] Twenty-first century radicalism seems to exist on the fringes where actions either takes the form of symbolic "take it to the streets" campaigns, self-centered acts of "speaking truth to power," or a call for the complete dissolution of the state in its entirety through a "government shutdown."
[34] DeLanda, "Markets and Anti-Markets in the World Economy," 191.

materialism (which is explicitly anti-Marxist). Given that the concept of sustainability is still in a dynamic state, this chapter seeks to provide the theoretical framework for introducing market dynamics within this emerging discipline through applied sustainability. This emerging concept is defined as the practice of linking the theory of sustainability to the real conditions found in a social setting through the merging of both symbolic and connective community action, that is, a (connective) real-world action informs a (symbolic) interpretative action from which we generate experiential meanings. Recalling the American proverb, "Hell is full of good meanings, but heaven is full of good works," this thesis proposes a synthesis of "good meanings" and "good works" where reality keeps perceived truths in check – in a word, realism.

Perhaps a more pragmatic approach would be to replace the obsolete dualisms of Marxism /Capitalism and Left/Right. I will distinguish between realism and non-realism, or realist and non-realist. Such a distinction begins to define the market dynamics that produce social reality and the parameters in which ideologies/myths influence these market forces. For example, DeLanda makes a clear distinction between what is real and non-real within social theory in *A New Philosophy of Society: Assemblage Theory and Social Complexity*:

> To say that social entities have a reality that is conception-independent is simply to assert that the theories, models and classifications we use to study them may be objectively wrong, that is, that they may fail to capture the real history and internal dynamics of those entities. There are, however, important cases in which the very models and classifications social scientists use affect the behavior of the entities being studied… accepting that the referents of some general terms may in fact be moving targets does not undermine social realism… the problem for a realist social ontology rises here not because the meanings of all general terms shape the very perception that social scientists have of their referents, creating a vicious circle, but only in some special cases and in the context of institutions and practices that are not reducible to meanings… acknowledging the existence of troublesome cases in which the meanings of words affect their own referents in no way compromises a realist approach to institutions and practices. On the contrary, a correct solution to this problem seems to demand an ontology in which the existence of institutional

> organizations, interpersonal networks and many other social entities is treated as conception-independent.[35]

**Historical Synthesis**

An even more useful distinction is found between materialism (inert matter) and New Materialism (living matter) wherein the former moves from concepts to reality and the latter moves from reality to concepts. While considering this distinction for the purpose of developing a philosophical framework for applied sustainability, perhaps Henri Bergson provides further guidance. He states that the primary purpose of philosophy is to "reverse the normal direction of the workings of thought" in order to "know *what* unity, *what* multiplicity, *what* reality superior to the abstract one and the abstract multiple is the multiple unity of" the practitioner's relationship to a mind-independent reality.[36] As such, the practitioner may want to consider approaching concepts in the following fashion:

> These concepts ordinarily go by pairs and represent the two opposites. There is scarcely any concrete reality upon which one cannot take two opposing views at the same time and which is consequently not subsumed under two antagonistic concepts. Hence a thesis and an antithesis which it would be vain for us to try logically to reconcile, for the simple reason that never, with concepts or points of view, will you make a thing.[37]

Using New Materialism to develop the theoretical underpinnings of applied sustainability that accounts for the historical identity of mind-independent entities, I account for the inadequacies of Marx's historical synthesis (*a priori*) through the negation of the negation. The anthropocentricism of Marx's synthesis is made obvious by Engels's ill-attempt to apply dialectics to nature. Inverting Marx and Engels's *a priori* synthesis, DeLanda states that what is necessary may be "a variety of *a posteriori* schemes of synthesis

[35] Manuel DeLanda, *A New Philosophy of Society: Assemblage Theory and Social Complexity* (New York: Continuum International Publishing Group, 2006), 1.
[36] Henri Bergson, *An Introduction to Metaphysics* (Indianapolis: Hackett Publishing, 1999), 160, 148.
[37] Ibid., 148-149.

(from physics, chemistry, biology and other fields) to account for all the different morphogenetic or synthetic processes that shape the non-human world, as well as the world of economics, starting with an account of the emergence of prices (when not manipulated via economic power) as a collective unintended consequence of intentional action."[38] When considering how Sustainable Williamson is presently being designed as a central node within a larger Central Appalachian Sustainable Economies (CASE) network, I can situate these two *imminent entities*, both of which are connected to a material stratum (e.g., growing food and improving health), within a well-defined framework of emergence that encourages applied practices to promote long-term sustainability.

In order to provide stability to the CASE network both ontologically in practice and epistemologically through translation to other practitioners and communities through exchanging ideas, one must identify models that have withstood the test of time. Given that the embodied method of historical synthesis will play an important role in informing the objective properties, tendencies, and capacities of present networks within central Appalachia, the ontological status of these networks will have to be assumed in part because capturing the real time conditions and associated complexities of these entities is not the purpose of this research.

Epistemologically, there are two concerns regarding the relationship between present manifestations of the CASE network that should be considered when defining a path forward for this network's successful strategies in central Appalachia. I will identify specific mechanism-independent components in the past or historical singularities as a way of introducing new ideas about the philosophical underpinnings of New Materialism and how this philosophy informs my present endeavors in central Appalachia. "Once we add the

[38] Ibid.

mechanism-independent component," Delanda clarifies, "the concept of emergence leads to two important epistemological consequences: it explains why we can use partial models to learn about reality and it provides an account for the capacity of those models to mimic the behavior of the processes they model."[39]

The mechanism-independent component deals with the emergent properties of past and present models where there is a network of individuals or institutions constituting those development models regardless of their economic or political nature. Once mechanism-independent, resilient *properties* are identified within a development model from the past that signify the *capacity* to "survive changes in the details of the interactions between its parts," I can then build similar resilient components into a present model that accounts for a part to whole relationship.[40] This process is not linear and must be considered as a dynamic-lived experiment with past and present interactions. In turn, I construct a historical synthesis that will allow practitioners to fully assess historical actors who are considered legitimate within a new materialist philosophy (i.e., those who can account for their genesis of form).[41] As such, I have developed the framework of symbolic and connective community action to provide historical actors the proper causal agency without falling into methodological trappings of micro-reductionism. Like DeLanda's proposed methodology for a new materialist approach to history, this symbolic/connective framework is designed to "block micro-reductionism, a step usually achieved by the concept of *emergent properties*, properties of the whole that are not present in its parts, its reduction to a mere aggregate of

[39] Manuel DeLanda, *Philosophy and Simulation: The Emergence of Synthetic Reason* (New York: Continuum International Publishing Group, 2011), 13.
[40] Ibid., 14.
[41] When considering the merits of how difference may inform our understanding of a historical subject, we take into account Braidotti's explorations: "This figuration translates therefore my desire to explore and legitimate political agency, while taking as historical evidence the decline of metaphysically fixed, steady identities. One of the issues at stake here is how to reconcile partiality and discontinuity with the construction of new forms of inter-relatedness and collective political projects. See Dolphijn, *New Materialism*, etc., 34.

many rational decision makers [micro-economics] or many phenomenological experiences [micro-sociology] is effectively blocked."[42]

By blocking the anthropocentric noise of history (rational or phenomenological actors), I will uncover objective properties, capacities and tendencies within a past model regardless of whether it functions within central Appalachia. The partiality of these past models should be made explicit. Like scientists only interested in assessing partial models based on their explanatory value, this research functions in a similar manner by evaluating emergent properties of a past model in order to translate its value within the present context. In short, I place certain limitations on the complexity or depth of my analysis given that a certain navigation through and privileging of component parts functioning within a specific past model is required when engaged in historical research.

I will also describe the process of isolating particular mechanism-independent qualities of a past model that may display either a property of, a tendency towards, or a capacity for solutions. I will then translate these mechanism-independent qualities into the CASE network. My "experimenting with solutions" takes two forms: genealogical and recursive. With the first, my historical synthesis should be understood as genealogical in nature, especially since I am primarily concerned with past and present norms associated with community action. Such a genealogical technique will enable me to peer through the ideological layerings of community action and identify specific solutions by weeding out the symbolic residue and navigating through the anthropocentric noise alluded to earlier.[43] In the words of Appalachian scholar John Gaventa, "genealogy is a term used to describe

[42] DeLanda, *Deleuze*, 3.
[43] For example, Appalachia Regional Commission not proactively engaging the value of past models while engaging in the implementation in the next best model that in informed by a completely new theory of development, that is, there is no historical continuum maintained in the institutional memory of ARC.

Foucault's method, which uses radical disjunctures of the past to destabilize the certainties of the present, rather than look for the 'truth' of histories."[44]

Additionally, we have the recursive component of my proposed historical synthesis, where "solutions obtained as outputs at any one instant are used as inputs for the next time interval" and so on, ad infinitum.[45] Much like the history of science or mathematics, the topological nature of the models, or what I will later call a "space of possibilities," allows for a continuous interplay between past and present contexts without introducing idealism through the back door or, in this case, an anachronistic interpretation the past. This recursive process renders the past and the present as profoundly heterogeneous by providing the practitioner a defined process for identifying singularities between one or more models from the past and present in the form of solutions. Once these solutions are identified, the practitioner can identify synergies within the present through their continuous interactions with the past by way of an "embodied synthesis." This recursive process exhibits similar characteristics to what Donna Haraway and Karen Barad refer to as "diffraction patterns." Such patterns imply a sort of morphogenetic continuum or phylogenetic splitting that uncovers the inherent differentiating process associated with the relationship between past, present, and future. Haraway writes:

> Diffraction patterns record the history of interaction, interference, reinforcement, difference. Diffraction is about heterogeneous history, not about originals. Unlike reflections, diffractions do not displace the same elsewhere, in more or less distorted form, thereby giving rise to industries of [story-making about origins and truths]. Rather, diffraction can be a metaphor for another kind of critical consciousness.[46]

[44] John Gaventa, "Power after Lukes: A Review of the Literature," in *Brighton: Participation Group, Institute of Development Studies* (2003): 5.
[45] DeLanda, *Philosophy and Simulation*, 15.
[46] Dolphijn, *New Materialism*, 51.

Through Haraway's "critical consciousness," the recursive process enables morphogenesis to engage the subject of history through an evaluation of a specific solution's capacity for self-replication (i.e., resiliency) in the present and vice versa, thereby creating a non-linear feedback loop of relations.

This embodied synthesis can be considered as "generative genealogy" because the recursive oscillations between stabilizing and destabilizing models never reach the static state of a singular origin. Functioning as a generative genealogy, my proposed embodied approach to history may be thought of as a rhizomatic synthesis where, for Deleuze, "transversal communications between different lines scramble the genealogical trees."[47] Arguably, my proposed embodied synthesis aligns with Dolphijn and Tuin as well as Barad's transversal cartographies. Barad clearly defines the type of temporal synthesis that my project of applied sustainability seeks to embody:

> What we need are genealogies of the material-discursive apparatuses of production which take account of the intra-active topological dynamics that reconfigure the spacetime manifold. In particular, it is important that they include an analysis of the connectivity of phenomena at different scales … The topological dynamics of space, time, and matter are an agential matter and as such require an ethics of knowing and being: Intra-actions have the potential to do more than participate in the constitution of the geometries of power, they open up possibilities for changes in its topology, and as such interventions in the manifold possibilities made available reconfigure both that will be possible. The space of possibilities does not represent a fixed event horizon within which the social location of knowers can be mapped, nor a homogenous fixed uniform container of choices. Rather the dynamics of the spacetime manifold is produced by agential interventions made possible in its very re(con)figuration.[48]

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[47] Gilles Deleuze and Pierre Félix Guattari, *A Thousand Plateaus: Capitalism and Schizophrenia, Vol. 2* (Minneapolis: University of Minnesota Press, 1987), 11. In response to Foucault's use of the genealogical method, Haraway (via Deleuze) argues that Foucauldian diagrams of power describe what we have already ceased to be, that is, this methodology acts a posteriori and therefore is unable to fully situate the process of "doing history" within the present. See both Donna J. Haraway, *Simians, Cyborgs, and Women: The Reinvention of Nature* (London: Routledge, 2013) and Rosi Braidotti, *Metamorphoses: Towards a Materialist Theory of Becoming*, Vol. 10 (Cambridge: Polity Press, 2002).

[48] Dolphijn, *New Materialism*, 112-113.

Adopting an open-ended process of interpreting history can allow for the practitioner to simultaneously examine the nature of both past and present models (e.g., health clinic models) – an entanglement of the symbolic and connective components of this research that I will discuss further in Chapter 3. By linking both a genealogical technique and a recursive process, we essentially block (in both past and present) what DeLanda refers to as macro-reductionism, a disposition in "favor of society as a whole, a society that fully determines the nature of its members."[49]

When considering a whole to part relationship, the second mechanism-independent component identifies isomorphic solutions between two or more partial models. This process will require the additional "concept of *relations of exteriority* between parts" in order to fully engage the raw nature of history or a *critical consciousness*.[50] As Delanda writes:

> Unlike wholes in which "being a part of this whole" is a defining characteristic of the parts, that is, wholes in which the parts cannot subsist independently of the relations they have with each other (relation to interiority) we need to conceive of emergent wholes in which the parts retain a relative autonomy, so they can be detached from one whole and plugged into another one entering into new relations.[51]

Elman Service's evolutionary methodology describes a similar interior/external process that I will use to examine the three specific fields of temporality associated with my embodied synthesis: the past, the present, and the future. My goal is to close the gap between the first two in order to ensure both the resiliency of future worlds and to increase the efficiency of these "resiliencies" emerging over time. This generative feedback loop may take the form of a present to past relationship (present-pasts) overlapping with past to presents relationships (past-presents) to bring about a likely future (present-futures). The practitioner identifies a present solution that possesses the highest capacity to create change in the future. In my

[49] DeLanda, *Deleuze*, 3.
[50] Ibid.
[51] Ibid., 3-4.

slight adaptation of his methodology, Service explains the complex network of feedback loops between the interior and exterior:

> The selective process of the [emergent properties] … involves problems of adjustment to a new altered [present-pasts] and to the presence of other [past-presents]. Any changing [emergent properties]… normally result in altered internal arrangements, so that we are talking about two aspects of the adaptive problem, not two different and unrelated kinds of problems. It would seem that [societal] changes are always fomented by external sources [or emergent properties], but the creative solutions are selected in terms of their internal fitness and their ability to cope with the external adaptive problem… so that the new element will prevail which does the job best while conflicting the least with the [present- futures capacity for change].[52]

In the end, the genealogical technique of weeding through symbolic community actions will allow me to identify the detachable connective community action solutions and to recursively plug and play these solutions within both the present through real-world interactions (present-pasts) and the past through memory (past-presents). This will enable the practitioner to build a highly interactive *space of possibilities*, or as Karen Barad would put it: "a memory of its materializing effects is written into the world" of present-futures.[53] Such a historical methodology is radically evolutionary because of its specific relationship to non-linear relations that exist within form-generating processes. Outlining the radical nature of this embodied synthesis, Bergson draws a line between two distinct dispositions: an evolutionary space of possibilities and a revolutionary space of limitations. Bergson states that "radical indeed is the difference between an evolution whose continuous phases penetrate one another by a kind of internal growth, and an unfurling whose distinct parts are placed in juxtaposition to one another."[54]

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[52] Elman Rogers Service, *Primitive Social Organization: An Evolutionary Perspective* (New York: Random House, 1962), 29.
[53] Dolphijn and Tuin, *New Materialism*, 67.
[54] Bergson, *An Introduction to Metaphysics*, 9.

Much like Service's evolutionary synthesis, embodied synthesis allows me to "consider variant forms and diversity within the stages in the context of specific" evolutionary processes involved in the creation of the past-presents and present-pasts. Embodied synthesis also details the ways in which the past and present interact in developing possible futures and present-futures.[55] More importantly, the practitioner should consider the complexity of problems that deal with the mechanics of evolutionary change. Service asks: "*how*, by what means and in what order, do changes take place, particularly in terms of the movement from one stage to the next."[56]

Service's simplified mechanics of historical evolution – an unfolding of linear stages "from one stage to the next" – should be qualified at this juncture by noting DeLanda's statement about the non-linear nature of history. DeLanda relates the mechanics of evolution to non-linear processes called phase transitions where "human society may be seen as a 'material' capable of undergoing these changes of state as it reaches a critical mass in terms of density of settlement, amount of energy consumed, or even intensity of interaction."[57] Service's picture contains significant clues about the nature of non-linear history if one understands his use of "stages" as phase transitions.[58] The use of phase transitions renders the past as profoundly active and, more importantly, interactive. DeLanda clarifies phase transitions as a relationship between a present and a past that are entangled "much as water's solid, liquid, and gas phases" are, so "each new human phase simply added itself to the other ones, coexisting and interacting with them without leaving them in the past." This methodology treats both past-presents and present-pasts as assemblages as they relate to a

[55] Service, *Primitive Social Organization*, 26.
[56] Ibid., 26.
[57] Manuel DeLanda, *A Thousand Years of Nonlinear History* (New York: Zone Books, 1997), 14.
[58] Ibid., 15-16.

present-future's capacity to change, and, more importantly, the regenerative capacity of those assemblages is preserved over time.[59] The present-future's capacity to be preserved over time and to create change in the future is defined by that which "does the job best while conflicting the least."[60] DeLanda writes:

> Let's parameterize the concept of assemblage. The first parameter qualifies the degree of territorialization and deterritorialization of an assemblage. Territorialization refers not only to the determination of the special boundaries of a whole – as in the territory of a community, city, or nation state – but also to the degree to which an assemblage's component parts are drawn from a homogenous repertoire, or the degree to which an assemblage homogenizes its own components … The members of a densely connected community are constrained by the capacity of the community to store reputations and enforce local norms, a constraint that may result in a reduction of personal differences and an increased degree of conformity. When two or more communities engage in ethnic or religious conflict, for example, not only the geographical boundaries of their neighborhoods or small towns will be policed more intensely, so will the behavior of their members as the distinction between "us" and "them" sharpens: a small deviation from the local norms will now be observed and punished and the homogenization of behavior will increase. Conflict, in other words, tends to increase the degree of territorialization of communities, a fact that may be captured conceptually by changing the setting of this parameter.
>
> The second parameter quantifies an assemblage's degree of coding and decoding. Coding refers to the role played by language in fixing the identity of a social whole. In institutional organizations, for example, the legitimacy of an authority structure is in most cases relates to linguistically coded rituals and regulations: in organizations in which authority is based on tradition, these will tend to be legitimizing narratives contained in some sacred text, while in those governed by a rational-legal form of authority they will be written rules, standard procedures, and most importantly, a constitutional charter defining the rights and obligations. While all individual organizations are coded in this sense, a state apparatus performs coding operations that effect an entire territory and all the communities and organizations that inhabit it. The more despotic or totalitarian the state apparatus the more everything becomes coded: dress, food, manners, property, trade. Because many archaic states allowed the communities over which they ruled to keep their own social codes, superimposing on them a dominant code, Deleuze and Guattari refer to this operation as "overcoding."[61]

According to Claire Colebrook, the degree of territorialization and deterritorialization signifies two parts of a three-part system of synthesis: connection, disjunction, and

[59] Ibid., 16.
[60] Service, *Primitive Social Organization*, 9.
[61] DeLanda, *Deleuze*, 13.

conjunction. This system of synthesis enables me to create a rhizomatic mapping of the relationships between specific singularities and their relationship to assemblages (e.g., scale-free network). In other words, by situating the interior/exterior singularities (long-term tendencies) within the feedback processes between the present-pasts assemblages and the past-presents assemblages, I can map potentialities or solutions within the present-futures assemblage and become a thinker or practitioner of the future. This relationship to the future opens up what Deleuze and Guattari refer to as a "line of flight" signified as sort of virtual interplay within a past-present-future manifold space and, in the end, a line of flight develops a heterogeneous space of possibilities.

This space is defined by dimensions that directly correspond to the degrees of freedom within an assemblage process(es) and where the points are specified by the generalized coordinates within a given singularity(s). DeLanda puts it another way: "The idea is to think of actual time as metric (cyclic in this case, since we measure 'lengths of time' by counting cycles) and then trying to conceive of a topological time, one in which there is no present (all presents are actual) but only past and future topologically stretched in an unlimited way," that is, a past-present-future manifold space.[62] By the same token, my proposed embodied synthesis creates a condition in which present-futures become "an active object of desire [which propels the practitioner of applied sustainability] forth and… can draw from it strength and motivation to be active in the here and now of a present that hangs on in between the 'no longer' and the 'not yet' of advanced post-modernity."[63]

At this point, DeLanda has already defined Colebrook's first two components of synthesis. Territorialization, he explains, is the degree of *connection* and deterritorialization

[62] DeLanda, "Manuel DeLanda in Conversation with Timur Si-Qin," 14.
[63] Rosi Braidotti, "Posthuman, All Too Human Towards a New Process Ontology," *Theory, Culture & Society* 23, no. 7-8 (2006): 206.

is the degree of *disjunction* rooted in conflict where "one intensity set against another; one body can be elevated above another, such that there is a distinction between two levels," such as elite/people.[64] The third component of *conjunction* defines DeLanda's second parameter: "an assemblage's *degree of coding and decoding*" in which the community action is both coded within the symbolic and decoded within the connective by flowing back to the practitioner's embodied synthesis (i.e., space of possibilities).[65] Colebrook explains:

> The third synthesis refers all the flows back to some general abstract essence[…] The order of connections is not imposed from without (the body of the despot terrorizing the tribe); it is produced from the ground – all connections and disjunctions, all differences or flows, are read as instances of, as signs or expressions of, some underlying whole. It is through the third synthesis that we can imagine that virtual whole of difference which possessed the tendencies from which difference emerged: the body without organs, the chaosmos, the plane of immanence, life, virtual difference.[66]

Deleuze and Guattari's use of the wasp/orchard relationship as it relates to a line of flight can provide us with a real-world conjunctive synthesis of the above-prescribed embodied synthesis. The wasp/orchard relationship offers further guidance in understanding how the rhizomatic mapping process is linked to a space of possibilities. Deleuze and Guattari write:

> How could movements of deterritorialization and processes of reterritorialization not be relative, always connected, caught up in one another? The orchid deterritorializes by forming an image, a tracing of a wasp; but the wasp reterritorializes on that image. The wasp is nevertheless deterritorialized, becoming a piece in the orchid's reproductive apparatus. But it reterritorializes the orchid by transporting its pollen. Wasp and orchid, as heterogeneous elements, form a rhizome. It could be said that the orchid imitates the wasp, reproducing the image in a signifying fashion (mimesis, mimicry, lure, etc.). But this is true only on the level of the strata -- a parallelism between two strata such that a plant organization on one imitates an animal organization on the other. At the same time, something else entirely is going on: not imitation at all but a capture of code, surplus value of code, an increase in valence, a veritable becoming, a becoming-wasp of the orchid and a becoming-orchid

[64] Claire Colebrook, *Gilles Deleuze* (London: Routledge, 2002), 107.
[65] DeLanda, *Deleuze*, 13.
[66] Colebrook, *Gilles Deleuze*, 108.

> of the wasp. Each of these becomings brings about the deterritorialization of one term and the reterritorialization of the other; the two becomings interlink and form relays in a circulation of intensities pushing the deterritorialization ever further. There is neither imitation nor resemblance, only an exploding of two heterogeneous series on the line of flight composed by a common rhizome that can no longer be attributed to or subjugated by anything signifying. Remy Chauvin expresses it well: "the aparallel evolution of two beings that have absolutely nothing to do with each other."[67]

This brings us to the rhizomatic landscape of central Appalachia and two particular focal points of our embodied synthesis, or "intra-historical," research: interpersonal networks and institutional organizations.[68] Given the importance that DeLanda places on emergent properties and relations of exteriority when answering "a crucial question confronting any serious attempt to think about human history," practitioners of applied sustainability should consider the merits of New Materialism as it functions within the above methodology and outside the limited scope of this research. Moreover, the following excerpt not only enables the practitioner to better understand the scope of my intra-historical research, but should also plant some seeds of curiosity to explore the brave new world that Karen Barad calls a "performative nature of intra-actions," or a "new way of thinking causality."[69] In this vein, Barad deftly illustrates the primary task of New Materialism:

> [S]tructures are to be understood as material-discursive [i.e., connective-symbolic] phenomena that are iteratively (re)produced through ongoing material-discursive intra-actions. This machine is not a Euclidean device, nor is it merely a static instrument with a non-Euclidean geometry. It is a topological animal that mutates through a dynamic of intra-activity. Questions of connectivity, boundary formation, and exclusion (topological concerns) must supplement and inform concerns about positionality and location (too often figured in geometrical terms).[70]

[67] Deleuze, *A Thousand Plateaus*, 10.
[68] Embodied synthesis or intra-historical research shares close ties with Karen Barad's concept of intra-actions.
[69] Dolphijn, *New Materialism*, 49, 55.
[70] Ibid., 112.

To this end, DeLanda provides us with an entry point to better understand how intra-activity may come to define what we know as Appalachia, and, more specifically, the coalfields of central Appalachia:

> With [emergent properties and relations to exteriority], we can define social wholes, like interpersonal networks or institutional organizations, that cannot be reduced to the persons that compose them, and that, at the same time, do not reduce those persons to the whole, fusing them into a totality in which their individuality is lost. Take for example the tightly-knit communities that inhabit small towns or ethnic neighborhoods in large cities. In these communities an important emergent property is the degree to which their members are linked together. One way of examining this property is to study networks of relations, counting the number of direct and indirect links per person, and studying their connectivity. A crucial property of these networks is their density, an emergent property that may be roughly defined by the degree to which the friends of the friends of any given member (that is, his or her indirect links) know the indirect links of others. Or to put it still more simply, by the degree to which everyone knows everyone else. In a dense network word of mouth travels fast, particularly when the content of the gossip is the violation of a local norm: an unreciprocated favor, an unpaid bet, an unfulfilled promise. This implies that the community as a whole can act as a device for storage of personal reputations and, via simple behavioral punishments like ridicule or ostracism, as an enforcement mechanism.
>
> The property of density, and the capacity to store reputations and enforce norms, are non-reducible properties and capacities of the community as a whole, but neither involves thinking of it as a seamless totality in which members' personal identity is created by the community. A similar point applies to institutional organizations. Many organizations are characterized by the possession of an authority structure in which rights and obligations are distributed asymmetrically in a hierarchical way. But the exercise of authority must be backed by legitimacy if enforcement costs are kept within bounds. Legitimacy is an emergent property of the entire organization even if it depends for its existence on personal beliefs about its source: a legitimizing tradition, a set of written regulations or even for small organizations, the charisma of a leader. The degree to which legitimate authority is irreducible to persons can, of course, vary from case to case. In particular, the more organizational resources are linked to an office or role (as opposed to the incumbent of that role) the more irreducible legitimacy is. Nevertheless, and however centralized and despotic an organization may be, its members remain ultimately separable from it, their actual degree of autonomy depending on contingent factors about social mobility and the existence of opportunities outside the organization.[71]

[71] DeLanda, *Deleuze*, 4-5.

When considering my present endeavors in developing applied sustainability in central Appalachia, necessity implores me to examine the temporal realities of the region's contextual realities through understanding "the specific nature of the fluctuations that have been present at each of its bifurcations." If practitioners are to prepare for the region's inevitable transition, they must fully understand the complexities of past transitions. As Delanda writes, "we need to know its exact history to understand its current dynamical state."[72] For this reason, I decided to place community-action and its histories as the primary topic of this research. I believe that changing the boundaries of what community-action can do in the present entails a shift of its fundamental parameters. By shifting the ontological conditions of community-action in terms of its spatio-temporal frame of becoming, I argue that this will lead to more connective expressions of sustainability in both central Appalachia and perhaps the world.[73]

Lastly, this research is a primer for developing a practical guide for practitioners of applied sustainability that "cannot be drawn from the immediate context or the current state of the terrain."[74] In line with Braidotti's project, this framework has to be "generated affirmatively and creatively by efforts geared to creating possible futures, by mobilizing resources and visions that have been left untapped and by actualizing them in daily practices of interconnection with others."[75] If nothing else, this project requires "more visionary power or prophetic energy, qualities which are neither especially in fashion in academic circles, nor highly valued scientifically in these times of commercial globalization."[76]

[72] DeLanda, *A Thousand Years of Nonlinear History*, 14.
[73] Dolphijn, *New Materialism*, 35.
[74] Ibid.
[75] Ibid., 35-36.
[76] Ibid., 36.

The question for the practitioner of applied sustainability is this: "By manipulating symbols, how are you going to manufacture reality?"[77] Moreover, as Bergson argues, "the more we become imbued with this truth, the more we shall be inclined to take philosophy out of the school and bring it into closer contact with life."[78] In the spirit of Braidotti's inter-generational ethics, this project of applied sustainability attempts to invoke a spiritual awakening within present and future practitioners:

> Prophetic or visionary minds are thinkers of the future. The future as an active object of desire propels us forth and motivates us to be active in the here and now of a continuous present that calls for resistance [i.e., the non-reactive flavor]. The yearning for sustainable futures can construct a liveable present. This is not a leap of faith, but an active transposition, a transformation at the in-depth level. A prophetic or visionary dimension is necessary in order to secure an affirmative hold over the present, as the launching pad for sustainable becoming or qualitative transformations. The future is the virtual unfolding of the affirmative aspect of the present, which honors our obligations to the generations to come… The pursuit of practices of hope, rooted in the ordinary micropractices of everyday life, is a simple strategy to hold, sustain and map out sustainable transformations.[79]

**The Emerging Concept of Applied Sustainability**

Applied sustainability is an interdisciplinary field of science and innovation that draws from the emerging philosophy of New Materialism to identify dynamic continuities which consider past, present, and future impacts upon a variety of material assemblages. These impacts of a particular social assemblage relate to a specific of material assemblages both within and outside of the social assemblage. For example, impacts within a social assemblage may consider inter-generational ethics and impacts outside of the social assemblage may consider biodiversity. These dynamic continuities should enable the present social assemblage to mitigate future impacts upon both predictable and unpredictable social assemblages so that the regenerative capacity of those assemblages is preserved over time.

[77] Bergson, *An Introduction to Metaphysics*, 153.
[78] Ibid., 104.
[79] Dolphijn and Tuin, *New Materialism*, 36.

The philosophical relationship between applied sustainability and New Materialism links the theory of sustainability to the material conditions found in a given social assemblage through the merging of both symbolic and connective relationships within the social assemblage. This is similar to actor-network theory, a connective science based action that informs and is informed by a symbolic innovation based action from which a given social assemblage creates meanings and, more importantly, a regenerative network economy influenced by various fields within a specific market economy. Some of these fields may include open innovation, endogenous growth theory, life-cycle assessment, industrial ecology, social entrepreneurship, and evolutionary economics.

This new approach to sustainability is significantly different from the standard definition of sustainability, which is normally encapsulated by some version of the United Nation's Brundtland Commission's concept: "development that meets the needs and aspirations of the present without compromising the ability of future generations to meet their own needs."[80] Serving as a working model for applied sustainability, Sustainable Williamson also states in its 2013 Central Appalachian Sustainable Economies study that the Brundtland Report's triple bottom line of sustainable development places too much emphasis upon "the ecological and social components with little to no applied component regarding the economic pillar. This accounts for our use of applied sustainability, which serves as a direct response to its profound shortcoming, [an] ignoring of the important role market systems play in sustaining the other two pillars."[81]

[80] Brudtland Commission, *World Commission on Environment and Development: Our Common Future* (Oxford: Oxford University Press, 1987), 8.
[81] Joseph Eric Mathis, Frank Fineis, and Alex Donesky, "Energy Integration: An Evaluation of Solar in West Virginia," *Sustainable Williamson* (2013): 4, http://www.scribd.com/doc/168659270/2013-CASE-Study-Energy-Integration-An-Evaluation-of-Solar-in-West-Virginia (accessed January 1, 2014)

**Sustainable Williamson in Brief**

Sustainable Williamson seeks to connect community stakeholders with specific programs under the banner of "applied-sustainability" and to activate personal engagement with economic development through market-driven projects. Williamson residents believe that central Appalachian communities will choose to actively participate in community development and make efforts to retain their investment within local economies by creating reliable, well-paid jobs and an expanded local tax base. As such, diverse participation in the development of triple-bottom line markets will stimulate vital economic growth, thereby improving health, wealth, and well-being. Sustainable Williamson's specific focus on applied sustainability, as opposed to sustainable development, also translates to its emphasis upon and utilization of market-driven models to bolster America's competitive position in contemporary global energy markets. This approach considers how our present decisions will make on future generations.

This citywide effort became possible when Williamson mayor Darrin McCormick spoke at a city council meeting, encouraging the council and local citizens to accept energy efficiency and renewable energy as a means to sustain a way of life for future generations. In 2011, the Williamson Redevelopment Authority adopted a new slogan: "Where Development Meets Sustainability." With the help of Sustainable Williamson, the city now hosts several community gardens, a weekly farmers' market, and, among other public health initiatives, a 5K race.

Once a favorite retailer for shoppers and a hub for the coal and banking industries in the region, the city of Williamson is no longer a bustling center of commerce. Its economic decline began as a result of the devastating 1977 flood, only to be followed by another flood

in 1984, just as most businesses were recovering from debt. In 1990, Clean Air Act regulations increasingly affected the coal industry as fewer mining permits were issued in the region. In central Appalachia, local and state governments are typically dependent on the coal industry for tax revenues and employment. In some counties, for instance, 40 percent of jobs are directly reliant on the coal industry.[82] In Williamson, the coal industry provides financial support to community schools, local organizations, and political campaigns.

The Appalachian Regional Commission (ARC) ranks Mingo County as one of the most economically distressed counties in Appalachia based on three economic indicators: average unemployment rate, per capita income, and poverty rate. According to the U.S. Census Bureau, 21 percent of local residents in Williamson live below the poverty threshold, compared to the national average of 14.3 percent. In 2012, Mingo County also had an annual average unemployment rate of 9.9 percent, compared to a national average of only 8.1 percent.[83] According to the West Virginia Health Statistics Center, much of the state's out-migration has consisted of younger people who, unable to find gainful employment, have moved to other states, a phenomenon referred to as "brain drain." According to a Health Statistics Center's 2002 report, "they marry and raise their families elsewhere. Then, after they retire, many West Virginians come back home to enjoy life in the Mountain State."[84] Indeed, the state has the second highest percentage of persons aged 65 and older and the third lowest percentage of people under age 18 in the nation.[85]

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[82] "West Virginia Coal Mining Facts," last modified October 10, 2012. http://www.wvminesafety.org/wvcoalfacts.htm. (accessed January 1, 2014)
[83] "Local Area Unemployment Statistics," U.S. Bureau of Labor Statistics, http://www.bls.gov/data/#unemployment (accessed January 1, 2014)
[84] West Virginia Health Statistics Center, "West Virginia Vital Statistics," *West Virginia Vital Statistics* (2009): 1-163, http://www.wvdhhr.org/bph/hsc/pubs/vital/2009/2009vital.pdf (accessed January 1, 2014)
[85] "The 2012 Statistical Abstract: State Rankings," U.S. Census Bureau, http://www.census.gov/compendia/statab/rankings.html (accessed January 1, 2014)

Due to years of economic decline, Williamson's city government leaders have consistently looked for new ways to survive and spark economic recovery. The city has attempted hiring freezes, layoffs, and levying greater percentages of employee contribution to health care insurance. Nonetheless, the essential services that the city provides continue to shrink. The consideration of geographic and topographic disadvantages plays an important role in shaping Sustainable Williamson's strategy to diversify the economic backbone of coal dependent communities, that is, energy. According to the ARC, rural communities in Appalachia continue to experience limited economic opportunity and slow growth rates. These regions typically lack diverse inter-industry relationships between counties; coalfield communities often mirror the coal-dependent economies of their spatial neighbors. More importantly, West Virginia's coal-dependent economy is sensitive to a host of factors – national coal demand, environmental legislation, and the health of the national economy – without having other reserve industries for potentially laid-off coal industry workers.

Building upon a strong energy economy in southern West Virginia, Sustainable Williamson aims to negotiate and actuate economic diversification through an integrated path forward with energy as the foundation. Residents and municipal officials are already demonstrating widespread support for Sustainable Williamson's energy projects because they reduce energy burdens for households and city municipal buildings, thus saving money. Sustainable energy professionals from across the nation have traveled to Williamson to share knowledge with professionals in coal-based industries and community residents, including at-risk youth. Discussions have focused on the economic feasibility, research and development, operations and maintenance, and design and installation of new sustainable energy technologies.

Sustainable Williamson can be considered a living lab for applied sustainability in central Appalachia and beyond. According to Birgitta Bergvall-Kareborn and Anna Stahlbrost, a living lab is "an open innovation environment in real-life settings in which user-driven innovation is the co-creation process for new services, products and societal infrastructures; living labs encompass societal and technological dimensions simultaneously in a business-citizens-government-academia partnership."[86] As a living lab, Sustainable Williamson brings together the theory of New Materialism with the practical application of the proposed "embodied synthesis" for practitioners. Moreover, Sustainable Williamson is only the beginning of a broader strategy for expanding the emerging CASE network that will be fully described in Chapter 4. Both Sustainable Williamson and the CASE network also serve as two concrete strategies that provide a transversal/collaborative approach to social movements, one that provides additional avenues for societal change. Chapters 2 and 3 will provide a base for the alternative model that I am proposing.

It is my intention to create a pathway to sustainability that is not only defined by middle-class value systems but is radically inclusive by situating the centers of innovations in "applied sustainability" within what can be considered one of the most un-sustainable regions in the United States today. In central Appalachia, I have found both the symptoms and the cures to some of the most perplexing issues of our time: poverty, obesity, civic engagement. Most importantly, I will transcend the ideology of "Us versus Them," a topic more fully explored in Chapter 2. In general, this project seeks to identify innovations within the very communities that have the highest barriers to obtaining sustainable approaches to livability.

[86] Birgitta Bergvall-Kareborn and Anna Stahlbrost, "Living Lab: An Open and Citizen-Centric Approach for Innovation," *International Journal of Innovation and Regional Development* 1, no. 4 (2009): 357.

Within these communities, we will ultimately find practitioners who will help guide the rest of the nation towards a future defined by inclusivity, livability, and creativity.

## 2

## Connective and Symbolic Community Action

*"By manipulating symbols, how are you going to manufacture reality?"*

***- Henri Bergson -***

Developing a roadmap for answering some interesting "Questions About the Borromean Clinic" posed by the blog site entitled *Larval Subjects*, this chapter examines the topological architecture of ideology.[1] Discussions of borromean knots as it functions in *Lacanian psychoanalysis* tend to become overtly saturated with post-modern "word-plays" with very little room for using this important psychological tool within the real-connected world. In particular, I am interested in reconfiguring the borromean knot by integrating, or perhaps by entangling its tripartite structure of the *real-symbolic-imaginary* with a forth component: the symptom. This addition may be called a *symptomal knot* whose sole function is to put *applied sustainability* to work within a world inhabited by humans who are always informed by an ideology, a "plague of fantasies." Additionally, I am interested in seeing how this apparatus is linked through concrete histories (e.g., idea of Appalachia, industrialization). I am not interested in a series of reified generalities about Appalachia as such, the real,

[1] Larvalsubjects, "Questions About the Borromean Clinic," *Larval Subjects*, March 27, 2013, http://larvalsubjects.wordpress.com/2013/03/27/questions-about-the-borromean-clinic/#comment-268620 (accessed January 1, 2014)

*jouissance* (i.e., joy), and so on, if it is not directly attached to applied examples within the material world. Pointedly, does ideology manufacture reality or not?

My proposed methodology situates the original tripartite structure of the borromean knot (i.e., real-symbolic-imaginary) within a middle ground, symptomatically oscillating between a mind-dependent and a mind-independent world. The mind-dependent world reveals itself as a *real-symbolic-fantasy* structure where the "fantasy" component can be understood as a process of hyper-symbolic overcodings of the real, a process I will explain in further detail below. As for the mind-independent world, it is a morphogenetically infused process of actualization born from the connective "real" itself. In this field of symptoms, the "real" component of the *real-symbolic-connective* tripartite can only be understood through action itself. In the case of this research, an embodied synthesis of applied sustainability is presently happening within a specific community: Williamson, West Virginia.

To understand connective and/or symbolic community action, this chapter will first examine the connective and symbolic components before moving on to unpacking the complexities of community action, a subject that will be fully explored in Chapter 3. I will begin by looking at several examples including scholarly literature and development programs and strategies to outline a "soft-framing" for the rest of the chapter. Moreover, this chapter engages in a theoretical practice that "argues that we know nothing of the (social) body until we know what it can do" per explicitly interlacing new materialist stitching's throughout the narrative.[2] By doing so, this chapter will provide historical support for an applied sustainability framing of what it means to "do development" in central Appalachia. Before exploring these themes, it is important to note that the symbolic/connective dyad should not be understood as an oppositional dualism where the task might be to cognitively

[2] Dolphijn and Tuin, *New Materialism*, 113.

position connective processes as the phenomenon *in and of itself* – along with the symbolic – as an epiphenomenon.

Quite the opposite, new materialism allows for the study of two different dimensions in their entanglement. For example, a particular economic development model in action consists of two different properties: matter/connective and meaning/symbolic, both of which form the multiplicity of Being. This entanglement of the symbolic and the connective is an equivocal set of relations of symbolic parts as well as an univocal folding and unfolding of connectivity that exhibits the characteristics of a multiplicity. These symbolic parts are infused within connective actions to form what DeLanda refers to as a "concrete assemblage."[3] In the case of our symptomal knot, equivocity posits two radically incommensurable ideas of the real where there is just one plane of the symbolic (i.e., overcoding, fantasy). Whereas a univocal folding expresses itself, not as that which is fundamentally real and then belied by connections, but that which gives birth to—while remaining irreducible to—connectivity.[4] Deleuze provides further clarification in *Difference and Repetition* to my symbolic and connective forms of community action. The symbolic is the equivocal side of the connective equation that is fundamentally univocal. Deleuze elaborates:

> With univocity it is not the difference which are and must be: it is being which is deference, in the sense that it is said of difference. Moreover, it is not we who are univocal in a Being which is not; it is we and our individuality which remains equivocal in and for a univocal Being.[5]

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[3] For more on the relationship between part and connective foldings, see Gilles Deleuze, *The Fold: Leibniz and the Baroque* (Minneapolis: University of Minnesota Press, 1993). Moreover, DeLanda writes: "The structure of a space of possibilities is sometimes referred to as a 'multiplicity,' a term that in French is equivalent to 'manifold,' the differential geometry spaces used in the construction of phase space. See DeLanda, *New Philosophy*, 125.

[4] Claire Colebrook, "Postmodernism is a Humanism: Deleuze and Equivocity," *Women: A Cultural Review* 15, no. 3 (2004): 288, 290.

[5] Gilles Deleuze, *Difference and Repetition* (New York: Columbia University Press, 1994), 39.

Philosophy of Science provides a clear understanding for the incommensurable component of equivocity. In *The Structure of Scientific Revolutions*, Thomas Kuhn develops a theory of paradigm shifts whereby two scientific communities operating under different worldviews are radically distinct and cannot rationally evaluate the world against one another.[6] This incommensurability is ingrained within the very language of the paradigm itself, leading Kuhn to argue that translation between two or more paradigms is difficult and often times impossible (e.g., the two worldviews of Renewable Energy and Fossil Fuels cannot communicate). The impossibility of translation signifies what he calls a "scientific revolution," or a break in both the symbolic field of meaning and experience.

Unlike Kuhn's external relations of incommensurability, entanglements are radically immanent processes that fall in line with recent adaptations of Kuhn's model, arguing for both a gradualist approach as well as a complexity model that comes close to supporting a univocity of Being. These adaptations retain the univocal components of Kuhn's model concerning physical experimentations that generate anomalies, the fuel source of scientific change. In this case, physical experimentations with the material world (i.e., a connective act) produce entanglements between mind and matter that function as a sort of "fantasy" filter for understanding a mind-independent reality. These entanglements are a cluster of attractors or set of physical tendencies linked together by abrupt phase transitions in the tendencies of physical processes.[7]

Appalachian scholars often use incommensurability to frame the transition from an agrarian paradigm to an industrial paradigm. This historical methodology takes shape within one of its most potent forms: conflict in the form of class struggle. A reexamination of the

[6] Thomas S. Kuhn, *The Structure of Scientific Revolutions* (Chicago: University of Chicago Press, 1996), 79.
[7] Manuel DeLanda, *Intensive Science & Virtual Philosophy* (New York: Continuum International Publishing Group, 2005), 21.

large body of scholarship on the infamous mine wars of 1920s should suffice to support of my claim that "paradigm shifts" played a dominant role in historical constructions of Appalachia. This scholarship identifies labor struggles as a dominant force in developing the material realities of central Appalachia in the 1920s. Paradigm shifts posit a revolutionary break where there was once an agrarian paradigm; there is now an industrial paradigm with little to no connectivity between the two. More importantly, a full account of the phase transition between two "kinds" of economies is concealed by equivocal accounts of historical processes. Labor historians view these processes as a series of labor struggles between the union and the company.[8] However, not all Appalachian scholars are susceptible to understanding Appalachian history as a series of paradigm shifts. Dwight Billings, Kathleen Blee, and Louis Swanson serve as good examples when they write about Clay County, Kentucky, and the cooperative linkages between historical agents:

> Capitalist domination also required new forms of social corporation among Appalachian entrepreneurs, workers, and local political elites in conjunction with outside capital and corporate managers. The emergence of militant occupational communities in the coalfields and the creation of powerful associations among coal operators and local business classes, along with the movement of Shiloh residents from hollows to the main roads and the persistence of cooperation among neighbors and kin in urban areas of the Midwest and their continuing ties "back home" seen in the "stem-family" structure of out migration from Beach Creek, all suggest ecological changes and new forms of Appalachian "community," but not community decline.[9]

This change in relationship between active agents and a network structure is affiliated with Actor Network Theory (ANT), which will be covered in Chapter 4, and realist social theory that details the entanglements of structure and agency. In *Selling Tradition: Appalachian and the Construction of the American Folk*, for instance, historian Jane Becker discovers that the process of "traditionalizing" crafts and their makers had deprived the

[8] This lens ignores a variety of other market forces at play during this period of transition.
[9] Dwight Billings, Kathleen Blee, and Louis Swanson, "Culture, Family, and Community in Preindustrial Appalachia," *Appalachian Journal* 13, no. 2 (1986): 166.

Appalachian people of their individual agency and multidimensional networks, endowing "them instead with a more generalized meanings that proved valuable to the market place."[10] This, of course, demonstrates the symbolic and connective processes of territorialization and deterritorialization in Appalachia. With symbolic territorialization, "traditionalizing" includes the symbolic behavior performed to assemble ideas into a whole as well as the biological connectivity to sensory organs needed for the production of impressions.[11] Meanwhile, the process of symbolic deterritorialization codes the region's historical transitions movement from a generalized process of "traditionalizing" to another generalized process of generating a "culture of poverty" during the onset of the War on Poverty.

Incapable of connective territorialization due to the top-down nature of its processes of generating ideas of Appalachia, symbolic deterritorialization and overcoding are believed to be two of the primary causes of poverty in central Appalachia. Claire Colebrook provides a clear understanding of these processes:

> The very connective forces that allow any form of life to become what it is (territorialization) can also allow it to become what it is not (deterritorialization). The human bodies that assemble to form a tribe or collective (territorialization) can produce a whole that then allows them to be governed by a chieftain or despot (deterritorialization, where the power for assembling has produced a collective disempowerment). The tribe can also can take the deterritorialized term (such as a ruler or despot) and return it to the collective: we are all leaders, or we govern ourselves.[12]

In the case of Appalachia, overcoding occurs when mountain residents become viewed as opponents of progress. Then the processes of territorialization (i.e., elite fantasies) offer them progress that results in personal, economic, and environmental exploitation.[13]

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[10] Jane S. Becker, *Selling Tradition: Appalachia and the Construction of an American Folk, 1930-1940* (Chapel Hill: University of North Carolina Press, 1998), 190.
[11] Delanda, *Deleuze*, 14.
[12] Colebrook, *Gilles Deleuze*, xxii-xxiii.
[13] Susan Sarnoff, "Central Appalachia–Still the Other America," *Journal of Poverty* 7, no. 1-2 (2003): 126.

Gilles Deleuze and Félix Guattari explain that this process of overcoding explains why symbolic expression is not only an expression independent of content, but also a form of expression independent of a physical process: "translation is possible because the same form can pass from one substance to another."[14]

Unlike the symbolic/connective entanglements mentioned earlier, overcoding is a radically disconnected process in which limited experiences of the mind are believed to capture a complete experience of reality.[15] Becker provides a clear example of such overcoding in Appalachia:

> In the hands of the American elite, the Arts and Crafts movement evolved into a campaign for "stylish rusticity" associated with restored farmhouses and country cottages and with handcrafted furnishings, all offering temporary escape from the vicissitudes of modern, urban life. Simplicity came to mean "good taste," Thorstein Veblen complained, and the "lure of the rough edge" became another form of conspicuous consumption. Thus both Arts and Crafts movement and the folk revivals of the first half of the century were shaped by, even as they influenced, America's consumer culture.[16]

Becker's emphasis on the external overcodings of "stylish rusticity" exchanged during outsider encounters with Appalachia makes this research suitable for executing an emergent analysis in which components of this region are joined by relations of exteriority.[17] Another way to examine this emergent process is through Margaret Archer's proposed framework in *Realist Social Theory: The Morphogenetic Approach*. Using Archer's morphogenetic theory, phase transitions between agrarian and industry can be interpreted in the following fashion: to use the word "Appalachian" to signify an individual agent doesn't

[14] Deleuze, *A Thousand Plateaus*, 62.
[15] Romans 1:22-23, 25 comes to mind: "Although they claimed to be wise, they became fools and exchanged the glory of the immortal God for images made to look like a mortal human being and birds and animals and reptiles. They exchanged the truth about God for a lie, and worshiped and served created things rather than the Creator—who is forever praised. Amen. "
[16] Becker, *Selling Tradition*, 18.
[17] DeLanda, *Deleuze*, 15.

mean that the same individuals are being discussed because the group as an emergent whole has changed profoundly between one state to another. In Archer's words:

> [A]t the end of the transformation sequence, not only is structure transformed, but so is agency as part and parcel of the same process. As it re-shapes structure, agency is ineluctably reshaping itself, in terms of organization, combination and articulation, in terms of its powers and these in relation to other agents.[18]

This chapter will also address Appalachian stereotypes without falling into the essentialist trappings that some Appalachian scholars utilize in their analyses of the region. Many of these scholars have often developed counter-histories to assumptions and beliefs about Appalachia such as isolationism, homogeneity, familialism, and fundamentalism.[19] In *A New Philosophy of Society*, for instance, DeLanda outlines these essentialist traps:

> [G]eneral categories do not refer to anything in the real world and that to believe they do (i.e. to reify them) leads directly to essentialism. Social constructivism is supposed to be an antidote to this, in the sense that by showing those general categories are mere stereotypes it blocks the move towards their reification. But by coupling the idea that perception is intrinsically linguistic with the ontological assumption that only the contents of experience really exist, this position leads directly to a form of social essentialism.[20]

Take the concept of "Appalachia" as a case in point. I argue that Appalachian scholars can resituate the idea that perception is intrinsically linguistic by adopting an embodied synthesis that entangles the symbolic and the connective realities of Appalachia. As Ronald Lewis and Dwight Billings explain, the reified generality of Appalachia is so "entrenched… that revisionist scholarship which questions the assumptions implicit within this construction has come close to abandoning the idea of Appalachia altogether, or at least

[18] Margaret Scotford Archer, *Realist Social Theory: The Morphogenetic Approach* (Cambridge: Cambridge University Press, 1995), 74.
[19] Two examples of developing counter-histories in Appalachian studies are Ronald L. Lewis and Dwight B. Billings, "Appalachian Culture and Economic Development," *Journal of Appalachian Studies* 3, no. 1 (1997): 43-69; and Katie Algeo, "Locals on Local Color: Imagining Identity in Appalachia," *Southern Cultures* 9, no. 4 (2003): 27-54.
[20] DeLanda, *A New Philosophy of Society*, 45-46.

recognizing the fluid and shifting nature of its social referent."[21] As such, perhaps Appalachian studies can adopt the revisionist paradox (death = birth) with a renewed focus on the regenerative nature of the dualism implied by Appalachia being a "region apart" from America as a whole. I propose the creation of a new approach to Appalachian Studies that avoids symbolic deconstruction. As a whole, Appalachian Studies needs to produce tools that will enable practitioners to create an Appalachia that is no longer perceived as "opposed to progress," as Susan Sarnoff suggests, but is understood as defining progress by becoming a national leader in applied sustainability.

The process of tool production is a difficult task. It requires an interdisciplinary approach drawing from formal and informal practices that demonstrate successful strategies of applied sustainability. For instance, in *Only Paradoxes to Offer: French Feminists and the Rights of Man*, Joan Wallach Scott relies on the process of tool production for uncovering the forces that generate sexual difference. Appalachia generates similar paradoxes where practitioners and scholars alike must accept its unsustainable realities in order to create sustainable futures for the region. Scott writes:

> Feminism was a protest against women's political exclusion; its goal was to eliminate "sexual difference" in politics, but it had to make its claim on behalf of "women" (who were discursively produced through "sexual difference"). To the extent that it acted for "women," feminism produced the "sexual difference" it sought to eliminate. This paradox—the need both to accept and to refuse "sexual difference"—was the constitutive condition of feminism as a political movement throughout its long history.[22]

I propose a re-reading of Scott's work by rewording her use of "sexual difference" and "political exclusion" with both "economic difference" and "cultural exclusion" found in Appalachia. Such a re-reading provides us with a tool to better understand how practitioners

[21] Lewis and Billings, "Appalachian Culture and Economic Development," 15.
[22] Joan Wallach Scott, *Only Paradoxes to Offer: French Feminists and the Rights of Man* (Cambridge: Harvard University Press, 2009), 3-4.

(e.g., entrepreneurs and Appalachian volunteers) have either symbolically *worked for* or connectively *worked with* individual agents and communities in Appalachia.

Indeed, feminism provides a rich pool to draw from given its emphasis upon embodiment. In *Words and Things: Some Feminist Debates on Culture and Materialism*, for instance, Susan Sheridan situates this process of tool building in contemporary feminist debates on culture and materialism. She identifies a similar overcoding process between post-structuralism and feminist cultural theory suggesting a break between the symbolic and the connective.[23] Moreover, I have witnessed similar processes of overcoding within contemporary manifestations of community action in central Appalachia. There, symbols and their connectivity to people's lives have become disconnected from reality, leaving only a symbolic, overcoded residue defined by protest signs and banner drops (to name a few "actions"). In response to this overcoding of community action, this chapter provides the theoretical tools necessary for practitioners to demonstrate the inseparability of the symbolic and the connective by examining the discursive construction of Appalachia along with the material effects of that discursive power. This project of symbolic/connective entanglements should ultimately be interpreted – to use the words of Bergson – as a movement of pushing "dualisms to an extreme" and, in turn, of opening up creative breaks in the overcoding structure.[24] Moreover, the virtual currents of this research should be understood as providing the morphogenetic fuel necessary for inducing a phase transition of present "Revolutionaries" (activists) into future *evolutionaries* (practitioners). The dropping of the "R" signifies a transformation from reactive dispositions of negation to transversal dispositions of creative acts.

[23] Susan Sheridan, "Words and Things: Some Feminist Debates on Culture and Materialism," *Australian Feminist Studies* 17 (2002): 23-30.
[24] Bergson, *Metaphysics*, 236.

This process of pushing dualism to the extreme also requires me to consider the theoretical underpinnings of the symbolic systems that both informed President Lyndon B. Johnson's War on Poverty and reinforced the Appalachian Regional Commission's (ARC) disconnected assumptions that Appalachia remains economically isolated, functioning as a region apart – a subject that will be fully explored in Chapter 3. One such theory, functionalism, speculates that social institutions such as religion, kinship, education, the economy, and politics form a mutually independent system in which values and cultural orientations direct social change and restrict life within a codified system of relations.[25] Lewis and Billings highlight the symbolic nature of these theoretical actions, noting that the implicit process of overcoding within ARC policies were underpinned with symbolic residues from the past. For instance, in *Yesterday's People*, an influential book popularizing the now infamous culture of poverty model, Weller argues, "The greatest challenge of Appalachia and the most difficult, [was] its people."[26] Lewis and Billings describe the symbolic methodologies of Weller's given that the "authority of his text came not from the power of research but from the potency of stereotypes recycled again and again by writers claiming to understand Appalachia."[27]

Along with these overcodings, I also consider the material bodies needed to produce symbolic impressions.[28] I argue that overcoding creates an unethical union between the symbolic structure and the connective agent when it assumes that poverty and childbearing are inextricably entangled. This consideration brings to the forefront the very real, connective manifestations that cultural stereotypes have in affecting what a woman's body can naturally

[25] Functionalism was developed by sociologist Talcott Parsons and Robert Merton.
[26] Jack E. Weller, *Yesterday's People: Life in Contemporary Appalachia* (Lexington: University Press of Kentucky, 1965), 7.
[27] Lewis and Billings, "Appalachian Culture and Economic Development," 10.
[28] DeLanda, *Deleuze*, 14.

do; in this case, bear children. In 1935, for instance, University of Kentucky Graduate School Dean William D. Funkhouser argued that "eugenic sterilization" would enable feebleminded women to live outside of mental institutions. These institutions, according to Matt Wray in *Not Quite White: Whitetrash and the Boundaries of Whiteness*, were "developed for morons and high-grade defectives that required nothing less than the permanent, total institutionalization of the feebleminded."[29] In support of forced sterilization, Funkhouser wrote:

> In the case of the girls [who are feeble-minded], it is the old and tragic story, borne out by the records of all institutions, that they usually return in a year or so with a feeble-minded baby. If sterilization were practiced, the less dangerous of the feeble-minded and insane could be allowed to live at home. The girl, even if unmarriageable, never becomes pregnant.[30]

Utilizing new materialism, I can transverse the poles of the symbolic and the connective to identify the material manifestations of cultural stereotypes (overcodings) that operate within specific conditions of poverty. This methodology of traversing poles supplements the methodology of deconstructing ideas that many Appalachian scholars presently utilize to uncover a static origin or "truth" of Appalachia. Unlike these scholars, I argue that ideas of Appalachia emerge from its realities, transversal methodology that moves from reality to concepts in the form of building embodied syntheses, an entanglement of the connective and the symbolic. Hopefully, this chapter will not only create new understandings of "Appalachia," but also define a potential path for developing new realities of Appalachia from the bottom up. With those goals in mind, this chapter will unfold through the following sections:

[29] Matt Wray, *Not Quite White: White Trash and the Boundaries of Whiteness* (Durham: Duke University Press, 2006), 89.
[30] W.D. Funkhouser, "Eugenical Sterilization," *Kentucky Law Journal* 23 (1935): 514.

"Symbolic/Connective Entanglements" provides several examples for both symbolic and connective community action. These concrete examples will provide the conceptual framework for understanding how the processes of overcoding and productive power sustain poverty over time. Additionally, this section sets the stage for the rest of the chapter as well as Chapter 3 where I will fully examine community action.

"Appalachian Stereotypes – An *Unknown Known*" explores the ideological architecture of Appalachia as a concept. Locating the historical origins of Appalachian stereotypes within the nineteenth-century local color writings, I examine how these ideologies have historically affected a variety of material conditions such as migratory patterns, economic diversification and most importantly poverty. This section argues that the conceptual framework of "Appalachia" has shifted from a region as a whole (i.e., Appalachia) to a more specific location (i.e., central Appalachia) given that both the persistence of overcoding processes as well as poverty tends to cluster within this central region.

"Transition and Appalachia's Industrialization" examines Wilma Dunaway's important insights concerning how Appalachia functions as a periphery to global markets. Provided that Dunaway's core-periphery analysis is the dominant model for understanding Appalachian economic history, I will expand its scope by examining the evolution of the region's economy from one primarily dominated by agriculture and barter-trade to one defined by industry and monetary-trade. Taking together Dunaway's analysis and the profound influence that Marxist theory continues to have in contemporary Appalachian scholarship, this section can be understood as an alternative model for understanding the economic history of central Appalachia.

Moreover, this chapter proposes a transversal methodology that may enrich the practitioners' exposure to the theoretical application of applied sustainability through a social theory that rethinks the dualisms so central to Appalachian studies: elite/people being the most common. This transversal methodology always begins its analysis with how these oppositions between internal and external, us and them, culture and nature, symbolic and connective are produced in community action itself.[31] By considering the entanglement of symbolic and connective within Appalachian studies, my hope is to introduce a new materialist framework that considers the morphology of social change. In turn, these

[31] Dolphijn and Tuin, *New Materialism*, 109.

entanglements should provide the necessary framework for understanding matter (connectivity, processes of actualization) given that dualist thought has neglected these processes.[32] Moreover, this framework may also redefine the role of the intellectual, which, for Rosi Braidotti, consists "not in leading the opinions, legislating the truth or administrating the protocols of intellectual life, but rather in creating and disseminating new concepts and ideas" which the practitioner can then take into the realities of Appalachia.[33] To restate a quote from Bergson in Chapter 1, "the more we become imbued with this truth, the more we shall be inclined to take philosophy out of the school and bring it into closer contact with life."[34]

The material forces of isolation, rates of exchange and transition, topography, lack of institutional infrastructure, familial relations, and, most importantly, poverty, should inform the way we continue to create concepts and ideas of central Appalachia. In the end, we either passively engage in developing an understanding of the material processes that encourage a culture of poverty or we actively engage in developing the material processes that stimulate the emergence of its regenerative counterpart: a culture of entrepreneurship. Appalachian scholars must adopt a new materialist framework for conceptualizing the region so as to uncover the contexts where the symbolic and the connective collide within the very real, lived conditions of poverty. Scholars must assess collisions between poverty and bodies given Joanna Badagliacco and Carey Ruiz's research that found women are less likely to see a physician, but are more likely to be "counseled by a medical provider about sterilization

[32] Ibid.
[33] Rosi Braidotti, "Posthuman, All Too Human Towards a New Process Ontology," *Theory, Culture & Society* 23, no. 7-8 (2006): 206.
[34] Bergson, *Metaphysics*, 104.

and have undergone a sterilization procedure than their wealthier counterparts."[35] Scholars and practitioners, for instance, should consider past situations of forced sterilization given that "white trash" continues to inform contemporary medical practices within Appalachia.

When examining the involuntary sterilization of feebleminded poor whites in America, Matt Wray discovered that the power of this shared moral disposition, coupled with the rising reformist power of a professional middle-class, results in efforts to achieve a rare and extreme form of exclusion: "the biological eradication of an entire population through reproductive control."[36] Providing another contemporary example of how a similar moral disposition affects a woman's capacity to bear children, Badagliacco and Ruiz explain :

> [A]mong the homeless women she interviewed in Appalachian Kentucky, few felt they had much choice in determining their future fertility. They stated that they could not easily acquire reversible birth control methods because they did not have the cash and/or the health insurance. Badagliacco found that 92% of the women were very familiar with surgical sterilization and had had it suggested to them that they 'probably wanted' sterilization in order to be able to better provide for their children. On the other hand, when asked, 40% reported wanting additional children in the future. The average age of these women was 27 years and their desire for additional children would not have seemed at all unreasonable, if they were better able to care for the children they had already. Therefore, as these women strategize about how to strengthen their families, they run the risk of being persuaded to undergo a medical procedure they might not want or need. Indeed, we might speculate that few white, middle class women aged 27 would have received a suggestion from a health provider to choose sterilization unless there was some medical (as opposed to social) need.[37]

This process of subtle eugenics basically renders the woman as a passive victim of physical processes that enable middle-class whites to distinguish between those that match their "class decorums of a certain racial identity (whiteness) and those who, through physical,

[35] Joanna M. Badagliacco and Carey D. Ruiz, "Impoverished Appalachia and Kentucky Genomes: What is at Stake? How do Feminists Reply?," *New Genetics and Society* 25, no. 2 (2006): 220.
[36] Wray, *Not Quite White*, 95.
[37] Badagliacco, "Impoverished Appalachia and Kentucky Genomes," 218-219.

emotional, or economic markings, fail to measure up."[38] Providing a stark example of the very real, material, embodied manifestations of Appalachian stereotypes, rereading Ann Cahill's statement in her article "Foucault, Rape, and the Construction of the Feminine Body," she highlights an operative mechanism of rendering the female body as passive. Cahill states that "the real, live, living, breathing women who experience [poverty] and the threat of [sterilization] on a daily basis, and whose very bodily behavior and beings are in part formed by the presence of" these stereotypes.[39]

Additionally, Pierre Bourdieu's theory of symbolic violence may provide further structure for my trans-reflexive equation of stereotypes equating to rape, a structure that monopolizes the legitimate use of physical and symbolic violence over a specific territory. The territory is of course both Appalachia as well as the corporeality of poverty. This equation should serve as an ethical benchmark for contemporary Appalachian scholarship as well as practitioners of applied sustainability.[40] In the end, poverty in the region will not be liberated by the redefinition of the idea of Appalachia. The idea of Appalachia excludes its connective effects upon – to use Cahill's words – the "real, live, living, breathing women" that call the region their home.

**Symbolic/Connective Entanglements**

In order to fully grasp my proposed transversal methodology, this section provides several examples for both symbolic and connective community action. Taken from the apex of War on Poverty (i.e., 1960s) these examples will provide a conceptual framework to better understand how the processes of overcoding and productive power sustain poverty over time.

[38] Annalee Newitz and Matt Wray, eds. *White Trash: Race and Class in America* (London: Routledge, 1997), 41.
[39] Ann J. Cahill, "Foucault, Rape, and the Construction of the Feminine Body," *Hypatia* 15, no. 1 (2000): 48.
[40] Pierre Bourdieu, *Practical Reason: On the Theory of Action* (Palo Alto: Stanford University Press, 1998).

According to Appalachian scholar Ronald Eller, the methodologies employed by both connective and symbolic strategies for facilitating societal change are in stark contrast to each other. With regards to symbolic strategies, Eller examines the Christian Appalachian Project (CAP), a program that seeks to draw state and national attention to Appalachia's perceived problems. Although few within and outside of the region question the value of the CAP's humanitarian services, which have reached a large portion of impoverished individuals throughout the region, critics challenge the ethics of the organization's fund-raising strategies.

The CAP's strategy of overcoding first emerges in its use of regional stereotypes to raise funds. The organization originally appealed to middle-class Americans who typically viewed Appalachian families as helpless victims trapped within a vicious cycle of poverty. In *Uneven Ground: Appalachia since 1945*, Eller locates the processes of overcoding with the CAP's direct mail, television commercials, and other fund-raising efforts such as the distribution of a photograph of a girl standing on the porch of a dilapidated cabin with a baby nestled on her hip.[41] Providing a working example of symbolic community action (overcoding), this fundraising strategy reinforces universal stereotypes of Appalachian destitution while portraying mountaineers as a noble and long suffering people who need middle-class America's help.[42] Building from Bergson's method of intuition, the CAP sheds light onto the process of overcoding by highlighting the shortcomings of self-help strategies and their fundamental disconnect from a connective field of operation. On the other hand, an intuitive method is generated within the interior realities of Appalachia to "coincide with

[41] Ronald D. Eller, *Uneven Ground: Appalachia Since 1945* (Lexington: University Press of Kentucky, 2008), 122.
[42] Ibid., 122.

what there is unique and consequently inexpressible in it."[43] Eller alludes to the interior of Appalachia by illustrating the uniqueness of the task in question, social change:

> Like the service-oriented programs of most Community Action Agencies and the educational outreach programs of colleges and universities, the CAP avoided the larger structural problems of Appalachia's politics and economy and assumed that individuals could lift themselves out of poverty if given the opportunity and resources to change their behavior. Alleviating poverty, to many religious workers as well as to those in government and education, was a matter of individual and cultural change rather than societal transformation.[44]

Unlike Bergson's intuitive method, overcoding reduces the dynamic complexities of Appalachia to symbolic expressions. According to Henry Shapiro, the CAP attempts to "alter the reality of Appalachian otherness through systematic social action."[45] the processes of overcoding fuel these actions. Overcoding symbolically obscure the realities of Appalachia and appealed to America's middle-class value system.[46] Eller provides some clarification:

> Drawing on received images of Appalachian isolation and degeneracy to justify its programs, the Christian Appalachian Project reinforced the popular idea of Appalachia otherness and limited its own ability to effect sustainable change.[47]

The Council of the Southern Mountains (CSM) provides another example of how overcoding expresses Appalachia in terms of "what it is not" via decoupling the symbolic from connective community action. Using a Bergsonian framework to understand this process of decoupling, overcoding can be understood as a translation, "a development into symbols, a representation taken from successive points of view from which are noted a corresponding number of contacts between the new object under consideration and others believed to be already known."[48] In *Reformers to Radicals*, Kiffmeyer discovers that the

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[43] Bergson, *Metaphysics*, 135.
[44] Eller, *Uneven Ground*, 123.
[45] Henry D. Shapiro, *Appalachia on Our Mind: The Southern Mountains and Mountaineers in the American Consciousness, 1870-1920* (Chapel Hill: University of North Carolina Press, 1978), 31.
[46] The American Environmental Movement employs similar strategies.
[47] Eller, *Uneven Ground*, 123.
[48] Bergson, *Metaphysics*, 135.

process of overcoding has long informed reformers' strategies for combating Appalachian poverty. While analyzing Eli Cohen, the executive secretary of the National Committee on Employment of Youth who spoke before the CSM annual conference in 1961, Kiffmeyer writes:

> Implicit in Cohen's analysis was the inadequacy of the rural mountaineers' lifestyle, echoing a nearly century-old explanation of Appalachian poverty and "otherness." Advancements in technology in the post-World War II era had rendered rural Appalachians "cotemporary ancestors." This label, first used in 1899 by the Berea College president William Goodell Frost, implied that the region's rugged terrain had sheltered mountain residents from the influence of modern America and led to their destitution because of how their culture had evolved within the confines of the Appalachian Mountains. As a result, Appalachian residents, particularly those removed from the more urban county seats, retained their allegedly pure Scots-Irish heritage, their strict allegiance to family and clan, and folkways unchanged from frontier or Elizabethan times. This deviant culture, then, contributed to their impoverishment because of the way it conflicted with mainstream American notions of individualism, progress, and acquisitiveness. Ironically, the Council of the Southern Mountains, with its publication of Jack Weller's Yesterday's People in 1963, became yet another purveyor of the image of the Southern highlands as a culturally unique and backward region.[49]

Like the CAP and CSM, other organizations have failed to consider the importance of connective community action. They continue to emphasize cookie cutter strategies that fall directly in line with Bergson's critique of symbolic processes of knowing reality, an operation that reduces the idea of Appalachia to elements already known. Examining the disconnected realities of Weller's research, Lewis and Billings rightfully consider these elements as "monuments not only to bad science but, more significantly, to the enduring power of Appalachian stereotypes."[50] Here, the operation of symbolic community action transforms the realities and complexities of Appalachia into simplified concept(s) where analyzing a given context consists of moving from concepts to reality and not from reality to

[49] Kiffmeyer, *Reformers to Radicals*, 32.
[50] Lewis and Billings, "Appalachian Culture and Economic Development," 12.

concepts.[51] Moreover, as it relates to understanding the raw unfettered realities of Appalachia, Bergson notes: "To know reality in the ordinary meaning of the word 'to know,' is to take ready-made concepts, apportion them, and combine them until one obtains a practical equivalent of the real."[52]

Whether the practitioner's "knowing" functions through concepts such as mountaineer, hillbilly, culture of poverty, coal communities, or the poor, the end is always the same. Once the practitioner claims "to know" Appalachia through the above concepts or through an idealistic-moral disposition, she/he begins to mold the realities of Appalachia into what Bergson describes as a "single system of relations which imprisons the totality of the real in a mesh prepared for it."[53] Consequently, Bergson argues, "it becomes a knowledge purely relative to human understanding… and it follows that if all possible experience is thus assured of admittance into the rigid and already constituted frameworks of our understanding, our understanding itself organizes nature and finds itself reflected in it as in a mirror."[54]

Given this understanding of symbolic community action, the Glenmary Sisters provide a working example of a connective strategy, an entanglement of the symbolic and the connective. During the same period that the CAP was overcoding Appalachia in its fundraising strategies, the Glenmary Sisters were working with rural mountain residents by utilizing the community empowerment strategies of liberation theology that were beginning to inform the Catholic worldview. Eller explains: "Unlike other poverty warriors, they did not bring prepackaged projects but shared their skills, ideas, energy, and network of friends

[51] Bergson, *Metaphysics*, 149.
[52] Bergson, *Metaphysics*, 149.
[53] Ibid., 166.
[54] Ibid.

and resources [and] in time, they gained the confidence of the community."[55] Because patience is crucial to my proposed intuitive method, the temporal component is paramount for understanding connective community action at its kinship with the Glenmary Sisters, who, over time, built long lasting partnerships, especially among the women, in the poorer Appalachian communities. Their connective strategy opened up numerous opportunities that led to organizing community-based health clinics and community centers, which later fueled the creation of child development and tutoring programs. In short, connective community action is the simple act of being genuine with and caring for others. DeLanda provides further insight concerning the ways in which connective community action can create an intuitive method of friendship building:

> The links in a network must be constantly maintained and the labor involved constitutes one of the material components. This labor goes beyond the task of staying in touch with others via frequent conversations. It may also involve listening to problems and giving advice in difficult situations, as well as providing a variety of forms of physical help … A variety of expressions of solidarity and trust emerging from, and then shaping, interactions, are a crucial component of these assemblages. These range of routine acts like having dinner together or going to church, to the sharing of adversity and the displayed willingness to make sacrifices for the community as a whole. Expressions of solidarity may, of course, involve language, but in this case actions speak louder than words.[56]

**Appalachian Stereotypes – *An Unknown Known***

Over the past three decades, scholars have devoted considerable attention to debunking Appalachian stereotypes. Most of them have successfully deconstructed misconceptions about the region so as to develop new methodologies to the general discipline of social and cultural history. Locating the historical origins of Appalachian stereotypes within nineteenth-century local color writings, I examine how these ideologies have historically affected a variety of material conditions like migratory patterns, economic

[55] Eller, *Uneven Ground*, 124.
[56] DeLanda, *Deleuze*, 17.

diversification, and poverty. This analysis argues that the conceptual framework of "Appalachia" has shifted from the region as a whole (i.e., Appalachia) to a more specific location (i.e., central Appalachia). Philosopher Slavoj Žižek, one of the leading theorists of ideology, provides a stepping-stone for my analysis.

In "Philosophy, the 'Unknown Knowns,' and the Public Use of Reason," Žižek notes, "In March 2003, Donald Rumsfeld engaged in a little bit of amateur philosophizing about the relationship between the known and the unknown."[57] To quote Mr. Rumsfeld, the former Secretary of Defense:

> There are known knowns. These are things we know that we know. There are known unknowns. That is to say, there are things that we know we don't know. But there are also unknown unknowns. There are things we don't know we don't know.

"What [Rumsfeld] forgot to add," Žižek concludes, "was the crucial fourth term: the 'unknown knowns,' things we don't know that we know."[58] The history of Appalachia's relationship to building America's values and belief systems is riddled with "unknown knowns," or what Žižek deems "disavowed beliefs, suppositions, and obscene practices we pretend not to know about."[59]

Henry Shapiro's *Appalachia on Our Mind* and Anthony Harkin's *Hillbilly: A Cultural History of an American Icon*, among other books, locate the origin of America's "unknown knowns" to the local color movement of the nineteenth century. According to Shapiro, local color writing was not so much a movement as it was a popular trend of the romantic literature of the 1830s and 1840s and the realism of the 1890s that formed "the

[57] Žižek, Slavoj. "Philosophy, the 'Unknown Knowns,' and the Public Use of Reason," *Topoi* 25, no. 1-2 (2006): 137.
[58] Ibid.
[59] Ibid.

background of our public values" seeking to Americanize Appalachia.[60] Building from this point of departure, this section provides practitioners with specific methodological tools to unearth these "unknown knowns," which, for Žižek, is the primary "task of an intellectual."[61] He continues his critique of Rumsfeld:

> This is why Rumsfeld is NOT a philosopher: the goal of philosophical reflection is precisely to discern the ''unknown knowns'' of our existence. That is to say, what is the Kantian transcendental a priori if not the network of such "unknown knowns," the horizon of meaning of which we are unaware, but which is always-already here, structuring our approach to reality?[62]

Local colorists have also shaped America's rigid concepts about Appalachia by analyzing what they believe to be "a strange land and peculiar people."[63] In *Appalachia on Our Mind,* Shapiro demonstrates that the existence of this "strange land and peculiar people" challenges "known knowns" about the basic homogeneity of American progress towards achieving a uniform national civilization. This causes a crisis where, in Rumsfield's words, "there are things we didn't know we didn't know." In "Local on Local Color: Imagining Identity in Appalachia," Katie Algeo sheds light on reformers' first attempts at resolving this crisis of Appalachia, a region representing America's "unknown unknowns." Alego argues:

> These writers depicted the mountain region as inaccessible, rugged, untamed wilderness and Appalachians as isolated by their environment in a changeless past, with a lifestyle more typical of eighteenth century than the nineteenth. This model of an isolated and timeless Appalachia served as a counterpoint to the idea of an increasingly unified and Modern United States.[64]

Local color writing signifies a shift from the unknown unknowns to a known unknown through generating narratives about Appalachian culture which, for Harkins, were "designed to show not cultural difference so much as cultural hierarchy – to celebrate

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[60] Shapiro, *Appalachia on Our Mind*, 137.
[61] Žižek, "Philosophy, the 'Unknown Knowns,' and the Public Use of Reason," 137.
[62] Ibid.
[63] Henry Wallace, "A Strange Land and Peculiar People," *Lippincott's Magazine* 12 (1873): 430.
[64] Algeo, "Locals on Local Color," 32.

modernity and mainstream progress and values emphasizing the inferiority and alien nature of alternative cultures and societies."[65] Shapiro also concludes that a certain cognitive dissonance exists when considering the social construction of the Appalachian mountaineer. Indeed, these ideas are not native to objective reality, but are instead the creation of human minds and stand in between the symbolic and connective.[66] Shapiro illustrates America's mind-independent concepts of Appalachia that essentially "become the surrogates for experience and representations of reality[;] they become also the subjects of discourse and the objects of action."[67] Reminiscent of Bergson, Shapiro ends his critique of the local color movement with this summation of the nineteenth-century birthplace of Appalachia's "known unknowns":

> By integrating the fact of Appalachian otherness into the cognitive schemes by which the nature of American civilization was otherwise understood, explanation functioned to maintain the possibility of conceptualizing America as a unified and homogenous nation entity, and modern American as the "natural" product of inevitable processes of historical development – processes which operate in and on Appalachia also, albeit with different results. By "Americanizing" the native-born Americans of Appalachia, or by replicating in the southern mountains the social, economic, and cultural patterns which prevailed elsewhere in the nation and which served as the norms against which Appalachian otherness was measured, on the other hand, social action promised to eliminate the disparity between Appalachia and America.[68]

One product of local color writing is a social crusade, the County Life Movement, a reformist campaign centered on education that lasted from the 1900s to the 1920s. According to David Danbom in "Rural Education Reform and the Country Life Movement, 1900-1920," Country Lifers believed that efficiency in agriculture would meet the material needs

[65] Anthony Harkins, *Hillbilly: A Cultural History of an American Icon* (New York: Oxford University Press, 2004), 29.
[66] Shapiro, *Appalachia on Our Mind*, xviii.
[67] Ibid.
[68] Ibid., 32.

of an increasingly urban and industrial society and economy.[69] These Country Lifers also sought to ameliorate the growing number of migrants flowing from the rural countryside to urban cities by scientifically investigating the desires and aspirations of the rural disposition.

The scientific slant of the Country Life Movement signifies the final phase of Žižek's challenge to bring to light the "unknown knowns." In an attempt to know Appalachia, Professor Harold W. Foght, one of the leading intellectuals of the Country Life Movement, toured the region in 1913, ending in a small community situated on the Big Laurel River, where he delivered a lecture on rural education reform. Shortly thereafter, Foght published an essay that he claimed transmits his first-hand impressions of the region's landscapes and people.[70] But historian Katie Algeo has recently noted that Foght drew more from prevailing concepts of Appalachia than his actual experiences during his tour.[71] Connecting Foght's writing to themes previously introduced by local color writing, Algeo examines Madison County, North Carolina, which unwillingly fell into Foght's witches brew of overcodings. Alego discovers local responses to Foght's inaccurate portrayal of county residents. Responding to the inaccuracies, one local resident that Algeo cites felt obliged to respond in a manner that can only be considered a fully engaged and connective action of speaking truth to power. He writes:

> [Professor Foght] gives the impression that hovels are taking the place of splendid and comfortable homes once inhabited by moonshiners; that the homes of that day and time are crumbling to ruins. There are more good homes in the mountains, today, than have ever been before. Our farms are better and industries are more plentiful than at any time in our history.[72]

[69] David B. Danbom, "Rural Education Reform and the Country Life Movement, 1900-1920," *Agricultural History* 53, no. 2 (1979): 463.
[70] Title of essay was "Prof. Foght Writes Home of 'Trail of the Lonesome Pine': Kirksville man visits mountain folk made famous by John Fox Jr. and tells of their manner of living."
[71] Algeo, "Locals on Local Color," 35.
[72] Ibid., 50.

Instead of relying on firsthand observation, Foght attempts to target a broad readership by tapping into the popular literature of the day: local color writing. This overcoding is similar to Bergson's critique of utilitarian philosopher Stuart Mill and historian Hippolyte Taine. Whether local color writers are considering the nature of the Appalachian Mountaineer, or the historian is concerned with psychological "states," the methodology is strikingly congruent in their pursuit of defining the subject of their research: the individual's disposition. Historically, Fought and many other scholars of Appalachian identity have claimed to discover individual dispositions by identifying specific psychological traits. However, according to Bergson, it is possible to obtain that diversity of individual traits "only by transporting oneself outside of the self and taking a series of sketches of the person, a series of notes, of more or less schematic and symbolic representations."[73]

The similarities abound if we revisit Bergson's overcodings that reduce the object to elements already known.[74] In summation, this playful entanglement of Žižek, Bergson, and Appalachian history considers the above phase transitions from America's crisis of "unknown unknowns" (unknown Appalachia) to local color writings "known unknowns" (novels about Appalachia) and Foght's "known knowns" (science about Appalachia) as a novel approach to conceptualize contemporary manifestations of regional stereotypes. This approach renders the overcoded residue of "unknown knowns" essentially unexplored. More generally, stereotypes are ultimately ignored by liberal dispositions "all too eager to listen to tales of degenerate hillbillies" rather than understanding the complex realities that generate such misconceptions.[75] By the turn of the twentieth century, Harkins concludes that the idea

[73] Bergson, *Metaphysics*, 145.
[74] Ibid., 135. Overcodings can be understood as analogous to Un*known Knowns.*
[75] Algeo, "Locals on Local Color," 51.

of mountaineers being a race of violent savages that threatens the nation's progress had become "firmly entrenched in the American psyche."[76]

Foght's essay (along with the local response it prompted) is one of the earliest examples of an "Us vs. Them" relationship that has continued to structure the economic and cultural logics of the America psyche. He accomplishes the structuring through two specific internal/external processes. The first is a part-to-whole relation that flows from the local to the national. Here, Appalachian identity is born from the process of becoming known by the rest of America. The internal process of becoming known is signified by local responses to external overcodings in Algeo's research. The second process is a whole-to-part relation that flows from the national to the local. Within this process, the flow of overcodings implicitly territorializes local norms of what is "Appalachian" through "traditionalizing." These two processes ultimately provide a complete picture of the ideological architecture that structures the "symptomal knot" of the American psyche.

Referring to local responses to Foght's essay, Algeo describes a type of regional solidarity that, for DeLanda, implies a whole that functions as a "device for storage of personal reputations and, via simple behavioral punishments like ridicule or ostracism, as an enforcement mechanism."[77] This solidarity creates strong divides between who is considered an insider and who is considered an outsider within Appalachian communities. Algeo writes:

> The published responses reveal solidarity of feeling that extended beyond the limits of social class or immediate community. Although they were members of the educated middle-class, the writers were offended by the Appalachian stereotype and clearly felt disparaged by the essay. Moreover, none of the writers made class or local geographic distinctions in their responses. No one suggested that while Foght's depictions were inappropriate for the county seat of Marshall, they might be applicable to the benighted souls living on Walnut Mountain, a form of social distancing by town dwellers that might have contributed to local-colorist Mary

[76] Harkins, *Hillbilly*, 36.
[77] DeLanda, *Deleuze*, 4.

> Noailles Murfree's stereotyped depictions of east Tennesseans. This is not to suggest that county residents were always, or even often, of one mind, but in this particular case, that segment of the population that might be expected to most favor educational reform for the lower classes instead identified with their poorer neighbors and left a record that suggests a united, indignant protest.[78]

The processes involved within the whole-to-part relationship are defined by the predominance of local color writings emerging from outside of the region in the form of overcodings. Overcodings exhibit the qualities of the interior/external singularity (long-term tendency) as well as relations of exteriority mentioned in Chapter 1, both of which form an emergent whole. For example, Foght's literary allusions (pulled from local color writings) situate Appalachian stereotypes within academic and reformist arenas with little contextual reference to the connective realities of Appalachia. Foght's essay serves as an example of a more generalized transference process of the Appalachian stereotype. In short, the relations of exteriority are maintained by and through the interior/external singularity where the processes of overcoding are sustained by the very conditions that paradoxically confirm the stereotype. These conditions are, of course, the complex causal relations of poverty. Moreover, Algeo's findings support my argument concerning the manner in which this transference process sustains the interior/external singularity.[79] Algeo argues:

> [Fought's] depiction of this community owes more to imagery borrowed from local-color novels than to first-hand observation. An explanation for this seeming violation of academic integrity can be found in the ideology of rural education reform and the then-current methodology for promoting it.[80]

He then reveals both the processes of overcoding and connective/symbolic expression, bringing to the forefront something practitioners should strongly consider regarding both

[78] Algeo, "Locals on Local Color," 52.
[79] For DeLanda, "the epistemological value of state space would be to reveal a *topological isomorphism* between singularities in the model and singularities in the physical system being modeled. This isomorphism, in turn, would be explained by showing that the model and the physical system are *co-actualizations* of the same virtual multiplicity (or part of the same multiplicity, given that isomorphism is valid only within a range)." See DeLanda, *Intensive Science & Virtual Philosophy*, 181.
[80] Algeo, "Locals on Local Color," 28.

economic poverty and the poverty of connectivity between internal and external networks. These connective linkages carry the capacity to breed internal self-determination in much the same way that external overcodings function. Algeo writes:

> The republication of the essay within the mountain community itself gave this group of Appalachians a chance to read and comment on a highly stereotyped depiction of themselves. Editorials and letters printed in the county newspaper provided a rare opportunity to assess Appalachian awareness of the dynamics of information and power that dominated the region's relations to mainstream America. Local reactions vehemently rejected Foght's depiction of the Appalachian stereotype, but the unequal access to information networks by Appalachians and outsiders ultimately determined whose version of Appalachia was accepted.[81]

The internal/external component is perhaps the most interesting property unearthed throughout the history of Appalachia. When external America says "Appalachia" is this, native residents typically respond by saying "Appalachia" is this – the winners are always defined by their ability to connect. Given the present connective conditions, both groups confine Appalachia within a dialectical process of negation and block the possibilities of traversing this part-whole relationship.[82] This property should provide a cornerstone for the practitioner's development of a connective process for social change in Appalachia. When considering the relationship between the past and the present, Bergson provides some guidance concerning my exploration of the internal/external entanglement, and he concludes that such a dualism is subject to change. The author writes, "The difficulties of ordinary dualisms come, not from the distinction of the two terms, but from the impossibility of seeing how the one is grafted upon the other."[83] Influenced by a variety of social movements, the internal/external entanglement, being maintained either explicitly through overcoding or

[81] Ibid.
[82] Nietzsche concept of *ressentiment* should be fully explored concerning the limitations of part-whole relations.
[83] Henri Bergson, *Matter and Memory* (New York: Zone Books, 1988), 222. Present projects that utilize the Hatfield and McCoy Feud as a productive mechanism for generating a new Appalachia identity should serve as one strategy (e.g., Hatfield and McCoy Healthy Feud or the Hatfield and McCoy Entrepreneurial Feud).

implicitly through a type of subjective (singular) or embedded (multiple) nihilism, is pathologically driven to wholly discount what has now become the mantra of this research – going from reality to concepts and not from concepts to reality. Disconnected nihilism is radically generative or, more precisely, portends a form of productive power, a kindred spirit of Marx and Engels' moral disposition discussed in Chapter 1.

Bergson offers a closer glimpse into the type of nihilism that interests me: "[T]his so-called representation of absolute emptiness is, in reality, that of universal fullness in a mind which leaps indefinitely from part to part, with fixed resolution never to consider anything but the emptiness of its dissatisfactions instead of the fullness of things."[84] To put it into context, the fullness of sustainable solutions for central Appalachia is negated by a disposition of developing idealistic strategies that are, in some cases, never intended to come alive.[85] This is a deep and complicated abyss that could provide future researchers with additional resources to explore ideology in the contemporary environmental movement. For the purpose of concision, however, I will leave this topic as one that needs to be explored in the future.

Providing a "High Definition" model for understanding power, Foucault's critique of oppressive power traces the historical tendency towards Bergson's flavor of nihilism. For Foucault, oppressive power is only half the battle: Power is always present, whether it manifests within the classic oppressive regime or in a productive manner as is the case of moral dispositions in general. In *The History of Sexuality: An Introduction*, Foucault describes relations of power that are not simply the super-structural positions that Marx theorizes, those with merely a role of oppression or symbolic connectivity, but they also

[84] Bergson, *Metaphysics*, 79.
[85] The Coal River Wind campaign is the perhaps the most insidious form of this type of nihilism. For more information, see http://auroralights.org/map_project/theme.php?theme=wind&article=7

"have a directly productive role, whenever they come into play."[86] Moreover, in *Discipline and Punish: The Birth of the Prison*, Foucault implores us to look beyond the oppressive framework that is so prevalent in today's "lefty," so-called "radical workshops," that often fall under the productive banners of "Anti-oppression training" (e.g., Mountain Justice Summer). Foucault writes:

> We must cease once and for all to describe the effects of power in negative terms: it "excludes," it "represses," it "censors," it "abstracts," it "masks," it "conceals." In fact power produces; it produces reality; it produces domains of objects and rituals of truth. The individual and the knowledge that may be gained of him belong to this production.[87]

Whether considering contemporary eco-warriors who pat each other on the back for "making the news" or Appalachian volunteers building support mechanisms for locals to "speak truth to power," productive power is always present. Although productive power embraces the symbolic and situated within the connective, it ultimately separates these forces from what they can do.[88] The history of Appalachia is fraught with the outright denial of the connective, living, breathing, and, oftentimes, profoundly regenerative subjects in order to save symbolic subjects from themselves. This, in turn, reinforces an internal division between who is perceived as a local or an outsider in Appalachia. While considering the general concept of Appalachia, the primary focus of this chapter is to decipher the materially impoverished realities of central Appalachia. As such, I will emphasize how external forces reinforce these regional identities and how these forces operate separately based on a variety of internal factors such as regional topography, infrastructure, natural resources, and economic diversification. Although some mountain regions in the twentieth century have

[86] Michel Foucault, *The History of Sexuality, Volume I* (New York: Vintage, 1978), 94.
[87] Michel Foucault, *Discipline & Punish* (New York: Random House, 1977), 194.
[88] Foucault, *Sexuality Volume I*, 93.

modernized through economic diversification (e.g., Tennessee), central Appalachia is still very much the Other America.[89]

Central Appalachia remains fixed under the symbolic gaze of cultural stereotypes, and the material conditions that have caused poverty in the region have remained largely unexamined as well. The overcoding process limits its gaze to central Appalachia evident by the production of countless (mis)representations which include the infamous documentary film by Robert Kennedy Jr., *The Last Mountain*. Moreover, West Virginia suffers the brunt of this overcoding process perhaps because it is the only state that exists completely within the parameters of "Appalachia." In *West Virginia's Lost Youth: Appalachian Stereotypes and Residential Preference,* for instance, George Towers discovers a direct linkage between stereotypes and outmigration, one that discourages young residents from staying home and contributing to the state's economic future.[90] Indeed, the mechanization of the coal industry in the 1950s represents one of the greatest economic blows to central Appalachia. The event sparked the so-called "Great Migration" when the best, the brightest, and the youngest left the region in search of employment. Meanwhile, according to Bruce Thomas's *An Appalachian New Deal: West Virginia in the Great Depression*, these migrants struggled to overcome "negative stereotypes about hillbillies and mountaineers."[91]

Stereotypes and poverty ultimately define the modern realities of central Appalachia as opposed to the reified generality of "Appalachia" that some scholars consider as an end in of itself. Because reformers ignore the actual "reality" of central Appalachia, the region continues to have substandard public schools, corrupt political institutions, and a limited

[89] Sarnoff, "Central Appalachia–Still the Other America," 136.
[90] George Towers, "West Virginia's Lost Youth: Appalachian Stereotypes and Residential Preferences," *Journal of Geography* 104, no. 2 (2005): 82.
[91] Jerry Bruce Thomas, *An Appalachian New Deal: West Virginia in the Great Depression* (Lexington: University Press of Kentucky, 1998), 39.

infrastructure, all of which (ironically) reinforce the persistence of poverty and negative stereotypes.[92] For instance, a simple examination of distressed counties in Appalachia region as a whole since the inception of the Appalachian Regional Commission should serve to elucidate my point (see Appendix B).

**Transition and Appalachia's Industrialization: 1790-1930**

According to most scholars, private property is the wellspring from which all wealth flows. Private property provides essential attractors within specific market dynamics that "breed" several forms of economic relations (e.g., contract enforcement, institutional exchange, and, in many ways, economic diversification).[93] With that definition in mind, Wilma Dunaway's insights concerning how Appalachia functions as a periphery to global markets lends important perspicacity to the phase transition in question.[94] At least since the 1500s, Dunaway argues, the industries predominant in Appalachia have been closely associated with the processing of raw materials for its urban counterparts in other states. Consequently, this type of economic development does not generate "spinoffs and multipliers required in fostering the kind of sustained growth that occurs in the core regions of the capitalist world economy."[95] This section will expand upon Dunaway's core-periphery model by examining the evolution of the region's economy from one primarily dominated by agriculture and barter-trade to one defined by industry and monetary-trade.

[92] Sarnoff, "Central Appalachia–Still the Other America," 125.
[93] To explain, DeLanda writes: "We can imagine the state space of the process which leads to these forms as structured by a single point attractor (representing a point of minimal energy)." See DeLanda, *Intensive Science & Virtual Philosophy* 15.
[94] I intentionally did not use the term "Capitalism" as noted in chapter 1 under the section "The Role of Capitalism."
[95] Wilma A. Dunaway, *The First American Frontier: Transition to Capitalism in Southern Appalachia, 1700-1860* (Chapel Hill: University of North Carolina Press, 1996), 193.

Moreover, this section will supply practitioners with two tools for traversing the rigid public/private binary currently defining central Appalachia's economic realities. By introducing both entrepreneurship and the distinction between markets and anti-markets into the discourse of Appalachian history, these analytical tools will allow practitioners to resituate present assumptions about how industry emerged and how it continues to operate in central Appalachia. Given the profound influence that Marxist theory has on contemporary Appalachian scholarship, this section can best be understood as an alternative model for conceptualizing economic history in central Appalachia. In the same spirit of developing new approaches for interpreting both political and economic realities, DeLanda provides some interesting tools:

> In a study by Annalee Saxenian comparing Silicon Valley (dominated by economies of agglomeration) and Route 128 near Boston (once dominated by economies of scale) she shows that during bad economic times, economies of agglomeration are more robust and "weedy," while economies of scale are brittle, and hence, must rely on government bail-outs when external shocks bring them down. Hence, there are choices to be made that are not the old choice between "privatization" and "nationalization," a distinction based on Marxism, and one still carrying the stigma that Marx, borrowing from Proudhon, phrased with the ridiculous slogan "Private property is theft." There are many leftists out there who still believe in that silly slogan.[96]

Using the practical distinction between economies of scale and agglomeration as a working framework, Dunaway's analysis of land accumulation and industrialization between 1790 and 1860 becomes tantamount to a process of natural resource accumulation. Specifically, southern Appalachia (including both Kentucky and West Virginia) was integrated into the capitalist world economy through an external anti-market structure made up of outside investors who monopolized the region's natural resources. These brittle economies of scale, founded upon an "interlocking network of distant brokerage houses,

[96] DeLanda, *Societe*, http://timursiqin.com/2012/siqin_inside_070612_final_NEU_web-spreads.pdf

planters, merchants, corrupt local officials," and other colorfully Marxist adjectives that Dunaway invokes throughout her book, are useful mechanisms for analyzing how land ownership is directly linked to large anti-markets, i.e., publically-subsidized monopolies.[97] By 1810, three quarters of the region's acreage was absentee owned, causing Dunaway to conclude, "Land provided the economic basis for the restructuring of a polarized Appalachian society in which the wealthy land gentry amassed a majority of the acreage while more than half the settler households remained landless."[98]

Reflecting on Dunaway's conclusions, Dwight Billings and Kathleen Blee state, "Regions that specialize in natural resource extraction and the production of raw materials for further processing elsewhere generally fail to develop locally sustainable and diversified economies."[99] Moreover, by 1860 southern Appalachia had already gone through a series of boom-bust cycles triggered by local economies' reliance upon external market demands for their limited resources for generating wealth.[100] Given the virtual monopolization of land and resources, these economies of scale gave rise to some interesting examples of agglomeration that may help practitioners achieve the holy grail of the central Appalachian coalfields: economic diversification. Although private property is regarded as a proverbial cornerstone to maintaining market dynamics, it also plays a central role in understanding the persistence of poverty in central Appalachia.

While Appalachian scholars exhaustively investigate the subject of land ownership and its connection to poverty, they fail to explore another market force that impacts the region's economy: the Appalachian entrepreneur. To investigate the entrepreneur, I will rely

[97] Dunaway, *The First American Frontier*, 85.
[98] Ibid., 85-86.
[99] Dwight B. Billings and Kathleen M. Blee, *The Road to Poverty: The Making of Wealth and Hardship in Appalachia* (Cambridge: Cambridge University Press, 2000), 78.
[100] Dunaway, *The First American Frontier*, 193.

heavily on Paul Salstrom's *Appalachia's Path to Dependency: Rethinking a Region's Economic History*, which provides a detailed account of the region's transition from barter-trade based to monetary-trade based.. One stark example of discounting the role of entrepreneurship is Billings and Blee's "Social Origins of Appalachian Poverty: Markets, Cultural Strategies, and the State in an Appalachian Kentucky Community, 1804-1940." Despite obscuring the regenerative entrepreneurial spirit of salt makers under the auspice of reified generalities such as "manufacturers and merchants" and ignoring Salstrom's entrepreneurial analysis of Appalachia, Billings and Blee successfully demonstrate the importance that the local state played in maintaining the region's economic stagnation. Billings and Blee state that the "repeated failures of those anti-poverty programs to challenge corrupt local governance and local elite structures – from the War on Poverty to federal empowerment and enterprise zones – to bring about meaningful change in the region's chronic poverty."[101]

Like other Appalachian scholars, Billings and Blee use specific analytical tools to conceptualize Appalachia's economic realities. More often than not, these tools locate the

[101] Dwight Billings and Kathleen Blee, "Social Origins of Appalachian Poverty: Markets, Cultural Strategies, and the State in an Appalachian Kentucky Community, 1804–1940," *Rethinking Marxism* 16, no. 1 (2004): 32. My use of the term *obfuscation* is very important in my analysis. When scholars draw upon concepts from other disciplines and theories, here being labor history and Marxist theory, while analyzing Appalachia's industrial transition, they tend to establish "actual" continuities between a priori concepts like "manufacturer" and "merchants" and simply peel them from the pages of labor history and place them on a posteriori concepts such as entrepreneur. Although I believe that this is not intentional, this seemly causes some Appalachian scholars to overlook the "virtual" continuities and more importantly phase transition from one entrepreneurial agent/structure to another entrepreneurial agent/structure. To put it another way, DeLanda writes: "virtual multiplicities are meant to replace eternal essences [i.e., our "actual" continuities], the intensive individuations that embody them, as well as the individuals that are the final product, are meant to replace general classes [i.e., 'manufacturer' or 'merchant'], a natural replacement given that general classes are often defined in terms of essences." See DeLanda, *Intensive Science & Virtual Philosophy*, 61. Billings and Blee had numerous opportunities to explore entrepreneurship but seem to altogether ignore market dynamics and foreclosed their economic assessments with a structural analysis of infrastructure and institutions. Moreover, the section in Road to Poverty entitled *Lesson 1: The Limits of Market-Driven Development* is telling regarding their limited understanding of contemporary economic development theories including innovation clusters, entrepreneurship, and anchor institutions. This may simply be a shortcoming associated to the historical context and analytical tools available to Billings and Blee.

creative forces of the region within conflictive dynamics between two socio-economic classes (e.g., elite vs. people or capitalist vs. workers). This methodology ultimately renders the creative forces of the market as opaque by limiting these forces within oppositional tensions between active and passive agents. Moreover, this methodology allows for the reified generalities (e.g., local elite, coal operator, etc.) to move from one analysis of Appalachia (i.e., book or journal) to another exhibiting the same characters of the overcodings processes explained earlier. Specifically, Billings and Blee locate Salstrom's argument within the "mentality" of farmers and their "orientation towards profit making, rather than social relations of production and reproduction in agriculture."[102] Countering Billings and Blee, Salstrom directly links relations of production and reproduction (i.e., a subsistence-barter-and-borrow economic environment) to behavior, not mentality.[103] He explains:

> How Appalachia became an arena for Capitalism can only be explained by describing behavior. Changes in mentality accompanied the behavioral changes, but they did not cause them. For instance, within a subsistence-barter-and-borrow economic environment, entrepreneurs tended to invest labor rather than capital. The reason capital investment nonetheless became more profitable in Appalachia than labor investment have little to do with values, with mentality. The reason concerns behavior.[104]

While investigating the theoretical biases of historians, economic historian James Soltow discovers similar top-down trends within the general field of economic history. In the case of Appalachian scholar's conceptualization of industrialization within the region, a

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[102] Ibid., 21.

[103] Salstrom's conclusions were surprisingly close to the same conclusions of Billings and Blee especially when one accounts for the social role banks and more importantly liquidity and credit plays in influencing both the behavior of agents and structure. Billings and Blee state that "although Clay County's wealthy families were able to finance some timbering operations and a limited amount of mining themselves, they lacked the resources and access to credit that would allow them to finance large-scale resource and industrial development." See Billings and Blee, "Social Origins of Appalachian Poverty: Markets, Cultural Strategies, and the State in an Appalachian Kentucky Community, 1804–1940," 27.

[104] Paul Salstrom, *Appalachia's Path to Dependency: Rethinking a Region's Economic History, 1730-1940*. (Lexington: University Press of Kentucky, 1997), xxii.

similar top-down process seems to be at work. The mere aversion to examining anything resembling market dynamics and the qualifying of those forces under the reified generalities developed through Marxist theory signifies an analytical preference of prominent Appalachian scholars. To clarify the general tendency, Soltow writes:

> [A]s Hughes has recently pointed out, "not all knowledge generated in economic history needs a springboard in general principles or 'theory.' Advances in science are made through measurement and study of phenomena ... as well as theoretical speculations." He reminds us that "phenomena occur without reference to theoretical speculation." Thus, it should not be surprising to any investigator to find facts which do not fit into a logical body of theory.[105]

Dunaway, Billings, and other scholars' explicit use of theoretical concepts like surplus value, class struggle, means of production, and their implicit use of a primitive accumulation analysis may lead practitioners to the same asymmetrical conclusions of Marx and Engel, which are highlighted in Chapter 1. A moral disposition maintaining that capitalism exploits labor and that certain people have subordinate roles in the economy ultimately renders economic participants passive.[106] Unfortunately, this encourages Appalachian scholars to avoid any solutions to the ailments of Appalachia within the reactive parameters of political resistance, thereby reducing the available tools that practitioners can use to engage the present realities of poverty in central Appalachia.[107]

Many Appalachian scholars and activists continue to build from the dynamics of the market solutions rooted in confrontation (i.e., class struggle). Providing a clear example, Billings, Blee, and Swanson state, "Collective resistance to capitalist domination (for which

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[105] James H. Soltow, "The Entrepreneur in Economic History," *The American Economic Review* 58, no. 2 (1968): 90.

[106] Billing and Blee's statement that Appalachian's had "no role in the economy" is interesting to note. See Billings and Blee, *Road to Poverty*, 322.

[107] A brief survey of titles should serve to support this claim: *Something's Rising: Appalachians Fighting Mountaintop Removal*; *Two Sides to Everything: The Cultural Construction of Class Consciousness in Harlan County, Kentucky*; *Fighting Back in Appalachia: Traditions of Resistance and Change*; *Combating Mountaintop Removal: New Directions in the Fight against Big Coal*; and *Mountain Justice: Homegrown Resistance to Mountaintop Removal for the Future of Us All*.

Appalachian coal field villages have become legendary) represents so strong an instance of 'local cohesion' that Kenneth Wilkinson's statement that 'resistance [might be] the last vestige of community in America' appears to be appropriate."[108] To reiterate a point made in Chapter 1, DeLanda cites similar top-down approaches employed by Marx via the labor theory of value. This theory of value has been shown by economist Piero Sraffa to move from concept to reality and not emerging from the reality itself, from "real struggles over wages, or the length of the working day, or for control over the production process."[109] Appalachian scholars utilize similar top-down strategies that ultimately cloud the complexities of the dynamic forces at play within a market and ignore other market forces, such as local entrepreneurship.

These same reactive dynamics have a generative counterpart that emerges from rural farming communities, a context, according to Dunaway, that functions as the fertile grounds "for the transition to capitalism."[110] From these fertile grounds of the market, Salstrom contributes to the scholarly debate over the self-sufficient versus entrepreneurial models of rural America. He emphasizes the importance that agricultural production plays in the move from acquisitiveness to a more cautious self-sufficiency. In "Connecting Appalachia: A Survey of Recent Work in Early American History with Reference to Southern Appalachia," Tom Costa situates Salstrom's observation within the larger debate concerning whether early farmers were self-sufficient, anti-capitalist, or "profit-maximizing proto-capitalists." [111] For Dunaway, Billings, and Blee, the profit-maximizing proto-capitalist

[108] Lewis and Billings, "Appalachian Culture and Economic Development," 166.
[109] Manuel DeLanda, "Markets and Antimarkets in the World Economy," in *Technoscience and Cyberculture*, ed. Stanley Aronowitz et al. (New York: Routledge, 1996), 186.
[110] Dunaway, *American Frontier*, 9.
[111] Tom Costa, "Connecting Appalachia: A Survey of Recent Work in Early American History with Reference to Southern Appalachia," *Journal of the Appalachian Studies Association* 7 (1995): 68.

provides the most accurate picture of how economic development leads to increased social stratification when access to land provides the key factor in the formation of an Appalachian elite.[112] Commenting on mountain residents' disposition towards both self-sufficiency and private enterprise, Salstrom builds a base to better understand the economic conditions from which modern Appalachia emerges:

> Self-sufficiency and enterprise can too uncritically be defined as opposite orientations. Anything can be called opposites in the realm of mentality. In the material world, however, self-sufficiency and enterprise make natural companions. A secure subsistence encourages enterprise … In Appalachia's early period, subsistence came easily and an entrepreneurial attitude was common … After the Civil War, when a subsistence crisis began threatening the Plateau subregion, market relations continued to expand even there – but the expansion was driven less by acquisitiveness than by subsistence needs … As the bulk of the region's people found themselves having to work harder and harder simply to maintain their basic subsistence, the spirit of [entrepreneurship] grew increasingly restricted to the region's land-rich elites.[113]

Along with the natural resource development spurring population increase, these restrictions bring about a dramatic decrease in entrepreneurial activity, an increase in dependency, and a rapid expansion of economies of scale in the central Appalachian coalfields. Salstrom examines the specific differences between pre- and post-industrial entrepreneurism to explain why subsistence-barter-and-borrow systems pervaded in certain areas (such as early Appalachia) instead of the capitalist system.[114] The scarcity of money, Salstrom argues, was controlled/managed through banking institutions and became the primary mechanism allowing anti-markets to take hold. This occurs by fixing the identities of central Appalachians as feuding hillbillies, limiting the region's access to money, and forcing the locals to act as middlemen. Mountain residents ultimately arranged sales of land and right-of-ways to Philadelphia entrepreneurs as opposed to carrying on the entrepreneurial

[112] See Chapter 3 in *The Road to Poverty* by Billings and Blee.
[113] Salstrom, *Appalachia's Path to Dependency*, 47, 49.
[114] Ibid., xxii.

flame through a shift in the exchange processes, a shift from the more rigid forms of exchange (barter) to fluid forms of exchange (money). To serve as a precaution to the practitioner, the process of fixing the identities of central Appalachia should not be interpreted as conspiratorial but should take heed to Foucault's insight that power is immanent. Foucault explains:

> [Power does not result] from the choice of decision of an individual subject; let us not look for the headquarters that presides over its rationality; neither the caste which governs, nor the groups which control the state apparatus, nor those who make the most important economic decisions direct the entire network of power that functions in society (and makes *it* function); the rationality of power is characterized by tactics that are often quite explicit at the restricted level where they are inscribed (the local cynicism of power), tactics which, becoming connected to one another, attracting and propagating one another, but finding their base of support and their condition elsewhere, end by forming comprehensive systems: the logic is perfectly clear, the aims decipherable, and yet it is often the case that no one is there to have invented them, and few who can be said to have formulated them: an implicit characteristic of the great anonymous, almost unspoken strategies which coordinate the loquacious tactics whose "inventors" or decision makers are often without hypocrisy.[115]

This study of central Appalachian entrepreneurship is also a general analysis of American fantasies that, for Horace Newcomb, "speaks, [and] interprets" current American values through the fictional Southern experiences, in this case the feudist disposition of the mountaineer.[116] One such fiction is the infamous "feuding hillbilly." Devil Anse Hatfield was a transitional entrepreneur who signified both a feudist tendency as well as lack of access to money. According to historian Altina Waller, Hatfield and other late-nineteenth-century mountain entrepreneurs were bombarded by legal codings and management of transactions that ultimately increased their "general wariness of outsiders."[117] Waller emphasizes that the "more immediate and practical effect was to thrust more onerous and needless obstacles in

[115] Foucault, *Sexuality Volume I*, 95.
[116] Horace Newcomb, "Appalachia on Television: Region as Symbol in American Popular Culture." *Appalachian Journal* 7, no. 1/2 (1979): 161.
[117] Altina Laura Waller, *Feud: Hatfields, McCoys, and Social Change in Appalachia, 1860-1900* (Chapel Hill: University of North Carolina Press, 1988), 38.

the way of achieving economic viability."[118] These limitations foreclosed all entrepreneurial activity within two primary arenas.

The first arena was external and defined by land-rich elites who promoted the development of Appalachia's natural resources as an elixir for the region's financial ills.[119] The second arena was internal and emerged from the first. Operating within exchanges in money and credit, these fluid forms of entrepreneurship were primarily defined by a proliferation of small independent mines. Eller found that these mines employed "anywhere from 10 to 300 men and produced on the average about 200,000 tons of coal per year."[120] On the other hand, the rigid entrepreneur, lacking access to money, "tried like hell to exploit the coal but lacked the necessary means to mount a large-scale operation."[121] Unfortunately, these potential entrepreneurs were seemingly held back from participating in these emerging markets due to their assumed feuding disposition, a trait that many outsiders believed impoverished the region and discouraged industrialization. Harkins explains:

> Newspapers such the Courier-Journal and the Times argued that the mountain people threatened national economic prosperity and social stability … The only solution to this crisis, they asserted, was regional "progress" in the form of industrialization, railroad construction, and the growth of towns and cities. Eager to attract northern capital and to portray their region as a secure investment opportunity, regional news reporters and elites defined any local people who opposed industrial "progress" as backward and deviant – in other words, as white savages on par with African and Native Americans and opponents to European imperialism worldwide.[122]

In the end, the shared entrepreneurial spirit was all but dead in Appalachia. Moreover, in "Central Appalachia: Still the Other America," Susan Sarnoff correctly states that "it was not

[118] Ibid.
[119] Eller, *Uneven Ground*, 57.
[120] Ibid., 134.
[121] Salstrom, *Appalachia's Path to Dependency*, 124.
[122] Harkins, *Hillbilly*, 35.

until the end of the 19th century, when lumber and coal companies sought to exploit Appalachia's natural resources … that the 'ignorant hillbilly' took shape."[123]

While examining mountain entrepreneurialism, Eller describes the origins of the early pioneers of industrialization and outlines three specific phases that took shape as the industry became increasingly controlled by outside interests. Eller writes, "A survey of 140 individuals, who operated mines in southern West Virginia, eastern Kentucky and southwestern Virginia between 1880 and 1930 revealed that over three-quarters of these southern mountain coal producers were born outside the region itself."[124] During the first phase, most entrepreneurs were of local origin. More importantly, Eller describes the transition from internal to external entrepreneurs at the turn of the twentieth century. Internal entrepreneurs typically came from the older anthracite fields in Pennsylvania that embodied the tacit knowledge necessary to extract coal and defined the first phase. With the second phase, internal and external forces began to define the realities of central Appalachia. Moving from outside the region, these "nomadic" entrepreneurs were typically young, well educated, and highly individualistic men who "set about turning quiet mountain valleys into bustling coal camps and 'black gold' into cold hard cash."[125] Rising competition and growing expenses signified the final phase in which many early entrepreneurs sold out to larger firms. By 1906, outside capitalists began to consolidate the small independent mines into large mining corporations through vertical integration, leaving two prevailing forces intact. The first consisted of large entities (monopolies or oligopolies) that manipulated supply and demand. The second consisted of small independent mines who were primarily price takers –

[123] Sarnoff, "Central Appalachia–Still the Other America," 126.
[124] Ronald D. Eller, *Miners, Millhands, and Mountaineers: Industrialization of the Appalachian South, 1880-1930* (Knoxville: University of Tennessee Press, 1982), 201.
[125] Ibid., 202.

signifying the essential qualities of a free-market. For economic historian Fernand Braudel, these price takers are often "the seedbed of inspiration, improvisation and even innovation."[126] Eller clearly defines this division between markets and anti-markets:

> Despite their numbers, however, the independent operators produced only a fraction of the coal mined in the area. As coal production revived after 1900, syndicates of northern bankers, industrialists, and other capitalists again began to acquire vast tracts of coal land in the mountains and to organize new companies or consolidate interests of smaller firms. The purpose of these enterprises was to control production in a given area or to provide a continuous supply of coal for the parent firm. Mines in the latter category were usually called "captive" mines, since they produced coal for the parent-consumer rather than for open markets.[127]

These types of relations encourage price fixing within emerging markets and limit the options of the nomadic entrepreneur. Born from an unlikely collaboration between Western coal companies and the United Mine Workers of America, such relationships triggered both the infamous mine wars of the 1920s and a little known conflict between nomadic entrepreneurs and outside interests that has arguably continued into the twenty-first century. In *West Virginia: A History*, John Alexander Williams alludes to the mechanisms that stimulated oligopolistic behavior within the coal industry. He writes: "The United Mine Workers, from its inception in 1890, recognized the chronic instability of coal prices and offered the industry a solution: put a uniform floor on wages, and prices would firm up the base."[128] When considering this emerging strategy of fixing prices, along with the role that banks played in defining the deference between the pre- and post-coal economies, credit became an accelerator of anti-market transactions that allowed oligopolies to control the region's industries. In fact, nomadic entrepreneurs "habitually insisted that the union was the pawn of its competitors, that it represented a conspiracy between operators and miners in

[126] Fernand Braudel, *The Structures of Everyday Life: The Limits of the Possible*. Vol. 1. (Berkley: University of California Press, 1981), 631.
[127] Eller, *Miners, Millhands, and Mountaineers*, 134.
[128] John Alexander Williams, *West Virginia, A History* (New York: WW Norton & Company, 1984), 144.

Pennsylvania and the Midwest to put West Virginia mines out of business and West Virginia miners out of work."[129] Perhaps the conspiracy theory of these entrepreneurs was well founded?

In *Capitalist Collective Action: Competition, Corporation and Conflict in the Coal Industry*, John Bowman attempts to understand these competitive situations that often generate suboptimal outcomes. Before turning to Bowman's analysis, however, we must first follow Bergson's lead and place the temporal component as the entry gate into the complex and misunderstood world of coal economies. DeLanda sets the stage by highlighting areas that industrialized at a slower rate and maintained their ties to traditional crafts skills. This slower rate allowed local entrepreneurs to retain some tacit knowledge through developing methods of production that were "scattered and small in scale but highly sophisticated, with a complex division of labor and a high degree of market involvement."[130] As such, the key to discerning central Appalachia's transition away from agrarianism is to understand the rates of industrialization and the relationship that temporal vectors have with tacit knowledge. Delanda elaborates:

> [There are] at least two stable trajectories for the evolution of industry, proceeding at different speeds and intensities: large-scale, energy-intensive industry and small-scale, skill-intensive industry. While the former gave rise to functionally homogenous towns, in many cases controlled by their industrial hierarchies (the factor town), the latter was housed in small settlements, with more heterogeneous set of economic functions and less concentrated control. Antimarket institutions took over only one type of industry, that which, like themselves, was based on economies of scale.[131]

Using game theory, specifically the prisoner's dilemma, Bowman successfully peered into the earliest stages of America's industrial revolution. He found an emerging market defined by suboptimal conditions in which the interests of independent entrepreneurs were

[129] Ibid., 145.
[130] DeLanda, *A Thousand Years of Nonlinear History*, 75.
[131] Ibid., 75.

incompatible with the collective interest of capitalists.[132] As an important characteristic of an economy of scale, Bowman explains, these early industry leaders soon realized that cooperative or cartel prices and profits were a necessity given that the alternative of universal defection or price cutting yielded negative profits for all firms.[133] Due to the entry barriers associated with coal markets, these early oligopolies functioned in a similar manner as the observer effect in physics. In short, the free market dynamics of competitor anonymity maintains the "wave-function" of the market, whereas a small pool of competitors decreases anonymity and collapses the wave-function. DeLanda further details this wave-function analogy by considering "self-organization that arises spontaneously" out of the interactions between many individuals, whose interests only partially overlap within market dynamics.[134] Bowman describes the psychological component of oligopolies where the wave-function collapses due to decreased anonymity:

> [T]he risk of being the sole price maintainer in a market full of price cutters is minimized when one can reduce prices as soon as one finds that one is being victimized by one's competitors. Under these conditions, mutual cooperation will be the outcome in each ordinary game … Analogous reasoning has led many economists to predict the "tendency toward the maximization of collective profits" in oligopolistic industries containing a relatively small number of competitors.[135]

Because price wars damage all participants, industry leaders resorted to explicit price fixing when they were unable to shift buyers' attention from price to other selling points like higher quality, better service, and improved design.[136] When we consider John Williams's insight concerning the UMWA's attempted solution to this problem and Bowman's use of

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[132] John R. Bowman, *Capitalist Collective Action: Competition, Cooperation and Conflict in the Coal Industry* (Cambridge: Cambridge University Press, 1989), 4.
[133] Ibid., 13.
[134] DeLanda, *A Thousand Years of Nonlinear History*, 31.
[135] Bowman, *Capitalist Collective Action*, 17.
[136] This is extremely important given that if these conditions were present along with other modern efficiencies associated with the coal industry today, the barriers to entry are greatly decrease and exhibit the qualities of agglomeration rather than scale where barriers to entry are high and lead to the emergence of oligopolistic behavior.

game theory, these industry leaders chose to simply change the conditions of the game by identifying ways of effecting enforceable agreements so as to turn the uncooperative game into a cooperative one.[137] In the absence of mechanization and other forms of efficiencies, the answer was, of course, unionization and the fixing of wages. This, in turn, led to the coal industry's first cartel in 1917: the National Coal Association. DeLanda identifies similar behavior of early-twentieth-century newspapers in which some segments of that industry began to engage "overtly in anticompetitive practices, such as the formation of a cartel by six New York papers, [resulting] in the formation of the Associated Press in the 1860s."[138] Before capitalists' founded the National Coal Association in 1917 to meet the fuel crisis of World War, small firms, unable to meet growing expenses and withstand competition, began to sell out to larger companies in 1906. In the same year that Eller noted the coal industry's "movement to consolidate," cartel leaders of the coal industry scalded John Mitchell, the President of the UMWA, for questioning their exclusion of West Virginia entrepreneurs (i.e., price takers) from their 1906 conference. Accounting for the role that unions played in the early formation of oligopolistic behavior among industry leaders, Bowman cites from the oldest industry magazine in the United States, *Coal Age*:

> Why don't you bring them? If it was not for the check-off system granted you by the operators of these four states your organization would not last two years. We are giving your organization its strength here today. It is not you … it is the gentlemen seated on this side of the hall that are making your organization what it is.[139]

The rest, of course, is history, or, more appropriately, labor history. The unions won and what semblance we may have had of an entrepreneurial disposition was lost to reified concepts like "coal barons" and "robber barons," not to mention artificial barriers to entry. In

[137] Anatol Rapport, "Prisoner's Dilemma—Recollections and Observations," in *Game Theory as a Theory of a Conflict Resolution*, ed. Anatol Rapoport (New York: Springer, 1974), 17-34.
[138] DeLanda, *A Thousand Years of Nonlinear History*, 244.
[139] Bowman, *Capitalist Collective Action*, 119.

"The Coal Barons of the Appalachian South," Eller lays out the arena where we can begin searching for the industry's price takers (as opposed to price dodgers). Between 1890 and 1920, Eller discovers, entrepreneurs constructed almost five hundred company towns in the region and that by 1926, the Southern coal districts supplied almost 45 percent of the nation's total bituminous coal output.[140] Within these coal towns, entrepreneurs "felt that the majority of miners were happy and generally loyal to the company for which they worked; it was only a small group of 'outside agitators' who stirred the fires of discontent."[141] In the end, these outsiders were encroaching anti-markets, along with their well-financed friends at the UMWA.

To uncover the market dynamics of coal towns, we must peel back the ideological layers of a former Kentucky coalminer humming "I owe my soul to the company store" as he escapes the atrocities of these centers of commerce. This Kentucky coalminer was George S. Davis, who wrote the (in)famous tune "Sixteen Tons." Aligning with Davis's sentimental ballad, scholars argue that coal towns exploited laborers and functioned as a monopsony, a market in which a single buyer faces many sellers. In the case of entrepreneurs and coal towns, the phenomenon of multiple sellers and one buyer most likely describes the majority of market conditions in the late twentieth and early twenty-first centuries. Whether the product was labor or coal, the predominant assumption about central Appalachian markets is that "coal is king" and that the prevailing anti-markets defined the most granule components of the mountaineer's everyday life. Price Fishback, however, challenges such an assumption by considering limitations on store monopolies:

[140] Ronald D. Eller, "The Coal Barons of the Appalachian South, 1880-1930," *Appalachian Journal* 4, no. 3/4 (1977): 197.
[141] Ibid., 210.

> In nonunion areas, like southern West Virginia in the early 1900s, hundreds of mines competed to attract miners, who were described as highly mobile by many writers. If the labor market had been perfectly competitive with homogeneous miners and zero transaction, transportation, and information costs, each miner would have received an employment package with value equal to the value of his marginal product. A mine charging higher store prices would have to compensate by paying higher wages or improving other aspects of the package. Variations in employment packages would arise in response to differences in the costs of providing parts of the package and the tastes of miners. Isolated mines, for example, faced higher transport costs for store goods and would therefore be expected to charge higher store prices that were offset by higher wages. Miners' evaluations of parts of the package varied with respect to factors including age, ethnicity, and the size of their families. Miners with lower propensities to purchase goods, like immigrants saving to bring families from Europe, were more likely to select mines with higher wages and higher store prices.[142]

Fishback raises two important questions concerning the everyday interactions between miners and entrepreneurs within coal towns. First, he asks: why did coal companies own stores? More often than not, Fishback argues, miners and entrepreneurs engaged in cooperative exchanges informed by a mutual understanding that company provision of stores and housing was a necessity during the initial stages of mine development. Due to topography and isolation, population density in mining regions was also typically very low, meaning that there was little need for stores or homes. These internal gradients created high risks for the entrepreneur: both opening mines and independent stores, with the latter carrying the majority of risks due to the complexity of determining sustainability of mines, carried an absorbent amount of transaction cost.

Second, Fishback asks: Did miners really owe their soul to the company store? He answers this question with an emphatic "no." Upon reviewing government reports and archival sources, Fishback found that relatively few miners were actually in debt and a significant proportion of their earnings were in cash. He also discovered that in the New

[142] Price V. Fishback, "Did Coal Miners 'Owe Their Souls to the Company Store'?: Theory and Evidence from the Early 1900s," *Journal of Economic History* 46, no. 4 (1986): 1012-1013.

River and Kanawha area miners spent about 5 percent of their income on rent and another 6 to 7 percent on doctors, fuel, blacksmiths, schools, and insurance. These findings cast doubt on traditional economic narratives of these coal towns proposed by labor historians. Contrary to the traditional approach, Fishback identifies a fair amount of economic freedom in coal towns:

> About 75 to 80 percent of his income was spent on items that might be obtained at the store… The highest percentages for store deductions are found in the monthly pay periods at the Acme mine prior to 1900. After 1900 the data suggest that store deductions accounted for 30 to 50 percent of the mine payroll in West Virginia and Virginia, 20 to 30 percent in Pennsylvania. These percentages suggest that miners purchased about 40 to 70 percent of their store goods in cash at company or independent stores.[143]

Given Fishback's conclusion that economic theory and empirical evidence offer several reasons to doubt labor historians' descriptions of company towns, we need to identify exactly where economies of scale emerge.[144] Perhaps exorbitant costs, pressures of unionizing, vertical integration by U.S. Steel, and internal gradients (e.g., isolation and topography) enabled corporate executives to replace local entrepreneurs in the management of mines. Perhaps more importantly, these external corporate executives developed disconnected company policies toward community action where, for Eller, "economic growth and social welfare in the mountains came from nonresident corporate heads."[145] Due to these disconnected interests, anti-markets in the central Appalachian coalfields ultimately stunted the public sphere and failed to produce local public and civic institutions with the capacity to effectively nourish the emergence of a robust entrepreneurial eco-system.

I locate the emergence of capitalism during this transitional period within the practices of setting prices or what Fernand Braudel refers to as anti-markets. Braudel and

[143] Fishback, "Did Coalminers 'Owe Their Souls to the Company Store,'" 1025.
[144] Eller, *Miners, Millhands, and Mountaineers*, 204.
[145] Ibid., 203.

DeLanda's economic theories may allow the practitioner to use the tools of entrepreneurship and the distinction between market and anti-markets to explore the past and counteract present anti-markets by encouraging the development of agglomerated economies, a subject that I will discuss at length in Chapter 4. According to the influential theory of transaction-costs, these giant coal companies grow by swallowing up small producers and internalizing markets either through vertical or horizontal integration. Using these tools as a guide, entrepreneurs could respond in an almost automatic way to the existing markets in Appalachia. Moreover, the material conditions of a network-economy produces and is produced by an agential-entrepreneur, which either encourages or discourages the development of a healthy entrepreneurial eco-system. Dunaway, Billings, and Blee demonstrate that these markets are fairly small when the only game in town is natural resource markets, thereby providing little institutional infrastructure for creating an economy of agglomeration. Given such conditions, entrepreneurship still flourished within a network of coal towns and by way of independent entrepreneurs who were often times considered the "power elite" by many Appalachian scholars today.

This brings my analysis to a more refined position of scale where central Appalachia becomes the area of focus while leaving the other non-coal producing regions to my analysis in Chapter 3. Briefly revisiting Fishback's examination on coal towns, we can assume that miners and their families where not essentially locked into a relationship with a particular company town. This opens up a profoundly dynamic network where specialized coalminers would deterritorialize and reterritorialize, moving from coal town to coal town. In *Life, Work, and Rebellion in the Coal Fields: The Southern West Virginia Miners, 1880-1922*, David Corbin describes the cohesive networks that existed between coal towns in southern West

Virginia. These networks provided a different degree of territorialization not found within the other networks throughout the region and were defined primarily by internal gradients of isolation and economic development.[146] The emergence of the company town, along with the entrepreneurial drive associated with the local entrepreneur, created a "strong, collective mentality as it made a single gigantic community out of five coal fields in southern West Virginia and the hundreds of isolated company towns scattered across them."[147]

In *Coal Towns,* Shifflett notes the important role that the UMWA played in assuring livable conditions in company towns and ushering in a new mechanism for coding the region through government analysis and intervention. Two forces played an important role in stimulating Appalachia's transition into the structure of overcoding, one rooted in governmental intervention. First, the onset of the Great Depression signified the emergence of a different kind of relationship between miners and entrepreneurs and a return of miners to greater reliance upon mutual aid, both of which enriched local networks and encouraged outmigration.[148] As Chad Berry discovers in *Southern Migrants, Northern Exiles,* the Great Depression intensified "the desire to move northward once jobs became available during the 1940s (indeed, the 1950s would see the greatest volume of out-migration), although ambivalence and a yearning for the South continued in the hearts of most southern migrants."[149] Secondly, America's moral disposition shifted its reformist gaze to examining the living conditions of residents in coal towns. For example, in 1925, in the "first major study of coal towns, the U.S. Coal Commission produced a five-volume study of 880 coal

[146] Robert D. Willig and Elizabeth E. Bailey, "The Economic Gradient Method," *The American Economic Review* 69, no. 2 (1979): 96-101.
[147] David Alan Corbin, *Life, Work, and Rebellion in the Coal Fields: The Southern West Virginia Miners, 1880-1922* (Chicago: University of Illinois Press, 1981), 42-43.
[148] Crandall A. Shifflett, *Coal Towns: Life, Work, and Culture in Company Towns of Southern Appalachia, 1880-1960* (Knoxville: University of Tennessee Press, 1991), 203.
[149] Chad Berry, *Southern Migrants, Northern Exiles* (Chicago: University of Illinois Press, 2000), 32.

communities in the United States, 167 of which were 'independent' towns and 713 'company-controlled' towns, with data on the physical environment and physical conditions [using a] rating system analogous to that of the U.S. Public Health Service."[150] This marshaled in a number of studies leading up to the historical roots of governmental overcoding (e.g., War on Poverty), which I will cover in Chapter 3. For example, Shifflett examines the Boone Report that was developed in 1946:

> [T]he Boone report enlarged the negative images of company towns with photographs of sanitary conditions in the best and worst camps. A supplementary section entitled "The American Coal Miner and His Family" also contained photographs of the day-to-day life of a "typical" mining family, including miners' homes and surroundings in some of the worst-looking camps to be found. Other photographs showed the miners seated at the kitchen table with his simple fare or sitting in a galvanized wash tub taking a crude bath.[151]

Are these representations a legacy of overcoding a region that has remained elusive to the American psyche? Considering the different strategies I have utilized to develop an evolving methodology for an "embodied synthesis," this chapter should provide practitioners and scholars alike with the tools to further develop a historical synthesis of Appalachia. In addition, these tools should be used synergistically with the processes of overcoding. For example, by integrating creative processes like entrepreneurship and other creative forces, regenerative symbolic/connective entanglements may come to define new realities in central Appalachia and resituate normalized notions of central Appalachian being lazy welfare recipients. As a note of caution, while connective community action breeds hope for potential futures, an intuitive method breeds the necessary wisdom to understand the persistent realities that define central Appalachia's present conditions. In this spirit, this chapter will

[150] Shifflett, *Coal Towns*, 146.
[151] Ibid.

hopefully provide strategies or entanglements for present actions to answer one of central Appalachia's most perplexing questions: Why does poverty persist?

**3**

## A History of Community Action

*"Ye are the salt of the earth: but if the salt have lost its savor, wherewith shall it be salted? It is thenceforth good for nothing, but to be cast out and trodden under foot of men."*

***- Matthew 5:13 -***

This chapter sets the stage for launching a revival of pragmatism wherein philosopher William James's radical empiricism can be read as implying that any kind of symbolic gesture is necessarily preceded by a connective experience. On the same token, American politics unfolds in a different direction. Politics flows from symbolic gestures to the connective experiences shared by people who, for Abraham Lincoln, "are the masters of both Congress and the courts, not to overthrow the Constitution but to overthrow the men who pervert the Constitution."[1] At the core of America's political architecture is a symbolic-connective entanglement that has, in many ways, experienced similar overcoding processes discussed in the previous chapter. Overcodings of left/right or big government vs. free-markets leaves us with a nagging question: Which direction should action flow?

Whether action flows from reified generalities like the Democratic Party or from the far less rigid forms like local communities, the result is surprisingly transversal if the practitioner chooses the latter bottom up approach. Historian Joseph Tainter's analysis of the relationship between the state and markets provides some guidance. In "Problem Solving:

[1] Abraham Lincoln, *Political Debates Between Abraham Lincoln and Stephen A. Douglas* (Cleveland: Burrows Brothers Co., 1897), 494.

Complexity, History, Sustainability," Tainter notes that "hominids have been discovered as old as about four million years, yet the most complex societies – states – did not appear until a little more than five thousand years ago. In the full spectrum of hominid history, complexity is rare."[2] Moreover, Tainter explains the laws of diminishing returns as they relate to the management of social problems:

> Rulers often seem not to have understood the capacity of the land and peasants to intensify production. They appear to have felt that compelling peasants to greater labor would always compensate for the declining productivity of land. The result was societies that underwent long periods of political growth, followed by economic stagnation, conquest by another state, or collapse. The Third Dynasty of Ur (ca. 2100–2000 B.C.) is a particularly dramatic example … After a few years of over irrigating Mesopotamian soils, saline groundwater rises and ruins the soil. The Third Dynasty of Ur was destroyed by its own strategy for raising revenues—part of its problem solving efforts. Before the Third Dynasty of Ur, in the period ca. 2900 to 2300 B.C., crop yields had averaged about 2030 liters per hectare. By the end of the third millennium B.C. they had declined to 1134 liters. This decline in production (and hence in state revenues) seems to have been the problem that the Third Dynasty tried to overcome by intensifying production and increasing governmental complexity. Thus as yields declined and costs rose, farmers had to intensify their production to support a costlier state structure. It was clearly a course of diminishing returns to complexity.[3]

In much the same way, the War on Poverty attempted to raise citizenry participation as a problem solving effort "toward the management of political instabilities" that abounded in the 1960s.[4] In this situation, according to Tainter, the state attempts to solve problems by creating additional bureaucratic layers, infrastructure, and, in some cases, a whole new class of experts, all of which increases the complexity and size of the state apparatus. Tainter sees complex societies as problem-solving organizations or complex adaptive systems, which, in the course of their history, invest in more complexity (e.g., the intensification of agriculture

[2] Joseph A. Tainter, "Problem Solving: Complexity, History, Sustainability," *Population and Environment* 22, no. 1 (2000): 6.
[3] Ibid., 12.
[4] Alyosha Goldstein, *Poverty in Common: The Politics of Community Action during the American Century* (Chapel Hill: Duke University Press, 2012), 115.

or increasing the specialization of bureaucracies) to relieve stress or to realize new opportunities.[5] Tainter's theory of social complexity can provide some guidance for practitioners to understand how the emergent properties of centralized government (i.e., the whole) and individual dispositions (i.e., the part) effect and are affected by increases in complexity over a particular period.

Returning to my original question concerning the direction in which power flows, DeLanda's *A New Philosophy of Society: Assemblage Theory and Social Complexity* provides a theory for experiencing an upward movement from individual dispositions to territorial states. He writes, "It is only by experiencing this upward movement, the movement that in reality generates all these emergent wholes that a reader can get a sense of the irreducible social complexity characterizing the contemporary world."[6] This upward movement firmly positions connective community action as the intuitive methodology for manufacturing a sustainable reality. This intuitive method implores contemporary practitioners to assess past experiments with community action in order to provide some guidance for developing present solutions in one of the most ideologically rigid periods of American history. To this end, the War on Poverty was one such "past" experiment.

According to historian Alyosha Goldstein, the neo-classical economic theory of human capital influenced President Lyndon Johnson's governmental policies during the 1960s. The Johnson administration believed that it could increase future returns for the state, including "enhanced individual mobility and improved aggregate productivity," by making

[5] See Ien Ang, "Navigating Complexity: From Cultural Critique to Cultural Intelligence," *Continuum* 25, no. 6 (2011): 779-794; and Joseph A. Tainter, *The Collapse of Complex Societies* (Cambridge: Cambridge University Press, 1990).
[6] DeLanda, *A New Philosophy of Society*, 6.

direct investments into its citizenry through education and training.[7] Yet much like the worldview that led to the eventual collapse of Ur, reducing the problem to aggregate productivity by direct investments into human capital sets limitations on assessing the systemic causes of the problem in question. Whether the solutions take the form of investing in the soils of Ur or the souls of Americans, the strategy is almost always the same. We have to appropriately nurture the physical systems that bring life to our world as human beings. Unfortunately, instead of nourishing the development of regenerative souls by way of market development, American reformism has continued along a path similar to its not too distant cousin Ur. By increasing our state's complexity through well-meaning investments in what can only be described as the morphogenetic fibers of the symptomal knot in question (i.e., poverty), the United States is quickly heading down the path of good meanings – perhaps sealed by no other fate than partial or full collapse of society as we presently experience it.

In his study on the ideologies that informed the War on Poverty, Daniel Moynihan weeds through the noise of governmental certainty relating to its ambitious program's beloved concept of *community action* by citing "an interesting convergent critique" from both sides of the political spectrum. Norman Hill from the A. Philip Randolph Institute, the notable sociologist Elliot A. Krause, and other "disparate authors" framed the top-down community action of the Johnson administration as a "perversion" of democracy.[8] Reflecting upon the War on Poverty's overcoding of democratic consensus, Moynihan suggests that "the early years of community action at [the Office of Economic Opportunity] are perhaps best seen in terms of personal agenda – a private ideology – of the white, middle-class actors evolving into an organizational agenda – that is to say, a bureaucratic ideology" left virtually

[7] Goldstein, *Poverty in Common*, 17.
[8] Moynihan, *Maximum Feasible Misunderstanding*, xxi.

unchecked.[9] This sort of invisible hand approach to leaving bureaucratic ideologies unchecked caused Krause to ask, "Who plans the planners? If no one does, if the idea of true participation is rejected … the society is with time prepared for what Hayek termed 'the road to serfdom' … [where] ideologies are becoming primary tools used by large and powerful governmental bureaucracies."[10]

Furthermore, the War on Poverty proved unsuccessful in central Appalachia because the political and moral fibers of the American psyche in the 1960s were infused with one single work of peripheral-fiction: Michael Harrington's infamous work *The Other America: Poverty in the United States*. In this passionate portrayal of America's *unknown unknowns*, Harrington unconsciously linked the region's long legacy of being seen (i.e., overcoded) to his and other reformers' strategy to combat poverty that, according to Irving Howe, is "due to a failure of political will."[11] Harrington believed that poverty exists because the poor "are not seen, and because of that they themselves cannot see."[12] Harrington's peripheral-fiction emerged from a context of democratic socialist perspectives that, for the most part, ignored the fertile soils of the market, a progressive legacy that still continues to this day. In other words, this moral disposition limited American reformism to the political arena of integrating the "poor with the rest of society" as opposed to direct investments into what some have called the *salt of the earth*. Pointedly, American reformism ignored market-based investments into the economic realities of people and chose instead to politicize their social ills.

[9] Ibid.
[10] Ibid., xx.
[11] Michael Harrington, *The Other America: Poverty in the United States* (New York: Touchstone, 1993), xxvii.
[12] Ibid., 11.

In the end, Harrington's *The Other America* was a peripheral fiction for the people living in Appalachia. It placed the region firmly within a conceptual manifestation of Wilma Dunaway's peripheral regions where "taken as a whole, poverty is a culture."[13] By the time of *The Other America*'s publication in 1962, the War on Poverty had already been initiated in many inter-cities through the establishment of "growth centers promising industry, none of which existed in central Appalachia."[14] Unlike its urban counterpart, central Appalachia received little investment in building the necessary institutional memory required to launch a successful war on poverty. This intuitional vacuum was filled by rushed, *ad hoc* strategies that did very little for central Appalachian communities because urban-centric policy makers lacked the institutional memory to grasp the complexities associated with the peripheral object of their interest – the long forgotten rural counterpart.

Harrington continued by appealing to the virtual currents of a fundamental American ideal – "Unity" – by stating that there was a "second nation in our midst, the other America," which should "be brought into the Union" of the state.[15] The conceptual framework of "Union" is of course the Archimedean point of America's increasingly complex layers of government bureaucracy: a symbolic expression of peripheral symptoms that definitively demonstrate that modern society is anything but sustainable. If we peer into the depths of America's beloved *object a* (i.e., its desire for liberty), we also find a wasteland of marginal boundaries where the target for intervention was "pauperism not poverty."[16]

In a region defined by depopulation strategies, cookie cutter political reforms imported from urban theorists, and prolonged interactions with overcodings, the War on

[13] Ibid., 165.
[14] Sarnoff, "Central Appalachia," 127.
[15] Harrington, *The Other America*, 164.
[16] Goldstein, *Poverty in Common*, 14.

Poverty led some Appalachian residents to actively create what had by now had been normalized, the modern manifestation of pauperism: generational poverty. This process of normalization takes many forms such as residents labeling their children as disabled to ensure that they will qualify for lifelong benefits.[17] When considering Foucault's *panopticism*, a subject I will flesh out later, I see this pauperism as a kind of Appalachian panopticon of sorts: an ideological architecture embedded deep within the American psyche. This architectural diagram of symbolic power can be reduced to an un-connective, smooth membrane or envelope; "its functioning, abstracted from any obstacle, resistance or friction, must be represented as a pure architectural and optical system."[18] Architecturally defined as an impermeable envelope and optically defined as a disconnected vision for future possibilities (i.e., typically produced by outsiders), these combine to create the post-materialist disposition.[19]

For Slavoj Žižek, such an envelope is the "oldest and most primitive architectural element which materializes the division between exterior and interior and is therefore automatically politically charged."[20] Within this symptomal knot of the American psyche lies a paradoxical envelope wherein reactionary or impatient acts of revolution become the *crème de la crème* of what it means to engage in social change. Made up of a material-discursive disposition suffused within an impermeable envelope (i.e., enclosing this disposition within a homogenous space of possibilities), the reformist paradoxically fixes the dynamic conditions she/he aims to set free by way of superlinearity, that is, a condition of impatience that must

[17] Sarnoff, "Central Appalachia," 126.
[18] Foucault, *Discipline & Punish*, 205.
[19] Decision processes dominated by an environmentalist ideology and more importantly a direct disconnect from those (i.e., coalminers) that do not share or support this ideology serves as a contemporary example of an impermeable envelope. Moreover, the planning meetings marginalize visions that exist outside of the ideology and outreach activities cherry pick participants. In the end, there is a concerted effort of disconnecting alternative visions that do not fit within the anti-coal ideological framework.
[20] Žižek, *Living in the End Times*, 263.

be understood as its creed, its fixation, its *jouissance*.[21] DeLanda's remark on the dispositions of Deleuze and Guattari is instructive: "Marxism is Deleuze and Guattari's little Oedipus, the small piece of territory they must keep coming back to at night after a wild day of deterritorializing. Who could blame them for needing a resting place, a familiar place with all the reassurances of the Marxist tradition (and its powerful iconography of martyrs and revolutionaries)? "[22] In the past-present-future manifolds of my proposed embodied synthesis, I have uncovered a technology of the present, defined by the idea of "Appalachia," that also accounts for a similar revolutionary Oedipus of the American environmental movement as it is presently operating in central Appalachia. As Žižek explains in *Living in the End Times*:

> Deleuze and Guattari's own [Oedipus] is a Marxist one: even if capitalism is a force of "de-territorialization," unleashing the productivity of the multitude, this productivity remains constrained within the confines of a new "re-territorialization," that of the capitalist framework of profit which encloses the entire process; only in communism can the nomadic productivity of the multitude be fully unleashed. The opposite answer is that given by advocates of the post-'68 "new spirit of capitalism": for them, it is Marxism itself which remains caught in the totalizing-representational logic of the Party-State as the unitary agent regulating social life, and it is capitalism which is today the only effective force of nomadic molecular productivity. Paradoxically, one should admit that there is more truth in the second answer: although Deleuze and Guattari are right in conceiving the capitalist framework as an obstacle to fully released productivity, they here make the same mistake as did Marx himself, ignoring how the obstacle is (like the Lacanian object a) a positive condition of what it enframes, so that, by abolishing it, we paradoxically lose the very productivity it was obstructing.[23]

While living within the peripheral regions of the American psyche, I have come to believe that this sort of paradox-icon, if one may create such a monstrous concept, may prompt potential practitioners of change to replace reactive strategies with active ones. The

[21] The rally cry at marches and actions is a good example of this idealism: "What do we want? JUSTICE!! When do we want it? NOW!!"
[22] Manuel DeLanda, "Deleuzian Interrogations: A Conversation with Manuel DeLanda, John Protevi and Torkild Thanem," *Journal of Critical Postmodern Organizational Science* (2005): 26.
[23] Žižek, *Living in the End Times*, 264.

reactive can be defined by creating counter-identities, or worse, attempts at moving beyond dualism by producing a plethora of counter-identities according to a pluralizing gesture.[24] Instead, practitioners of applied sustainability should push towards qualitatively stronger deterritorializations by integrating themselves within the market itself as, for example, social-entrepreneurs.[25] Redefined as true investments in the salt of the earth, deterritorializations enable practitioners to understand that humans may have lost something essential to life itself through their obsessive and oftentimes rushed pursuits of power. While navigating these pursuits, the strategic adversary of the practitioner definitively becomes an internal fascism, "that causes us to love power, to desire the very thing that dominates and exploits us."[26]

At this point, the practitioner's disposition becomes filled with active, simple, slow, patient investments in time and movement that can allow she/he to paradoxically engage in the act of collaborative-competition (e.g., culture of entrepreneurship). If executed proactively, this disposition renders the impermeable envelope as radically porous by entangling the body/mind assemblage within the limitless creativity of our intuition, the material matrix of the regenerative living-soul. This chapter is a sort of beckoning to America's memory, a gesturing of institutional and dispositional foldings and unfoldings within the productive forces of liberal empathy. My goal is to evoke a rippling gestalt across the fluid dynamics of the present or, what DeLanda calls, "a single point in the manifold" in order to ensure a successful transition in central Appalachia.[27] As such, this chapter is divided into the following sections:

[24] Dolphijn and Tuin, *New Materialism*, 99.
[25] Rosi Braidotti, *Transpositions: On Nomadic Ethics* (Cambridge: Polity Press, 2006), 26.
[26] Gilles Deleuze and FelÎix Guattari, *Anti-Oedipus* (New York: Continuum International Publishing Group, 2004), xiii.
[27] DeLanda, *Intensive Science & Virtual Philosophy*, 13.

> "Emergence of the Liberal Disposition" begins with the sixteenth-century and traces how western civilization has conceptualized dependency. This section sets the stage for understanding the post-materialist disposition, the source of symbolic community action.
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> "Historical Evolution of Community Action" looks at the period between the 1950s and 1970s in order to tease out the tensions between both symbolic and connective community action. Both active and reactive forces play a central role both in my theory of community action as well as providing concrete example of the importance of strategic dualism.
>
> "Community Action in Central Appalachia" utilizes the findings from the previous section to loosely sketch out my theory of community action as it applies in the coalfields. Strategic dualism between active and reactive forces will play a central role in this analysis.

While philosophically mapping symptomal knots, Levi Bryant describes my proposed gestalt or a Žižekian Parallax Shift wherein the situation is similar to the envelope between the ego and the unconscious in Freudian psychoanalysis. When confronted with slips of the tongue, dreams, fumbling gestures, or rapid grasps for power, the ego considers these dispositions not as active expressions of an unconscious desire, signifying a deeper connection between the panoptic (symbolic) and the envelop (connective), but as meaningless noise that is radically disconnected from the identity of the ego. In turn, this gesture creates a productive apparatus that, in most cases, unknowingly maintains its power through a sustained disconnection with the material world. As mentioned in the introduction of this thesis, the American environmentalist's disconnection with the realities of the central Appalachian coalfields is a perfect case in point.[28] Bryant leaves us with an important challenge:

[28] This section of the introduction was taken out due lack of research to support my critique of American environmentalism. This will be the primary focus of my future research including a robust quantitative analysis. This exclusion was perhaps due to the following claims that lacked supporting evidence: "Using French psychologist Jacques Lacan's framework for further clarification, the ideological conflict of 'Us vs. Them' can be seen as a continuation of the prior cultural logic in which the hillbilly served as the obscene superego supplement or fantasy to America's reality. Within the dominant narratives reproduced by modern environmentalists, central Appalachian communities play an analogous symbolic role to the hillbilly of the past,

> The whole question, however, is how we pass from viewing these singular elements as "non-essential or contingent disturbances to a situation" to being "symptoms of the structural lie of the situation itself." What is it that accounts for this "parallax shift," this shift in perspective that allows the contingent to suddenly be seen as a symptom?[29]

**Emergence of the Reformist Disposition**

In the fourteenth century, new, stronger, and more complex states emerged across Europe that sought to limit the migratory freedom of the destitute and to codify informal distinctions between those deemed worthy and unworthy of assistance. Upon defining the division between the terms worthy and unworthy, the English Poor Law of 1601 (commonly known as the Elizabethan Poor Law) formalized the latter. While considering the unworthy embodiment of poverty during the 1600s, a disposition or posturing of shame by the poor can almost possess a historian's imaginings as she/he begins to envision one of the earliest examples of the panoptic-envelope dyad. This period was defined by a transition from connective drifts of intuitive migration to symbolic acts of dependency upon the state that caused the now codified "unworthy" to question their internal drive for survival. These imaginings are further fueled by Foucault's analysis of disciplinary practices in the 1700s that regarded individuals as both symbolic objects of poverty and connective instruments for measuring unworthiness by pulling and bending dispositions towards the complexity of the state. This corporeal overcoding makes possible a passive disposition of the individual either in relation to the idea of unworthiness, in relation to other individuals, or in limited relations

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the excluded 'Other' whose alien presence legitimizes measures of the internal 'eco-conscious' fantasy of sustainability." The following claim may also be controversial due to lack of supporting evidence: "The same displacement of socio-economic conflict that emerged during the War on Poverty is mirrored in the environmentalist-coal industry conflict, the 'symptomal knot' of all the economic and cultural logics of the contemporary American psyche."

[29] Levi R. Bryant, "Symptomal Knots and Evental Ruptures: Žižek, Badiou, and Discerning the Indiscernible," *International Journal of Žižek Studies* 1, no. 2 (2007): 13.

to a type of embodied codification.[30] Much like Pierre Bourdieu, Foucault ultimately draws a direct connection between the symbolic and the connective in which keywords typically carry unspoken assumptions and connotations that can powerfully influence the discourses they permeate – in part by constituting a body of *doxa* or social norms.[31]

Generally considered a refinement of 1597's Act for the Relief of the Poor, the Elizabethan Poor Law demonstrates a corporeal transition from methods of punishing pauperism to practices of correction. For Foucault, this brought about a new politics of the body, a theoretical model that allows me to examine dependency's logical counterpart: independency. My examination brings to light the productive disposition of the reformer or what I will later refer to as the post-materialist. In order to do so, the terms dependency and independency must be understood as being logically intertwined and contextually driven. For instance, Nancy Fraser and Linda Gordon found that during the seventeenth century, both of these terms did not apply specifically to individuals, but signified a collection of bodies. Thus, in the seventeenth century, a nation or a church congregation could be thought of as being independent.[32] This connective clustering of individuals under the symbolic expression of "independence" blocked an earlier manifestation of what political scientist Ronald Inglehart refers to as the post-materialist. Primarily concerned with the materialism of the mid-twentieth century, Inglehart describes the dispositional characteristics of the post-materialist:

1. Materialists tend to be preoccupied with satisfying immediate physiological needs; Post-Materialists feel relatively secure about themselves and have a greater amount of psychic energy to invest in more remote concerns such as politics.

[30] Foucault, *Discipline & Punish*, 170, 161.
[31] Pierre Bourdieu, *Outline of a Theory of Practice* (Cambridge: Cambridge University Press, 1977), 310.
[32] Nancy Fraser and Linda Gordon, "A Genealogy of Dependency: Tracing a Keyword of the US Welfare State," *Signs* 19, no. 2 (1994): 313.

2. As a recently emerging minority whose highest priorities have traditionally been given relatively little emphasis in industrial society, Post-Materialists tend to be relatively dissatisfied with the established order and relatively supportive of social change.
3. The disruption and property damage that sometimes result from unconventional political action seem less negative to Post-Materialists, since they threaten things they value less than Materialists do.

In short, Post-Materialists have a larger amount of psychic energy available for politics, they are less supportive of the established social order, and, subjectively, they have less to lose from unconventional political action than Materialists.[33]

By the eighteenth century, independence moved from being understood as the connective clustering of individuals to a singular individual who generally carried an altogether different disposition from her/his seventeenth-century counterpart. This dispositional phase transition signified a physical independence from the previous material conditions that once defined individual experiences such as manual labor and, more importantly, tacit innovation. This distribution of psychic energy can be thought of as a mass distribution of earlier dispositions formed by and distributed through blood lines and a privileged elite (i.e., royalty). Fraser and Gordon note that independency aligns with what we would today call economics and "survives in our expressions *to be independently wealthy* and *a person of independent means*."[34] In contrast, to be dependent during the eighteenth century carried both the relational and stratified characteristics of its seventeeth-century counterpart. In other words, individuals now engaged in acts of dependency or services to another individual either in the form of slavery or indentured servitude. The disposition of the dependent was often normalized within the field of stratified relations and did not signify an individual trait that carries a completely different disposition – one of being examined for specific inferior traits as opposed to being understood as inferior. Quite the opposite,

[33] Ronald Inglehart, "Post-Materialism in an Environment of Insecurity," *The American Political Science Review* (1981): 890.
[34] Fraser and Gordon, "Genealogy of Dependency," 313.

according to Fraser and Gordon, preindustrial definitions "were explicitly positive, implying trusting, relying on, counting on another, the predecessors of today's *dependable.*"[35] However, with the onset of the Industrial Revolution in the late eighteenth century, a phase transition occurred from dependency being a materially relational activity where the connectivity was a *known known* (master-servant) to dependency being a symbolically relational activity where the connectivity was an *unknown unknown* (state-nomad). To clarify, Fraser and Gordon write:

> The terms dependence and independence often figured centrally in political debates in this period, as they did, for example, in the Putney Debates of the English Civil War. Sometimes they even became key signifiers of social crisis, as in the seventeenth century English controversy about "out-of-door" servants, hired help who did not reside in the homes of their masters and who were not bound by indentures or similar legal understandings. In the discourse of time, the anomalous "independence" of these men served as a general figure for social disorder, a lightning rod focusing diffuse cultural anxieties – much as the anomalous "dependence" of "welfare mothers" does today.[36]

Returning to Inglehart's framing of the post-materialist disposition, the most important component to consider is the role that time plays in generating a healthy amount of psychic energy accessible to the newly emerging post-materialist. This disposition is directly related to the increased amount of energy society began consuming during the industrial era. Discovering the morphogenetic processes associated with the emergence of complex societies, DeLanda reveals that material forces created a new surplus of psychic energy during this phase transition in Western civilization. "Both coal and steam, and later oil and electricity," Delanda writes, "greatly affected the further development of Western towns, and, as usual, once the mineralized infrastructure of those towns, and the institutions within them, had registered the effects of these intensifications, they reacted back on the energy

[35] Ibid.
[36] Ibid., 314.

flows to constrain them, either inhibiting them or further intensifying them."[37] This surplus of energy produced immense amounts of free time, thereby allowing post-materialists to engage in practices of reflection, analysis, and new methods of experimentation with matter itself. Much like its human counterpart (i.e., individual dependents), raw matter was believed to be inferior or in a passive state waiting to be brought alive by the observer's mind – a type of hylomorphism. The active-mind/passive-matter dualism later transformed into the profoundly misunderstood "observer effect" in physics and is closely akin to Marx's top-down analysis of market dynamics and struggles over wages.

This transition marked a period of both confinement and liberation of psychic energy, that is, DeLanda's "inhibiting" or "intensifying" personal freedom. Independence now became synonymous with certain active dispositions that symbolically situated themselves within political and economic expressions and became radically connective through their democratization of time and space. This radical connectivity is expressed in the rise of democracies such as America (albeit a democratic/republic hybrid). On the other hand, those considered dependents fell into a different configuration with reactive dispositional characteristics such as restriction, compression, and fragmentation, all of which clustered around one single but widely dispersed mechanism that Foucault calls panopticism. Foucualt writes, "Generally speaking, all authorities exercising individual control function according to a double mode; that of binary division and branding (mad/sane; dangerous/harmless; normal/abnormal); and that of coercive assignment, of differential distribution (who he is; where he must be; how he is to be characterized; how he is to be recognized; how a

[37] DeLanda, *A Thousand Years of Nonlinear History*, 74.

constraint surveillance is to be exercised over him in an individual way, etc.)," all of which prevent these bodies from becoming an active force.[38]

In 1787, social reformer and father of utilitarianism Jeremy Bentham wrote *Panopticon or Inspection House* as a part of a growing body of work concerning his and other scholars' moral disposition towards the world around them. Operating as a window into the moral disposition of the nineteenth-century liberal, Foucault developed the concept *panopticism* that designated his modern physics of power. In *Panopticon or Inspection House*, Bentham proposed building a circular prison where inmates could constantly be supervised. He believed that this "all-seeing" structure could solve one of the most vexing problems of the Enlightenment's social thought: the use of bodily pain as a form of punishment. By applying the principle of "perpetual inspection" in a wide variety of different settings, from prisons and hospitals to factories and schools, one might "harmoniously" coordinate self-interest and social duties. This apparatus painlessly enforces a sense of consciousness or constructs the internal relationship of Foucault's power/knowledge nexus defining the art of being governed or what he refers to as *governmentality*. Governmentalization can be understood as the process in which the individual internalizes exterior processes of being governed by either institutions or a set of practices. Governmentality may also be linked with what Friedrich Nietzsche referred to as *ressentiment*, or what Gilles Deleuze calls reactive forces. In *Nietzsche and Philosophy*, Deleuze elaborates:

> Reactive forces do not become active but, to the contrary, they make active forces join them and become reactive in a new sense. We can see that, from its beginning and in developing itself, the concept of reaction changes in signification: an active force becomes reactive (in a new sense) when reactive forces (in the first sense) separate it from what it can do. Nietzsche will analyze how such a separation is

[38] Foucault, *Discipline* & Punish, 199.

> possible in detail. But it is important to notice that, even at this stage, he is careful never to present the triumph of reactive forces as the putting together of a force superior to active force but, rather, as a subtraction or division. Nietzsche devotes a whole book to the analysis of the figures of reactive triumph in the human world – *ressentiment*, bad conscious and the ascetic ideal. In each case he shows the reactive forces do not triumph by forming a superior force but by "separating" active force. In each case this separation rests on a fiction, on a mystification or a falsification.[39]

Embracing the reactive force of overcoding dispositions, Bentham believed that his "new mode of obtaining power of mind over mind" would secure the greatest happiness of the greatest number.[40] "Call them soldiers," Bentham wrote, "call them machines: so they were but happy ones, I should not care."[41] Bentham created this mechanism for self-governing in part because he belonged to a social class worried about the growing number of democratic revolutions erupting throughout Europe.[42] He went on to state that "the actual end of government is, in every political community, the greatest happiness of those ... by whom the powers of government are exercised."[43] Gilles Deleuze warns of the active potential embodied by the lingering dependent, a subject that was becoming more of a concern for the nineteenth-century liberal:

> A collective body of captains asserts its demands through the organization of the officers and the organism of the superior officers. There are always periods when the State as organism has problems with its own collective bodies, when these bodies, claiming certain privileges, are forced in spite of themselves to open onto something that which exceeds them, a sort of revolutionary instant, an experimental surge. A confused situation: each time it occurs, it is necessary to analyze tendencies and poles, the nature of the movements.[44]

To continue my analysis of tendencies and poles, as industry became larger and more complex and as the number of workers and the division of labor increased, supervision

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[39] Gilles Deleuze. *Nietzsche and Philosophy* (New York: Continuum International Publishing Group, 2006), 53.
[40] Jeremy Bentham and Miran Bozovic, *The Panopticon and Other Prison Writings* (New York: Verso, 1995), 38.
[41] Ibid.
[42] Jeremy Bentham, *The Collected Works of Jeremy Bentham: Constitutional Code*. Vol. 1 (Oxford: Oxford University Press, 1983), 192.
[43] Ibid.
[44] Deleuze, *A Thousand Plateaus*, 366.

became necessary for the management of society.[45] Dependency became a process of reporting, subjecting to rules, coding and recoding of behaviors, and forming the body and its dispositions into objects of study. Meanwhile, examinations of an individual's traits attempted to mold, form, and locate the source of the examiners active disposition (i.e., liberty) within the examined subject in order to paradoxically set it free. For some, Fraser explains, "political subjection and sociolegal subsumption were offences to human dignity [and in turn] informed a variety of radical movements throughout the industrial era, including abolition, feminism, and labor organizing, with substantial success."[46] It was from these fertile grounds of discontent and social change where I locate the origins of the liberal disposition.

**Historical Evolution of Community Action**

The context in which President Johnson's called for an "unconditional" War on Poverty in 1964 was complex and, for the most part, fleeting. Emerging from the Vietnam War, Civil Rights movement, massive immigrations flows, and abrupt changes in traditional values due to the so-called Cultural Revolution, the causative linkages to social change became fairly complex and transitory. Within this primordial soup of societal (r)evolution, I am able to map certain trends or morphogenetic tendencies that signify some semblance of reality and define practical guidelines for contemporary practitioners of applied sustainability to unlock the active components of evolution from the reactive components of (r)evolution. Pointedly, dropping the "R" reenforces DeLanda's distinction between homogenous (i.e., revolutionary) and heterogeneous (i.e., evolutionary) spaces in computer simulations. DeLanda writes:

[45] Foucault, *Discipline & Punish*, 174.
[46] Fraser and Gordon, "Genealogy of Dependency," 315.

> Think about the Game of Life [computer-based cellular automata developed by mathematician John Conway]. At first the rules of interaction of the little cells in an abstract space were so simple that everybody thought it was a game. Then they found ladders and glider-generating guns spontaneously forming. So this tiny, abstract, stupid space all of a sudden began exploding with possibilities. Chris Langton at Los Alamos later set out to classify all possibly cellular automata – which basically means abstract spaces with many dimensions – depending on how many rules they have. He discovered that there's a range, a magic region if you will, where your cellular automata game will develop all the unpredictable patterns that the Game of Life developed. If your rules are too rigid, nothing interesting will happen. If they are too loose, nothing interesting will happen. But if they are in the middle region what they call the edge of chaos – all kinds of organizing processes will happen.[47]

I am specifically interested in identifying this middle region during the War on Poverty to better understand central Appalachia's emerging transition. When examining the 1960s, for instance, Inglehart identified a downward trend in people's trust in government and political leaders across most industrial societies, signifying a revolutionary or "reactive" trend wherein societal rules were perceived to be too rigid.[48] Following DeLanda's lead, this section assesses the phase states of society before the 1960s to identify both active and reactive spaces of possibilities within what can be considered a global Cambrian explosion of cultural change. Describing the docility of enfranchised Americans, historian Robert Wiebe wrote that U.S. voters in the 1950s "were construed as essentially passive consumers, waiting inertly to receive messages, then choosing between more or less trivial alternatives."[49] During that decade, the important role that traditional institutions provided to the dream of American consensus should not be quickly denounced as an inefficient pathway for expression largely controlled by enfranchised American elite. Along with the many valid critiques of terms like "elite," "political machine," and "white," historians should also inject

[47] "DeLanda Destratified: Observing the Liquefaction of Manuel DeLanda," Techgnosis, http://www.techgnosis.com/delandad.html. (accessed January 1, 2014)
[48] Ronald Inglehart, *Modernization and Postmodernization: Cultural, Economic, and Political Change in 43 Societies*. Vol. 19 (Princeton: Princeton University Press, 1997), 85.
[49] Robert H. Wiebe, *The Segmented Society: An Introduction to the Meaning of America* (New York: Oxford University Press, 1975), 218.

a sense of trust when examining the complexities of conflict that changed America for the better or the worse. This trust may emerge from a variety of histories concerning the power of connectivity or face-to-face interactions. Mahatma Gandhi and/or Martin Luther King's civil disobedience that coupled both economic and political forces within a connective face-to-face action could be instructive.

While exploring this period, I also consider what I have often observed in my day-to-day experiences as a practitioner of applied sustainability in central Appalachia: a general resistance to developing societal change through traditional procedures of consensus. I argue that whether consensus operates through local city councils or school board meetings, these procedures should be trusted, not ignored. Much like private property (discussed in Chapter 2), these traditional pathways act as stable attractors within society that prevent the chaos of revolution from emerging. Moreover, this section will attempt to understand the robust and stable structure of the American psyche that led up to the 1960s by conceiving the honored tradition of consensus and its institutions against the backdrop of dictatorships, industrial genocide, paralyzing internal divisions, and the devastation of war. In a period that saw the rise and fall of Fascism and Communism, America was made up of individuals and institutions that were not free from guilt, but were often far more complicated than they have been portrayed. As Bill Bishop writes in *The Big Sort: Why the Clustering of Like-Minded America is Tearing Us Apart*:

> What one thought about labor unions had little relationship to one's opinions about Senator Joseph McCarthy's communist witch hunt. Only half the people knew how "liberal" and "conservative" were used in contemporary politics. The American Ideal was to get along. The national goal was modernization and consensus. Given the trauma of the Great Depression and the horrors of World War II, these were reasonable objectives.[50]

[50] Bill Bishop, *The Big Sort: Why the Clustering of Like-Minded America is Tearing Us Apart* (Boston: Houghton Mifflin, 2009), 82.

Against this backdrop of stable attractors (e.g., consensus and traditional institutions), urban reform emerged because of the large restructuring of manufacturing centers, migrations of low-income African Americans and Puerto Ricans to inner-cities, and outmigration of both middle-class whites to the suburbs and Appalachian whites to Midwestern cities (commonly known as Appalachia's Great Migration). Between 1940 and 1960, according to Appalachian scholar Jerry Bruce Thomas, more than 7 million people left Appalachia while only 3 million moved into the region, leaving a net loss in population of 4 million.[51] Displaying similar migration and settlement patterns as their African American and Puerto Rican counterparts, Appalachians migrated to Detroit, among other Midwestern cities, where they clustered in an area known as Little Appalachia. There, they established their own restaurants, stores, churches, and bars.

Throughout the mid-twentieth century, the Ford Foundation emerged as a key player in the management of these large migratory shifts in the American landscape. Informed by emerging experts or social scientists, the Ford Foundation sought to not only manage the shifting landscape of urban demographics, but to also change the political landscape in Washington. This body of reformers represents the reactive force. According to Noel Cazenave in *Impossible Democracy: The Unlikely Success of the War on Poverty Community Action Programs*, Ford Foundation officials and social scientists alike worried that "low-income African American and Puerto Rican residents were controlled neither by existing neighborhood institutions nor the patronage apparatus of local politics which both had traditionally eased the assimilation of ethnic immigrants in Europe."[52] Moreover, these

[51] Thomas, *An Appalachian New Deal*, 34.
[52] Noel A. Cazenave, *Impossible Democracy: The Unlikely Success of the War on Poverty Community Action Programs* (New York: SUNY Press, 2007), 3.

migratory shifts presented a tremendous opportunity for political parties, especially since the vast majority of African Americans had now moved from a context of disenfranchisement to one of political agency. This social body of individuals represents the active force. They became a key constituency in the presidential aspirations of the Democratic Party and were – to use Cazenave's words – "a force to be reckoned with."[53]

The net migration of Puerto Ricans reached its peak in 1953, when over 70,000 migrants arrived in the United States.[54] That following year, the Puerto Rican Forum began to develop innovative initiatives for small businesses and emerging entrepreneurs, and created Aspira, which emerged as one of organization's most successful and enduring programs focusing on leadership development. This, of course, is the active social body being expressed institutionally, emerging naturally from the bottom-up. With the financial support of the Ford Foundation, the Puerto Rican Forum also established the Mobilization for Youth (MFY), an organization that relied on opportunity theory to combat poverty. This movement from concept to reality signifies the institutional expression of the reactive body of reformers. Developed by social scientists Richard Cloward and Lloyd Ohlin, opportunity theory had a profound influence on the development of the War on Poverty and provided the "theoretical guidepost" for both the President John F. Kennedy's Committee on Juvenile Delinquency and Youth Crime and the infamous "culture of poverty" thesis. According to Cazenave, this self-help approach focused primarily on "changing what were assumed to be socially pathological individuals, families, and communities … rather than actual opportunity structures." Unlike its active counterpart (e.g., civil disobedience), it sought to fix solutions within the internal relations of the individual as opposed to including external or structural

[53] Ibid.
[54] Goldstein, *Poverty in Common*, 176.

causes into the equation.[55] When one examines the actual 1961 proposal of MFY, submitted to President Kennedy's newly formed committee on Juvenile Delinquency, we find the heterogeneous space for solutions again homogenized within the individual's space of possibilities. Within this rigid space, the infected individuals were thought of as carriers of a cultural disease – poverty. The MFY proposal described this disease: "instead of developing a capacity to need and enjoy long-range accomplishments, for example, they may learn to need and enjoy immediate achievements."[56]

In addition, an examination of the origins of the MFY's "final" proposal sheds light on the experimental nature of opportunity theory, which is, according to Cazenave, "generally considered to have had the greatest influence on the War on Poverty's Community Action Program."[57] The MFY's initial proposal was conditionally rejected by the National Institute of Mental Health (NIMH). However, funding for MFY operations would eventually be awarded based on the condition that preliminary research was conducted with the Columbia University School of Social Work Research Center, where Cloward and Ohlin were developing the conceptual framework for opportunity theory. After completing the necessary research and insuring enough test subjects, the MFY's final proposal was approved by the NIMH, which awarded the organization a two-year planning grant. In the summer of 1962, MFY opened its first neighborhood service centers with additional funding from the President's Committee on Juvenile Delinquency and Youth Crime, the Federal Department of Labor, the City of New York, and the Ford Foundation.

[55] Cazenave, *Impossible Democracy*, 68.
[56] Mobilization for the Youth, *A Proposal for the Prevention and Control of Delinquency by Expanding Opportunities* (New York: Mobilization for the Youth, December 9, 1961), 62.
[57] Cazenave, *Impossible Democracy*, 65.

Finding a home within the impoverished realities of inter-city New York City, opportunity theory began its overcoding quest for validity, signifying one of America's first collaborative strategies for implementing community action, albeit from the top-down.[58] These symbolic exploits are described in Moynihan's book as "a project of social experimentation and investigation using as its laboratory an urban residential area with a high delinquency rate, large and diverse enough in population to be representative of problem areas in many communities but small enough geographically to permit the operation of intensive programs of action and research."[59] Highlighting this program's post-materialist disposition (i.e., middle class), Moynihan writes:

> But if a measure of fantasy found its way into the proposal, there was also present a fair-minded insistence that the MFY prospectus was after all only a set of middle-class notions of what was to be done, and that as soon as could possibly be managed, the program ideas for MFY should start coming from people of the area itself – in cooperation with the staff, to be sure, but a staff trained and drilled to understand that the indigenous disadvantaged know more about what ails them than do social engineers from Columbia. For the fundamental fact of the MFY plan was that it proposed to mobilize not just the youth of the area, but the entire community.[60]

The nature of this symbolic approach is found in MFY community organizers' responses to organizational shifts from institutional outreach (Puerto Rican hometown clubs, church groups, veterans' organizations, etc.) to community outreach and the frustration of being unable to provide residents "anything to really fight for."[61] This post-materialist disposition emerged when many MFY employees became involved with the Civil Rights movement, participating in the 1963 March on Washington and adopting organizing strategies from groups such as East New York Action and the Congress of Radical Equality

[58] Goldstein, *Poverty in Common*, 123.
[59] Mobilization for the Youth, *A Proposal for the Prevention,* vi.
[60] Moynihan, *Maximum Feasible Misunderstanding*, 56.
[61] Ibid., 124.

(CORE) that also displayed a mixture of both reactive and active elements.[62] Civil rights should be considered as an active desire for liberation and genuine change, while the radical or more revolutionary components like CORE provide the dispositional pattern of the post-materialist that I am attempting to trace, that is, the reactive element. This element was fueled by the Civil Rights movement; the active desires to identify "something worth fighting for" reconfigured the "psychic flows" of the operation theory espoused by Cloward and Ohlin. Instead of psychic flows moving from a linear-fixed state whereby solutions were codified within the structural process of identifying individual traits, they flowed in a nonlinear-dynamic state whereby solutions oscillated from the individual to the structure and back again. These oscillations generated (r)evolutionary affects at both the local and national level, and, according to Cazenave, "expanded democratic participation."[63] A (r)evolutionary affect can be understood as a potential to either be expressed as a symbolic (i.e., reactive) or connective (i.e., active) form of community action. In short, a (r)evolutionary affect is a state space through which "all kinds of organizing processes will happen."[64] For example, the MFY developed the Mobilization of Mothers (MOM) to organize "community control" within local school districts in the Lower East Side that, in turn, generated local (r)evolutionary affects. For Cazenave, the successful propagation of these affects were signified by the "community control" idea or meme spreading nationally and "today its legacy remains in less radical school reform initiatives [whereby] parental involvement is a core value of school reform initiatives across the nation."[65]

[62] Ibid.
[63] Cazenave, *Impossible Democracy*, 173.
[64] "DeLanda Destratified: Observing the Liquefaction of Manuel DeLanda."
[65] Cazenave, *Impossible Democracy*, 175.

Given that MFY organizers were not charged with the tasks of identifying community innovations but with creating them, Kenneth Clark and Jeanette Hopkins's *A Relevant War Against Poverty: A Study of Community Action Programs and Observable Change* can provide some guidance while navigating between symbolic and connective expressions of community action. Symbolic community action is rooted in the propagation of ideas and the action itself is symbolically rooted in a disposition of *working for* a community (e.g., a research study, a rally or march, and awareness campaigns) wherein the end result exhibits similar characteristics as in the Game of Life discussed earlier. This space of possibility is homogeneous and requires specific selection pressures (e.g., cherry picking leaders that represent an "idea"). On the other hand, connective community action is solely concerned with producing actual change and the action is connected to and drawn from reality – a disposition of *working with* a community. This space of possibility is heterogeneous and accounts for naturally emerging phenomenon (e.g., leaders). To put it another way, a practitioner of applied sustainability acts within a field of heterogeneous connectivity because the conditions for actualization are true for "most circumstances," whereas a practitioner of conflict operates within a field of homogeneity where actualization "is a highly unlikely state which may be brought about only under very specific selection pressures."[66] Using Clark and Hopkins' research as a guidepost, connective community action asks questions like: "What is the evidence of actual change in the conditions of the poor as a result of community action programs?"[67]

Informed by Cazenave's insight on the role that time plays in policy evaluations, I will begin to unpack specific "state spaces" associated with the active forces alluded to

[66] Delanda, *Intensive Science and Virtual Philosophy*, 59.
[67] Kenneth B. Clark and Jeannette Hopkins, *A Relevant War Against Poverty: A Study of Community Action Programs and Observable Social Change* (New York: Harper Collins 1969), 239.

earlier and the post-materialist disposition thereof. First, when examining Cazenave's observation concerning the only heterogeneous state space explored by the War on Poverty's endeavors in social engineering (i.e., social protest), this component spilled over into Cloward and Ohlin's science-community labs and was not caused by them. These active forces were overcoded by reactive forces, creating an entanglement superseded by the post-materialist disposition. Cazenave describes the spin-offs of these reactive-active entanglements as "sleeper effects," whereby community "empowerment of the poor and the expansion of other democratic participation … did not become evident until years after their operation."[68] Indeed, as Cazenave points out, MFY activists ultimately "helped establish welfare rights as a national movement."[69] The so-called "sleeper effect" exhibits similar characteristics of overcoding as opposed to a genuine entanglement of symbolic and connective community action. Specifically, the "idea" of community action is historically traced through a process of moving from concepts to reality, in a word: ideology.

Like Moynihan, we have to address questions about the top-down engineering of these processes by the newly emerging non-profit industrial complex. While reflecting on the origins of the MFY, Moynihan unveils the nature of the experiments whereby the social innovations take on a prescriptive nature (moving from ideas to reality) as opposed to a preventative approach informed by localized innovations that emerged from within the communities themselves (moving from reality to ideas). "The Ford Foundation," he explains, "did not begin with the assumption that ingenious social invention could not arise from existing community agencies, but somehow it always ended with that conclusion."[70] This conclusion resembles a similar slip of the tongue discussed earlier. Noting the institutional

[68] Cazenave, *Impossible Democracy*, 173.
[69] Ibid., 176.
[70] Moynihan, *Maximum Feasible Misunderstanding*, 41.

nature of this new discipline of social engineering, Moynihan also states that "the idea that a private, tax-free organization, responsible to none but its own wishes, should attempt anything of the sort would surely have given rise to not a little consternation in liberal circles had the organization been seen as politically conservative."[71]

Although Clark and Hopkins considered the temporal nature of their analysis of War on Poverty programs given that most of these programs were in their first or second year of operation, they still concluded "that federally financed community action programs have so far not resulted in any observable changes in the predicament of the poor."[72] Clark and Hopkins' findings and Cazenave's temporal component raises several questions about the War on Poverty's experiments in central Appalachia. Why does poverty persist in central Appalachia? Where is the Cazenavian sleeper effect of idea propagation or overcodings? Before addressing these complex questions, we need to examine the origins of the MFY and War on Poverty and their connective relationship. These relationships provide the key to creating a distinction between active and reactive elements of community action. Clark and Hopkins note that the "relationship of government and private agencies to the poor has never been structured as a relationship of peers, but of clients, or patients, or delinquents."[73] The symbolic component of community action is fully revealed in their analysis of the power dynamics involved:

> The poor are self-conscious in their assigned role of "indigenous," aware that they have been involved not because of genuine acceptance of their individual worth, but as symbols of the poor, chosen for show. The poor are seen by the non-poor, on the other hand, either as exotic creatures, quaint, different in kind rather than degree from others, and controllable; or as alarming and uncontrollable. The

[71] Ibid., 42.
[72] Clark and Hopkins, *A Relevant War Against Poverty*, 249.
[73] Ibid.

> underlying condescension and alienation reflects the power realities typical of any stratified authority.[74]

Clark and Hopkins' research also provides a way to analyze the historical origins of what I call symbolic community action. They state: "It is easier to verbalize a novel approach to the problems of the poor than develop and implement new programs compatible with those new theories and purposes."[75] In fact, their research found that the connective components or "traditional social services" of community action programs prevailed over their symbolic counterparts, thus, supporting my claim that these traditional institutions (i.e., qualified by long-term tendencies) provide much needed stable attractors for societal change. What they referred to as "the action approach" was rooted in conflict and riddled with dialectical spurts of revolution – the ontological home of the post-materialist.[76] At this point, I can begin to conceptualize the mechanism of power in which the immediate, connective-material concerns of the community are replaced by reactive forces that operate by and through the active individuals who make up the community.

The validity of these active forces (e.g., civil rights) is not what is in question, but fixing those desires within the immediate realities of the community is. Transforming a disposition of *working for* an idea to *working with* a reality or context by producing measurable, tangible, real results fixes the practitioner's interests within the community as opposed to an idea of what the community should be. This requires a strict demarcation between active and reactive forces given the latter's tendency to become either "too rigid" (conservative) or "too loose" (liberal). If the practitioner adopts the proposed demarcation or what some contemporary environmental activists have called a break from solidarity,

[74] Ibid., 247.
[75] Ibid., 234.
[76] Ibid.

"controversy not only is not relevant to the predicament of the poor but the poor serve as pawns in a struggle in which their interests are not the primary concern."[77] In the conclusion of their report, Clark and Hopkins' found that "the entire data gathered for this study reveal not a single instance in which conflict or controversy has resulted in intensification of community action or social change."[78]

Although we may identify some general trends or causative linkages between local communities and the national community in the form of policy changes (i.e., reactive/active entanglement strategies of the 1960s), we cannot, as of yet, fully establish local trends that have similar causative linkages at the community level (i.e., symbolic/connective entanglement strategy). These causative linkages may take on an entirely different shape from their early predecessors of "idea propagation" or "political will" strategies, fueled by building strength in numbers, speaking truth to power, and many other "actions." These strategies are profoundly linear and simplistic because they asymmetrically end with the very conditions they begin with: crisis. These strategies ultimately identify a crisis or issue for creating the next social movement that will translate into a national policy which, in turn, adds to the complexity of the state.

However, reactive forces or post-materialist dispositions are fairly easy to identify. The first trend for identifying this disposition is associated with Foucault's productive power and the general homogeneity of the groups in question. In a 1951 study concerning group behavior, Stanley Schachter found that like-minded groups often excluded individuals who held a differing opinion of the group, whereas the more heterogeneous group remained more

[77] Ibid., 240.
[78] Ibid., 243.

receptive to external flows of difference (i.e., a permeable envelope). Bill Bishop describes the second trend that emerges from like-minded groups:

> Conventional wisdom is that group discussion balances out different points of view, but … researchers found that "society not only moderates ideas [but] it radicalizes them as well. There have been hundreds of group polarization experiments, all finding that like-minded groups, over time, grow more extreme in the direction of the majority … Mixed company moderates, like minded company polarizes.[79]

Is this sustainable over time? The recent government shutdown signifies just how radically polarized America has become due to reactive elements. But to answer this question, I have to consider the institutional effects of this polarization.

In line with Joseph Tainter's law of diminishing returns, present trends in Sustainable Development strategies (e.g., International Council for Local Environmental Initiatives working with local governments) can be seen as a continuation of this upward trend in complexity without considering other market-based approaches to sustainability. At this crossroads, practitioners should carry on the tradition of ensuring individual liberties by working with communities and identifying local, endogenous innovations that can be shared with other communities and vice versa. They should, in a very real way, drop the "R" and become evolutionaries. To put it another way, practitioners would collaboratively facilitate the emergence of livable communities by acting as connectors between communities and identifying ways that translate these innovations to other audiences. I will explore these options and many others in Chapter 4. For the purpose of developing a theoretical model for connective community action, I will identify (r)evolutionary affects that surprisingly sync with the jujitsu approach proposed by Paul Ylvisaker, one of the founding architects of community action and a former executive director of the Ford Foundation:

[79] Bishop, *The Big Sort*, 68.

> …social application of the art of jujitsu: of exerting smaller forces at points of maximum leverage to capture larger forces otherwise working against us. We have placed the Ford Foundation's first bet not on the central business district of the city but on its school system, and more the school outlook and methods than on buildings; on the city and metropolitan areas employment system, on their administration of justice, and a growing list of similarly critical "production processes" which are currently bottlenecks in the process of citizen-building.[80]

One such (r)evolutionary affect emerged in a confrontation between the MFY's spinoff MOM and the school principals of New York's Lower East Side on June 27, 1963. MOM sought parental participation where there was believed to be none by insisting on a confrontation strategy for integrating "community control" into school board protocol. This strategy of reactive-active entanglements populated an assortment of meetings at the community level and eventually percolated up into traditional institutions such as the school board. During one of these confrontations, the incumbent superintendent protested a meeting that he felt was "obviously intended to be inflammatory."[81] Additionally, the principal who had been working with the MFY as a liaison noted that "the air of hostility toward the school system that pervaded the meeting."[82] At this time, the reactive-active entanglements of those confronting the school principals (i.e., MOM) were asked to work within an institutional framework of traditional pathways that were typically slower by nature and often required the collaborative process of consensus. Moreover, these traditional pathways may have been fairly intimidating to those who might have been unfamiliar with expressing concerns or desires for change through these established processes.

As a caveat, the temporal component of community action involved during this confrontation signifies a genuine multiplicity of (r)evolutionary affects wherein the raw,

[80] Paul Ylvisaker, "Private Philanthropy in America," *An Address to the National Council on Community Foundations* 3 (1964): 44.
[81] Cazenave, *Impossible Democracy*, 77.
[82] Ibid.

unabated realities of the present conditions had to be properly assessed asking: where is the middle region? This proper assessment allows each party to account for all possibilities of both tactic and strategic actions within their specific temporal scales. Additionally, these actions either become fixed upon a singular goal and temporal scale or explore their space of possibilities which are almost always infinite. Quite the opposite was true for community organizers at this time given the variety of tactical and strategic tools for engaging their realities was fairly limited within the institutional parameters of the "political will" and the social context of "activism" (i.e., the space of possibilities for engaging in the process of community action was fairly homogenous).[83]

Several other factors also affected this middle region or space of possibilities, including a general air of frustration, which highlights the importance of patience for a pragmatic/intuitive methodology for community action. As one MFY memorandum noted, "The response from existing low-income groups was often misleading. Most of these were more interested in Mobilization's resources of money and staff than in programs for community change." This curiosity of locals demonstrates what I have experienced numerous times: the community is feeling you out or engaging in the process of building trust.[84] Building trust typically takes a lot of time and patience. Upon reflecting on the events that led up to the MFY's confrontation, Marylyn (Bibb) Gore, the coordinator of MFY's community organization program, elucidates the active/reactive entanglement in question. She stated:

> This was a time when poor parents were utterly intimidated by the Board of Education, and all it represented. When a teacher spoke, the parents quivered, or did nothing. They might have felt extreme injustices against their children, but they didn't understand that they had rights to confront this Board of Education.

[83] Harrington, *The Other America*, xxvii.
[84] Goldstein, *Poverty in Common*, 124.

> That program helped a lot of parents in that community to be able to stand up for the rights of their children, to go to the Board of Education, to demand changes.[85]

I argue that confrontation should be a last resort after all available options have been exhausted. This requires that the practitioner engage with community members' navigation through the complex middle region by placing active forces as the primary goal. Because MFY organizers believed that working through traditional pathways within both school systems and community organizations failed to produce immediate results, activists concluded that all options had been exhausted. This created an institutional lock-in whereby revolution quickly became the defining creed of some MFY organizers. When reflecting upon his work with the neighborhood ministers' council, one MFY organizer complained: "I would say that the effort was a failure… We weren't going anywhere with them**. We didn't have anything to fight for**."[86]

Most of these frustrations also came just one year after the summer of 1962, when the MFY opened its first neighborhood service centers. Considering the short amount of time that had been spent engaging in something that had never been attempted before, it should not have been frustration that moved the organizers, but a sense of leadership and perseverance. Regarding the latter, community and institutional change must be understood as something that does not happen quickly but requires an abundance of patience. As for leadership, the MFY's research director, Richard Cloward, closed the gap on the middle region by overcoding the reactive-active entanglement with the reactive component or what will later be called the "crisis strategy." This ultimately inhibited any opportunities to endow a sense of perseverance or patience within the group of organizers. As such, organizers failed to examine the local complexities of poverty and develop a heterogeneous space of

[85] Cazenave, *Impossible Democracy*, 75.
[86] Goldstein, *Poverty in Common*, 124.

possibilities outside of the normative channels of liberal reformist strategies whereby change is exercised through the state. The overcoding of the local heterogeneous space of possibilities was alluded to in a staff memo by Cloward. Noting the importance of the Civil Rights movement, Cloward wrote: "The question for an organization like MFY is … how we ride with this groundswell, exploiting its potential for programs, helping to give it momentum."[87]

I am not arguing that the conditions of 1964 trumped organizers' sense of duty to participate in the "groundswell" or active forces that Cloward mentioned. However, this same pattern of expediency or a disposition of "rushing things along" continues to play a significant role in social movements. Another notable example of this impatient disposition came again from Cloward in his 1966 book *The Weight of the Poor: A Strategy to End Poverty*, coauthored by Frances Fox Piven. In it, Cloward and Piven described their "crisis strategy" to build political power for the poor through a targeted conflictive strategy (i.e., reactive force) that operated within short time frames (i.e., superlinearity). Perhaps before rendering the possibility space of community action as a fairly homogenous set of action/reaction pathways, Cloward and others should have reflected upon the aforementioned 1961 MFY proposal (i.e., their blueprint for community action) that called for a heterogeneous space of possibilities. The proposal stated:

> In summary, it is our belief that much delinquent behavior is engendered because opportunities for conformity are limited. Delinquency therefore represents not a lack of motivation to conform but quite the opposite: the desire to meet social expectation itself becomes the source of delinquent behavior if the possibility of doing so is limited or nonexistent.
>
> The importance of these assumptions in framing the large-scale program which is proposed here cannot be overemphasized. The essence of our approach to prevention, rehabilitation, and social control in the field of juvenile delinquency

[87] Cazenave, *Impossible Democracy*, 75.

> may be stated as follows: in order to reduce the incidence of delinquent behavior or to rehabilitate persons who are already enmeshed in delinquent patterns, we must provide the social and psychological resources that make conformity possible.[88]

Conceivably, active forces of patience were too much given Daniel Moynihan's personal assessment that "persons such as Cloward grew steadily more radical in their demands for the transformation of American society."[89] Reflecting upon the above except from MFY's proposal, Moynihan describes his personal experiences with Cloward's strategy, noting that the "initial desire to facilitate entry into that system by outsiders (one section of the MFY prospectus was entitled "Expanding Opportunities for Conformity") was supplanted by a near detestation of the system itself."[90] Moreover, while foreclosing the structural field (institutions and economics) of community action within a homogenous space of possibilities or simply the political sphere (i.e., political will), the individual operates in both a passive/internal and active/external fashion. First, the individual becomes the object of observation for analyzing internal traits of the poor constituting the impermeable envelope of the expert's vision. A strict distinction is made between the subject experts and the object of their experiments: the impoverished individual. Secondly, the overcoded individual becomes an active conduit for post-materialism and liberal reformism alike and, in turn, external or symbolic ends became the goal of social engineering. This ideological architecture is ultimately defined as an impermeable envelope and optically defined as a disconnected vision for future possibilities. As Moynihan notes, "this was social engineering on a large scale."[91]

[88] Mobilization for the Youth, *A Proposal for the Prevention*, 45.
[89] Moynihan, *Maximum Feasible Misunderstanding*, 94.
[90] Ibid.
[91] Ibid., 59.

The success of this overcoding can be summed up by Cazenave's sleeper effect. The above homogenous space of possibilities is virtually proliferated throughout a number of institutions and movements in what seems to be a pattern of superlinearity in terms of immediate satisfaction. In turn, we have a general normalization of this strategy due to the simplicity for producing (r)evolutionary affects: touch base with locals, regroup and create crisis strategy, build support, and finally get a bill passed. Here, we have the birth of engineering U.S. social movements, a class of experts that make up the majority of the non-profit industrial complex. Finally, we have the rationalizing of this strategy given its seemingly a-causal influences that takes many forms, one being Cazenave's sleeper effect through a type of institutional resonance. Rationalizing overcodings of the crisis strategy, Cazenave writes:

> The influence of the National Welfare Rights Organization can also be seen today in community organizing that is not limited to poor women and welfare rights. This is most evident in that the nation's largest and perhaps most effective community organization, the Association of Community Organizations for Reform Now (ACORN), is a direct descendent of the National Welfare Rights Organization and its apparent failure to broaden its base beyond poor women and welfare rights. George Wiley sent Wade Rathke, one of his community organizers, to Little Rock, Arkansas, to begin an experiment to transform the struggling National Welfare Rights Organization into a larger economic justice movement that included not only public assistance for welfare recipients bit other issues important to low and moderate income people.[92]

The institutional resonance of the ACORN model was an entanglement of active and reactive forces. The active component adopted similar structures of Alinsky's community-based organizing model with one major exception: "Instead of cooperating with local officials, ACORN favored direct action and sought to experiment with electoral politics as a

[92] Cazenave, *Impossible Democracy*, 179.

way to consolidate organizational victories."[93] The history of reactive forces can also be drawn back to Cloward and Piven's 1966 article in *The Nation*, wherein they argued that crisis strategy often "creates or exposes conflict, [thereby] threaten[ing] to produce cleavages in a political consensus which politicians … ordinarily act to avert."[94] The frustration and aversion towards traditional, slower avenues is obvious. Moreover, a proactive or even transversal tactic is silenced due to the overall tone of the article and its Lacanian slip that "if organizers can deliver millions of dollars in cash benefits to the ghetto masses, it seems reasonable to expect that the masses will deliver their loyalties to their benefactors."[95]

Like most business models, if this reactive strategy produces revenues (i.e., in the form of votes), then it passes the test. Unfortunately, much like unregulated markets left to their own devices, the reactive marketing strategy becomes too large to fail especially when one accounts for the role that the crisis strategy (i.e., superlinear affects) plays in the political economy with its short term cycles. Malcolm X's talk entitled "The Ballot or the Bullet" is illuminating when he writes about the 1964 election season, "the year when all of the white politicians will be back in the so-called Negro community jiving me and you for some votes." Accentuating a sort of political overcoding of local hopes, Malcolm X continues his critique of this superlinear cycle "when all the white political crooks will be right back in your community with their false promises, building up our hopes for a letdown, with their treachery, their promises which they don't intend to keep."[96] Although illuminating, Malcolm [X's] strategy is an example of reactive forces preventing action forces from what they can do, causing me ask: what if the talk's title was "The Ballot or the Creative Act?"

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[93] Arlene Stein, "Between Organization and Movement: ACORN and the Alinsky Model of Community Organizing," *Berkeley Journal of Sociology* 31 (1986): 102.
[94] Richard A. Cloward and Frances Fox Piven, "A Strategy to End Poverty," *The Nation* 2 (1966): 514.
[95] Ibid., 517.
[96] Malcolm X, *Malcolm X Speaks: Selected Speeches and Statements* (New York: Grove Press, 1965), 25.

Given the market value of political expediency and the importance of overcoding in ensuring mercantile success, the engineers of social movements planted themselves firmly within the processes of America's electoral system. In "Community Action Loses," Moynihan assesses this newly created professional class of experts that engineer the political economy in question:

> [I]n the period 1964-66 between 25 per cent and 35 per cent of the field representatives recruited for the community action program were Negro, Puerto Rican, or Mexican American. It was … "probably the ablest and largest group of minority group professionals ever assembled in one government program." Kenneth E. Marshall, one of the planners with Kenneth B. Clark and Cyril Tyson of HARYOU, and subsequently head of the Paterson, New Jersey, community action program agrees: The major immediate beneficiaries of these programs," he stated in 1967, "have been non-poor persons who have been afforded the opportunity of executive, technical and professional positions in a program."[97]

This new professional class was linked by its shared ideology, the crisis strategy. During the national Poor People's Convention in 1966, two members of the emerging class of social engineers, Cloward and George Wiley, discussed the important role that the crisis strategy could play in the emerging national welfare rights movement. Cherry picking reactive dispositions also became the norm as Wiley noted specific individual traits at this conference that frustratingly spoke truth to power. These individuals were primed for positions as leaders in the newly engineered social movements (i.e., selection pressures mention earlier).

One such meeting for identifying future leaders was held at the Poor People's Convention. The primary speaker at this meeting was Sargent Shiver, the director of the OEO, where he spoke about the intricacies and successes of the War on Poverty's Community Action Programs. However, a hostile audience, consisting mostly of local anti-poverty reformers, interrupted Shriver's address and "challenged him with questions and

[97] Moynihan, *Maximum Feasible Misunderstanding*, 130.

irate testimonials."[98] According to Alyosha Goldstein, this example of "members [losing] patience with the platitudes of maximum feasible participation" revealed that "the welfare rights movement [organizing] against such OEO-prescribed civility" had now embraced "the crisis strategy described by Piven and Cloward."[99] On June 30, a total of sixteen welfare rights demonstrations ushered in the crisis strategy signifying an actual national movement. One year later, Wiley established the National Welfare Rights Organization, the historical origin of ACORN, which is arguably the predecessor of the contemporary environmental movement's present strategies (e.g., Carbon Bill, UN climate talks, anti-MTR).

**Community Action in Appalachia**

This chapter will end by detailing the historical genesis of several reactive and active singularities in Appalachia's experiments with community action during the War on Poverty. For DeLanda, singularities determine long-term tendencies and structure the space of possibilities "that explain the regularities exhibited by morphogenetic processes."[100] How, then, did these singularities operate within the context of central Appalachia? If institutions provide long term stability for a particular strategy, what was done to prepare Appalachia for the War on Poverty? With these questions in mind, I will examine how Appalachia remained peripheral in the preplanning of the War on Poverty given that all pre-institutional development emerged within urban settings that were "later transformed into flagship antipoverty organizations for the War on Poverty."[101] In short, the region was impoverished from the beginning because no proactive planning and institutional development had taken place before the War on Poverty in the 1960s. This fact was, of course, unstated by

[98] Goldstein, *Poverty in Common*, 129.
[99] Ibid.
[100] DeLanda, *Intensive Science*, 15, 10.
[101] Goldstein, *Poverty in Common*, 157, 118.

Washington officials. Instead, Appalachia took on its typical role as a symbolic place marker within the American psyche.[102] Navigating through perceived claims of racial preference, Adam Yarmolinsky, a key figure in the development of the antipoverty legislation, stated that "the War on Poverty was in no sense a help-the-blacks program." He continued by insisting that American's "color it… Appalachian if you are going to color it anything at all."[103]

Upon examining Inglehart's "post-materialist" society defined by changing gender roles, negative attitudes toward authority and sexual norms, declining fertility rates, broader political participation outside of traditional pathways, and less easily led publics, Bill Bishop concluded that 1965 was the year in which "Americans lost their faith" in politics.[104] Attempting to understand the phase transition of individual values from a materialist disposition (i.e., physical and economic) to a post-materialist disposition (i.e., autonomy and self-expression), Bishop uncovered a sort of hyper-symbolic world of overcoding rooted in an anthropocentric worldview, whereby people "would adopt a politics of self-expression."[105] Perhaps the first full blown emergence of the reactive force of distrust, this post-materialist disposition was, in many ways, a silent revolution. Inglehart, Bishop explained, "predicted one more aspect of this post-materialist phenomenon: since the cultural transformation would happen at a generational pace, it would be in a sense a 'silent revolution.'" Bishop continued, "People would assume that the 'erosion of confidence' in the government, religion, and social institutions was because these institutions were singularly corrupt or inefficient."[106] Moreover, when assessing the general trends in student dispositions during the War on Poverty, Inglehart concludes:

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[102] See footnote 281.
[103] Ibid., 157.
[104] Bishop, *The Big Sort*, 89.
[105] Ibid., 85.
[106] Ibid.

> It seems clear that in virtually all Western nations, the student milieu of the late 1960s did constitute a distinct communications network, propagating a distinctive viewpoint. Given these circumstances, it is not surprising that the student elite saw themselves as part of a counterculture that was engaged in an irreconcilable clash with the culture of an older generation: From their viewpoint, the dictum, "Don't trust anyone over thirty" seemed plausible. Our hypotheses imply that as time went by, the Post-Materialists became older and more evenly distributed across the population. But in 1970, conditions were optimal to sustain belief in a monolithic generation gap, with youth all on one side and older people all on the other.[107]

Perhaps the most violent manifestation of this particular brand of reactive forces (i.e., distrust coupled with superlinearity) occurred in China between 1966 and 1976. During those years, value systems in China experienced accelerated changes that sparked the emergence of a post-materialist value system. In "How Bodies Remember: Social Memory and Bodily Experience of Criticism, Resistance, and Delegitimation Following China's Cultural Revolution," Arthur Kleinman and Joan Kleinman map the bodily and social effects of these rapid changes. They note that "the topsy-turvy cycles of the Cultural Revolution spread this experience across all social positions. One group ascended via struggle, was in turn struggled against, and then was passed by, as another group grasped for higher position, only to fall in turn."[108] The post-material disposition's appearance in China was largely due to social and economic changes that transformed the country's value systems from a materialist disposition influenced by rural settings to a post-materialist disposition generated by both the migration from rural farm land to urban cities as well as the post-materialist conditions of the urban setting itself.

[107] Inglehart, "Post-Materialism in an Environment of Insecurity," 887.
[108] Arthur Kleinman and Joan Kleinman, "How Bodies Remember: Social Memory and Bodily Experience of Criticism, Resistance, and Delegitimation following China's Cultural Revolution," *New Literary History* 25, no. 3 (1994): 715.

This phase transition created a psycho-physical break between traditional or connective pathways of expressivity and symbolic pathways of expressivity. The former pathways often moved from reality to ideas and were slower by nature due to their inherent processes of building trust. On the other hand, the latter pathways moved from ideas to reality in a superlinear fashion, allowing for revolutionary agents to symbolically transcend traditional processes of trust building. Post-materialists attempted to create new pathways of expressivity that captured new material conditions found within the urban setting, ultimately forming a generational gap between connective and symbolic forms of expression. This gap was filled by reactive expressions of overcoding in the form of revolutionary violence. These expressions of violence provide a concrete example of a passage from DeLanda's "edge of chaos" into the chaos of unfettered revolution: a path well defined by the good intentions of Marxist practitioners. Arthur Kleinman and Joan Kleinman describe this process of bridging the gap between two worlds, the past and the present:

> These symptoms themselves need to be seen as forms of mediation and transformation through which interpersonal processes constitute the moral core of local worlds (here, work and family units). Symptoms of social suffering, and the transformations they undergo, are the cultural forms of lived experience. They are lived memories. They bridge social institutions and the body-self as the transpersonal moral-somatic medium of local worlds. The origins and consequences of these symbolizing sensibilities of lived distress and criticism reveal what those local worlds are about; how they change; and what significance they hold for the study of human conditions. That is to say, bodies transformed by political processes not only represent those processes, they experience them as the lived memory of transformed worlds. The experience is of memory processes sedimented in gait, posture, movement, and all the other corporal components which together realize cultural code and social dynamics in everyday practices. The memorialized experience merges subjectivity and social world.[109]

While considering these embodied entanglements of the subject and the social, the Appalachian Volunteers (AV) of the 1960s lend a way to broaden our understanding of

[109] Ibid., 716.

symbolic and connective community action. Historian Thomas Kiffmeyer provides a poignant critique of AV activists, arguing that they ultimately "lost their focus on local people, asserted their own agenda, and attempted a frontal assault on their more powerful adversaries."[110] Signifying the importance of a connective strategy, Huey Perry, a West Virginia native and local CAP director, stated that his community had to take the time and "build an organization that involves the poor in the decisions as to what types of programs they want, rather than to sit down and write up what we think they want."[111] Much like Perry, who was not directly associated with the AVs, "community organizing at the grassroots level was the AVs' ultimate goal in the summer of 1966." In support of Perry's flavor of politicizing his organizing activities, the AVs believed that:

> the greatest weakness of the typical Community Action Program in the Appalachian area was its failure to involve the poor in the planning, conduct, and review of the programs. The typical CAP director, along with certain members of his board, devised local community action efforts, and the poor were permitted only "to ratify a 'pre-planned' program."[112]

The obvious connectivity associated with the AVs was their emphasis upon grassroots organizing via upholding the OEO's creed of maximum participation of the poor. However, the more radicalized or combative the AV workers became, the more symbolic their community action became. This constituted an inversion of *working with* to *working for* or moving from reality to ideas to moving from ideas to reality. In the end, these AVs displayed similar characteristics of a reactive-active entanglement discussed in the previous section. More importantly, it may have been engineered this way from the start because of an explicit strategy on the part of the War on Poverty engineers. What came to be known as "threat power" was described in the *Trainers Manual for Community Action Agency Boards*

[110] Kiffmeyer, *Reformers to Radicals,* 152.
[111] Perry, *They'll Cut Off Your Project*, xv.
[112] Kiffmeyer, *Reformers to Radicals*, 153.

under the section entitled "The Powers of Community Organizations." The manual for War on Poverty organizers (i.e., both active and reactive) stated:

> Threat power – the ultimate threat power is the riot. This is clearly against the public law, the national standards of conduct and the rules of the OEO; and it is most destructive to the citizens most in need. But it is important that Board members recognize the threat power of rioting as a very real power and possibility.[113]

Coupled with Huey Perry's reflections of his new office, this "threat power" provides a deeper glimpse into the reactive disposition – speaking truth to power – that prevailed during Appalachia's War on Poverty. It also reinforced the profound disconnect between Washington planners and the realities of Appalachia through their processes of symbolic overcoding.

Following Perry's first experiment with "speaking truth to power" at a board meeting for Mingo County's CAP, he wrote that "the breach between the community action program and the local political machine deepened markedly."[114] I argue that this strict division or impermeable envelope prevented Appalachia's active forces from what they could do. Providing a clear horizon for understanding symbolic community action in central Appalachia, Perry notes one of the deepest ironies of this region's history even to this day: the burgeoning spirit that is fixed between the regions realities of the local industry (i.e., coal) or by the ideals of American activism (e.g., environmentalism). Perry writes:

> In the new office, directly over the door, hung an old West Virginia workman's compensation certificate that had been issued to the Sycamore Coal Company in 1913. Perhaps because it was hanging only a foot from the twelve-foot ceiling, no one had taken the trouble to remove it. What a contrast it was to the poster on its left, sent to the office by the OEO, which seemed indicative of the burgeoning spirit of Mingo County. In bold red letters, it said, "Speak out."[115]

[113] Moynihan, *Maximum Feasible Misunderstanding*, xxvii.
[114] Perry, *They'll Cut Off Your Project*, 96.
[115] Ibid.

The juxtaposition of the connected realities of workman's comp and the hyper-symbolic call to action through acts of superlinearity (e.g., speaking truth to power) is captured by Alyosha Goldstein's insight concerning how much thought went into designing a strategy for Appalachia by urban planners. According to Goldstein, the Economic Opportunity Act "included an all-purpose section called 'Special Assistance to Rural Families' that was concerned with the plight of small-scale farmers and migrant agricultural laborers but largely inattentive to the dynamics of the coal industry that had decimated central Appalachia."[116] By homogenizing the space of possibilities and situating it within the political sphere of expediency, the AVs initiated a series of phase transitions employed by other poverty warriors who took a general form of speaking truth to power within the political arena. Such conductive behaviors ultimately prompted responses and/or reflections like:

- Huey Perry reflecting on a Board of Directors meeting that prompted a members response: "What we need it unity, working together, and you're not going to get it in the manner that you're going about it here today."[117]
- AV staff member Thomas Rhodenbaugh admitting that Appalachian Volunteers "do not have the best working relationship with many school superintendents."[118]
- Clearly defining a working-for as opposed to a working-with disposition, one Appalachian Volunteer concluded that "The causes of poverty, at least in Appalachia are fundamentally political, and that the people of Appalachia need to be encouraged to exert their own political power."[119]

In *Uneven Ground*, Ronald Eller argues that the local CAP objectives often "placed grassroots organizations in confrontation with local elites, who controlled the schools, county governments, and state agencies, including most of the OEO funded poverty programs."[120] These added flows of reactive energy (i.e., "Us vs. Them") into a stratified context of active

[116] Goldstein, *Poverty in Common*, 157.
[117] Perry, *They'll Cut Off Your Project*, 95.
[118] Kiffmeyer, *Reformers to Radicals,* 168.
[119] Ibid., 167.
[120] Eller, *Uneven Ground*, 140.

"elites" and passive "people" ultimately created the conditions for a type of reactive cycle to emerge. Similar to both the cherry picking of Wiley and the propagation strategies of ACORN (i.e., end goal of building a "social movement"), the participants involved in this approach built an autonomous, local, and "somewhat militant anti-strip-mining" chapter that emerged from the reactive-active entanglements of Knott County's Mrs. Ollie "Widow" Combs and Dan Gibson, who, in 1965, engaged in some of the region's first anti-mountaintop mining actions. Following these actions, the Appalachian Volunteers formed affiliate chapters in Breathitt, Pike, Floyd, and Harlan counties.[121]

The propagation of this symbolic strategy – signified by occasional spurts of rioting – displayed similar turbulent patterns found elsewhere in America. This pattern provides a glimpse into the more chaotic forms of social movements. Such social change can be found within the residual memories of China's Cultural Revolution – perhaps Foucualt's flavor of fascism as a desire for power is an appropriate application in understanding this final state. Arthur Kleinman and Joan Kleinman note the profound effects that conflict has on both the individual and social body in China:

> Exhaustion from sleeplessness, and the paralyzing fatigability and weakness associated with it, recalled shared traumatic events. Months of working frenetically in political campaigns, often at contradictory purposes, convinced sufferers that they and the nation had reached the end of revolution. Vital resources were exhausted. Personal and collective efficacy had been drained. Fatigue and weakness in traditional Chinese medical theory express loss or blockage in the flow of qi ("vital energy"). Devitalization is understood to affect the body-self and the network of connections (guanxi wang), the microcosmic local world and the macrocosmic society.
>
> Pain-headaches, backaches, cramps-also recreated the effects of the Cultural Revolution's turmoil on human lives. This lived metaphor was easily extended from personal anatomy to the social body, from the anatomical network of muscles, bones, nerves, and blood to the social network of interpersonal experience in conflicted work and family settings. We mean that pain and inner

[121] Kiffmeyer, *Reformers to Radicals,* 172.

> resentment, outer suffering and social resentment, merged. Each complaint, elaborated in the context of a story that integrated social and bodily suffering, was a moral commentary, first about a delegitimated local world, ultimately about the delegitimation of Chinese society.[122]

When accounting for the phase transitions involved in Appalachia's War on Poverty, the opportunities for changing the direction of these transitions resides in how practitioners translate the space of possibilities. With entanglements of the symbolic and the connection as my proposed strategy, the dialectical tension between symbolic and connective must reconcile the fact that a symbolic solutions is relatively easy to execute (e.g., a march or rally) whereas it is much more difficult to initiate a connective solution that consist of patiently building trust.[123]

In recognition of Bergson's insight that "humanity only sets itself problems that it is capable of solving," Deleuze develops a strategic methodology that may provide some precautionary strategies for practitioners in both Appalachia and beyond, writing:

> Conscious of the need to take the test of true and false beyond solutions into problems themselves, they are content to define the truth or falsity of a problem by the possibility or impossibility of its being solved. Bergson's great virtue, on the other hand, is to have attempted an intrinsic determination of the false in the expression "false problem."[124]

The false problem of Appalachia is the continued cultural logic of the hillbilly, in the case, the culture of poverty.[125] What should be considered as a stable attractor in both the minds of the reader and the past-present-future contexts of Appalachia, Goldstein noted the shortcomings of the culture of poverty. By now, it should be evident that this external node is a singularity that influences internal dispositions by acting as an attractor for the trajectories of Appalachian development over time. When defining a process of morphogenetically

[122] Kleinman and Kleinman, "How Bodies Remember," 715-716.
[123] Deleuze, *Bergsonism*, 16.
[124] Ibid., 17.
[125] See footnote 279.

mapping material realities, DeLanda provides some guidance: "What this means is that a large number of different trajectories, starting their evolution at very different places in a manifold, may end up in exactly the same final state (the attractor), as long as all them begin somewhere within the 'sphere of influence' of the attractor (*the basin of attraction*)."[126] Examining the portrayal of striking miners in a 1962 *Time* article, Goldstein alludes to the stable trajectories that almost certainly defines Appalachia's basin of attraction. She writes:

> *Time* [magazine] did its best to frame the brutal conflict not as class war but as a struggle of "the desperate… against a permanent fact of life" – another unfortunate example of the mountaineers' backwardness. Rather than portraying the unemployed miners as a part of an indefatigable rank-in-file movement for labor rights or a people under economic siege, journalists depicted them as "yesterday's people," stubbornly mired in a culture of poverty.[127]

We can also think of Appalachia's "basin of attraction" within the parameters of new materialism, whereby a culture of poverty can be understood as a "single system of relations which imprisons the totality of the real in a mesh prepared for it."[128] By linking the culture of poverty or the "basin of attraction" to the economic strategies of the ARC, many Appalachian scholars have analyzed how this "single system of relations" influenced funding policies within both the government and foundation sector. One stark example of this was a Ford Foundation report that provided scientific analyses on the region's economy and social institutions. For Eller, this report placed "most of the blame for regional backwardness on the provincial culture of the mountain people."[129] Identifying the problem within individual traits, the ARC failed to address some of the most perplexing barriers to economic development in the region, most notably "absentee ownership of resources, a tax structure rigged for the benefit of the out of state investors rather than for the citizens of the state, poor

[126] DeLanda, *Intensive Science & Virtual Philosophy*, 14.
[127] Goldstein, *Poverty in Common*, 162.
[128] Bergson, *An Introduction to Metaphysics*, 166.
[129] Eller, *Uneven Ground*, 65.

rural schools, strip mining and the need for reclamation and reforestation, and inadequate hospital care for indigent people."[130]

In line with past and present approaches to addressing poverty through depopulation, Kiffmeyer argues that "the prevailing theory held that development funds could have impact if invested in urban centers where jobs would grow, offering opportunities to those living in poor rural areas."[131] Kiffmeyer concludes: "Even though the state's unemployment rate fell, the persistent poverty of some areas led some federal officials to conclude that the best solution for some rural people was to encourage movement to the urban area."[132] The Ford Foundation's depopulation strategy, entitled the "Great Cities-Gray Areas" program, provides a palpable example of the overcoding processes during the War on Poverty. Kiffmeyer writes that this program was designed to help "Appalachian out-migrants, mostly displaced by the mechanization of the coal mines, who had relocated to Northern cities in search for work." He continues:

> Essentially, the Ford Foundation believed that these transplanted mountaineers, the "fightin', feudin', Southern hillbillies and their shootin' cousins," as the Chicago Sunday Tribune called them, were the cause of many of the urban problems in the North. In short, it hoped that the CSM could inform mayors, city councils, and government service agents how to deal with their new, "culturally unique" residents.[133]

Given the complexity of navigating through the ARC's strategies during the 1960s, I intend to further explore this context in future research. As such, I will end by analyzing the term community action. In addition to my analysis, the goal was to examine some of the shortcomings of the War on Poverty. The strategies both related to a working definition of community action as well as the processes involved in the planning and implementation of

[130] Ibid.
[131] Kiffmeyer, *Reformers to Radicals,* 166-167.
[132] Ibid., 168-169.
[133] Ibid., 30.

the this program leads us to ask where these processes symbolic-connective or reactive-active entanglements? With this in mind, Kiffmeyer states:

> [T]he trouble with evaluating the accomplishments of the War on Poverty and its participants lies within the war itself. How can community development and community action be evaluated when those notions lacked clear definitions and were understood differently by the various people involved? To local officials and program planners, they essentially meant solidifying their control over any new federally sponsored programs, while, to the local people, they involved "political organizing and genuinely local autonomy." In the end, to determine whether the War on Poverty met the criteria for failure – or success – the perspective from which the criteria were drawn must be identified.[134]

Moreover, Eller notes that there was little agreement about the actual meaning of the term community action during the development of War on Poverty programs.[135] This was due to both the temporal as well as the spatial component of this strategy. Like many other government programs, the War on Poverty placed a daunting task on planners because it was rushed. Consequently, the designers of the War on Poverty formulated a plan for Appalachia within the confines of the only approach they knew, urban development. This context left the complexity of Appalachia essentially unexplored. Coming to a similar conclusion, Eller writes:

> [I]n the rush to formulate a plan, the idea came to represent different things to politicians, bureaucrats, and intellectuals. Almost everyone believed that the antipoverty campaign should be waged at the local level by local people rather than administered from Washington, but there was little understanding of how the strategy would work in practice.[136]

Divided over the meanings of community action and local control, practitioners of the War on Poverty were also left to their own devices. Informed by many conflictive tactics that cross-pollinated the activist landscape of War on Poverty strategies, the poverty warriors' space of possibilities was defined by dispositions of youthful impatience and a national

[134] Ibid., 14.
[135] Eller, *Uneven Ground*, 132.
[136] Ibid., 95.

outcry for revolution. Analyzing the poverty warriors and federal government's top-down approach, Kiffmeyer writes:

> [Reformers] initiated a process of change that pitted desperate forces and incompatible ideas against each other in a volatile environment and in unpredictable times. Initially an important symbol of the paradox of poverty in America, Appalachia became a critical testing ground for academic theories and popular ideas about government intervention on behalf of the poor.[137]

While considering the disconnected strategies of the War on Poverty, Bergson's "clear line of demarcation between intuition and analysis" provides a guide for practitioners in nurturing localized approaches to social change.[138] An intuitive method (connective-community-action) operates within the non-linear dynamic realities of Appalachia itself signified by actively engaging communities through acts of patience, perseverance, and, most importantly, concerted efforts to create a collaborative environment. On the other hand, an analysis approach (symbolic community action) operates within a linear static reality informed by the reactive disposition of the post-materialist. This approach is impatient, self-centered, and holds a complete disdain for moving the process of consensus through traditional pathways of expression. In the end, Bergson's inversion of moving from "reality to concepts and not from concepts to reality" cannot be overemphasized.[139] From this position, the practitioner can begin to glimpse into the very nature of not only Appalachia but reality itself. Bergson states:

> One recognizes the real, the actual, the concrete, by the fact that it is variability itself. One recognizes the element by the fact that it is invariable. And it is invariable by definition, being a schema, a simplified reconstruction, often a mere symbol, in any case, a view taken of the reality that flows. But the mistake is to believe that with these schemas one could recompose the real. It cannot be too

[137] Kiffmeyer, *Reformers to Radicals,* 103.
[138] Bergson, *An Introduction to Metaphysics*, 152.
[139] Ibid., 155.

> often repeated: from intuition one can pass on to analysis, but not from analysis to intuition.[140]

When considering the variety of meanings associated with the term "community action," it is my hope to provide a solid base for navigating both the symbolic and connective manifestations of this concept. As such, practitioners may begin to develop a diverse pool of proactive strategies for facilitating the emergence of societal change in central Appalachia and beyond. In the end, the practitioner may one day be able to fully exploring the possibilities of DeLanda's middle region.

[140] Ibid., 152.

**4**

## A Market Based Approach to Applied Sustainability

*"History… if it is anything at all, is at one with the dialectic, and can only be the problem of which it claims to be the solution."*

***- William James -***

Economist Adam Smith identified the division of labor and specialization as the two key ways of achieving larger financial returns on production. Through specialization, employees would be able to both focus on specific tasks and improve the skills necessary to perform those tasks. Tasks performed better and faster should lead to increased production levels. While Smith describes a model for increased efficiency through economies of scale, his model fails to account for the efficiencies present in distributed open innovation networks and their ability to stimulate technological innovation, specifically, the efficiencies associated with economies of agglomeration.

This chapter details the economic benefits of technological innovation. It highlights the benefits of innovation in relation to entrepreneurship and the strength of institutions (i.e., an endogenous growth model) as opposed to the reverse, understanding market flows on the level of price (i.e., a neo-classical growth model). The neo-classical growth model maintains that the long-run rate of growth is determined exogenously by either the savings rate or the rate of technical change, both of which remain ubiquitous to the model.[1] Due to the oblique

[1] Both exogenous and endogenous models are not always mutually exclusive. For further discussion, see Ryuzo Sato, "The Harrod-Domar Model vs. the Neo-Classical Growth Model," *The Economic Journal* 74, no. 294

nature of these market forces, savings rate and technological change are typically assumed to be subject to diminishing returns due to the decoupling of long-term rates of growth from rates of investment. In short, long-run growth of personal income necessitates that exogenous improvements in technology generate growth.[2] Endogenous growth theory tries to overcome this shortcoming by locating differentiation, or, rates of change, within microeconomic forces that, in turn, generate macroeconomic trends. Limitations of the neo-classical model include its failure to take into account entrepreneurship (which may be a catalyst behind economic growth) and the strength of institutions (which facilitate economic growth). In addition, it does not explain how or why technological change occurs. These limitations have led to the rise of the endogenous growth theory, whereby technological progress and/or knowledge may be accumulated internally. Unlike previous classical models of economic development, the endogenous growth model does not see technology as a given, but as a product of economic activity. This theory also holds that growth is due to the increasing returns characterized by knowledge and technology – as opposed to the diminishing returns characterized by physical capital.[3]

I wish to expand upon the endogenous growth model by situating its knowledge/technology nexus within a model of applied sustainability. In this framework, knowledge would be viewed much like technology; technological development exists in the endogenous growth model as a primary driver of economic growth and emerges from within a network of related industry actors. Therefore, I argue that knowledge development, or

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(1964): 380-387; and Steven N. Durlauf, Andros Kourtellos, and Artur Minkin, "The Local Solow Growth Model," *European Economic Review* 45, no. 4 (2001): 928-940.

[2] Nicholas Crafts, "Exogenous or Endogenous Growth? The Industrial Revolution Reconsidered," *Journal of Economic History* 55 (1995): 745-772.

[3] Joseph Cortright, "New Growth Theory, Technology, and Learning: A Practitioner's Guide," *Reviews of Economic Development Literature and Practice* 4, no. 6 (2001): 1-35.

creativity, is a primary driver of economic growth, and, similar to technological advances, is made possible by a supporting network of previously specified tacit and codified knowledges.

This nexus assumes that knowledge and technology can be infinitely shared and reused. In other words, we can accumulate knowledge and technology without limit and without subjecting either of them to the law of diminishing returns. Economist Joseph Cortright explains, "One special aspect of knowledge makes it critical to growth. Knowledge is subject to increasing returns because it is a non-rival good."[4] This may not be the case if one accounts for the material transactions or informal processes that are involved in producing a particular type of knowledge and/or technology. For example, the materials needed to transport a research scientist to her/his job on a daily basis would be considered one of many possible transaction costs. Applied sustainability, however, can begin to supplement the limited nature of the knowledge/technology nexus – when situated solely within the endogenous growth model – by contextualizing its production within a regenerative development model. This model accounts for the inherent limitations found in any material system through the use of life cycle assessments (LCA) and innovative financing models (e.g., shared value creation). By adopting an open innovation model, regional R&D firms can reduce various transaction costs that are often associated with the traditional closed innovation model.

Along with an emphasis on applied sustainability, the theory of open innovation will help practitioners negotiate development within central Appalachia by synthesizing a resource-based economy with a knowledge-based economy. Such an approach underscores a crucial point that the economic processes that create and diffuse new knowledge are critical

[4] Ibid., 4.

to shaping the growth of urban and rural communities as well as individual firms. In this light, practitioners should consider the importance that institutions (i.e., institutional economics) play as providers of a framework for growth. In "Clio and the Economics of QWERTY," economic historian Paul David describes ways to conceptualize institutions as providers of such a framework by viewing them as actors who act to minimize unwarranted technological lock-in or path dependence. This, in turn, ensures the creation and maintenance of a generative network.[5]

Technological lock-ins typically occur because of technical interrelatedness, economies of scale, and the quasi-irreversibility of innovation and development.[6] As such, lock-ins take place in both merited and unmerited situations. In the case of inefficient technological lock-ins and arrangements, it is not necessary for market forces to automatically correct these inefficient outcomes. In addition, while lock-ins typically adhere to one particular physical piece of technology, this same adherence to routines can be seen on a larger economic level. Some economic theorists see business firms, managers, and other economic actors as creatures of routine that follow certain successful beliefs and behaviors and only change when their routines fail to succeed. Therefore, an alternative method of correcting inefficiencies due to lock-ins and industrial routine is needed. If institutions were utilized to decrease the occurrence of these inefficiencies, there would be room for additional

[5] Actor-Network Theory (ANT) provides a useful model for creating a generative network by maintaining a distinction between intermediaries and mediators. Intermediaries are entities which make no difference (to some interesting state of affairs which we are studying) and so can be ignored. They transport the force of some other entity more or less without transformation and so are fairly uninteresting. Mediators are entities which multiply difference and so should be the object of study. Their outputs cannot be predicted by their inputs. From an ANT point of view sociology has tended to treat too much of the world as intermediaries.

[6] Paul A. David, "Clio and the Economics of QWERTY," *The American Economic Review* 75, no. 2 (1985): 332-337.

innovation and sustainable economic development. The open innovation model is ultimately essential for achieving "sustainable innovation."[7]

Economists are generally understood as experts in conceptualizing flows of capital and quantifying these flows in terms of price. My research poses an alternative and equally valid model, one that considers price as well as the positive feedbacks of open innovation in relation to a particular technology's ability to remain competitive in the market. Within this model, businesses would be competitive according to their ability to remain flexible and creative in order to meet market demands. Businesses would also remain competitive on the level of price, and they would continue to encourage sustainable economic growth.

Accordingly, as an applied sustainability component of the development models presented in this research are being developed through the projects of both Sustainable Williamson and the Central Appalachian Sustainable Economies (CASE) network, community development models rooted in applied sustainability are actively promoting the rural area. These regions are typically rich in natural, cultural, and human assets that can often foster increased local investment. Such strategies try to engage local residents and employees in economic development, which would help to increase entrepreneurship, improve education, and provide rural communities with a unique means of capitalizing on relevant technological innovations. One such area of investment is in advanced Distributed Energy Resources (DER) technologies, amongst other innovative approaches to applied sustainability that enable local residents to take part in newly emerging markets. DER technologies and applied sustainability can also bolster many related industrial sectors, thereby providing an even larger, macroeconomic platform of broad-based technological

[7] Sustainable Williamson's Smart Office is an example of intentionally creating an architectural/technological model which utilizes open innovation.

innovation that leads to economic growth. A recent publication sponsored by the Ford Foundation, for instance, states:

> Green products, in particular, are proving to be highly convergent, as they become the defining characteristic of firms, for example in architecture, processed foods, building materials, construction, design, and consumer electronics companies. Food processing converges with energy in areas such as biomass, bio-fuels, and ethanol; pulp and paper converge with biochemistry, bio-refining, and biomass power generation; waste recycling converges with energy, oil, cement, plasterboard, biotechnology, and aquaculture – all in industrial symbiosis clusters.[8]

This chapter will chronicle how the endogenous development model, which is presently being instituted by both Sustainable Williamson and CASE, promises to revitalize central Appalachian communities through a market-based approach. It is divided into the following sections:

> "Historical Roots of Innovation" focuses on the history of innovation and applies the theory of technological evolution to various historical periods when knowledge emerged within a complex network of social interactions.
>
> "Conceptual Market Analysis of Scale vs. Agglomeration" is a market analysis of both economies of scale and agglomeration and their prospective relationships to either discouraging or encouraging technological innovation.
>
> "Sources of Innovation" attempts to locate sources of open innovation by analyzing network affects. This section ends with a conceptual framework of distributed open innovation networks, situating localized integration within a modular design and an agglomerated manufacturing setting simultaneously.
>
> "Practical Applications in Central Appalachia" proposes an emergent endogenous growth model (Regenerative Network) to enliven economic diversity within the central Appalachian region. It also presents the proposed CASE network initiative that is currently attempting to contextualize the previous sections into a real world model, which I refer to this as a "Smart Cluster."

**Historical Roots of Innovation**

Typically, economies of scale were carried upward and onward on the shoulders of small firms and "the enormous creative powers of the market, of the lower story of exchange.

[8] Stuart Rosenfeld, *Generating Local Wealth, Opportunity, and Sustainability through Rural Clusters* (North Carolina: Regional Technology Strategies, Incorporated, 2009), 1-53.

This lowest level, not being paralyzed by the size of its plant or organization," writes Fernand Braudel, a French historian and strong proponent of the Annales School's *longue durée* (history of long-term trends), "is the one readiest to adapt; it is the seed bed of inspiration, improvisation and even innovation, although its most brilliant discoveries sooner or later fall into the hands of the holders of capital. It was not the capitalists who brought about the first cotton revolution; all the new ideas came from enterprising small businesses." Braudel continues: "Are things so very different today? One of the leading representatives of French capital said to me the other day: 'It is never the inventors who make a fortune'; they have to hand it over to someone else."[9]

The history of innovation can be seen in a similar light. Whether technological or scientific in nature, clusters of small institutions often produce most of the creative phenomena. Such clusters are producers of a certain good that reduces the barriers of communication not found in larger institutions. The history of innovation generally privileges the inventive "heroes" without accounting for the collective nature of why and how their particular innovation emerged. As such, this section will provide a broader historical perspective on how and why innovation emerges.

This exploration of the past provides a framework for understanding present developments in open innovation and its importance for economic growth. The broad analysis of technological innovation presented below is informed by George Basalla's *The Evolution of Technology* and both Braudel's and Joel Mokyr's contributions to economic history. Mokyer provides further guidance for understanding how economic transitions function by and through evolutionary forces and selection processes bounded by contextual

[9] Braudel, *The Structures of Everyday Life*, 631

lock-ins or path dependence.[10] Additionally, Braudel considers the long-term tendencies of these evolutionary forces by bringing the temporal component to the forefront. With these virtual currents at play in this section, Basalla bestows invaluable insight concerning the actual artifacts of technological change.

Basalla credits Samuel Butler as one of the first historians to analyze the emergence of technology as an evolutionary process in which machines "developed in a fashion remarkably similar to the evolution of living beings."[11] In order to support his thesis of novelty – where the creative phenomenon is productive as opposed to imitative[12] – Basalla utilizes Herbert Spencer's assertion that the entire history of innovation is fundamentally connected to a continuum from simple to complex, that is, a movement from the homogeneous to the heterogeneous.[13] From Butler's evolutionary analogy and Spencer's continuum, Basalla constructs an expansion of the revolutionary model, one predicated upon discontinuous historical breaks or paradigm shifts, for understanding technological change. Basalla then presents an alternative model of cumulative change, arguing that major inventions result from the cumulative synthesis of a series of minor ones. From Basalla's evolutionary model of technological change, this research emphasizes the continuous breaking down of technology into constituent parts and the subsequent reassembling of those

[10] Joel Mokyr, *The Lever of Riches: Technological Creativity and Economic Progress* (Oxford: Oxford University Press, 1990); Joel Mokyr, *The Gifts of Athena: Historical Origins of the Knowledge Economy* (Princeton: Princeton University Press, 2002); and Joel Mokyr, "Long-Term Economic Growth and the History of Technology," *Handbook of Economic Growth* 1 (2005): 1113-1180.
[11] George Basalla, *The Evolution of Technology* (Boston: Cambridge University Press, 1988), 52.
[12] See ANT's distinction between intermediaries and mediators.
[13] ANT emphasizes the use of heterogeneous networks which often indicates the use of multiple types of access nodes in a given network.

parts in a new and creative way. In most cases, novel combinations can provide an answer to a particular problem that persons or institutions are trying to resolve.[14]

According to Braudel, Eli Whitney's cotton gin did not spontaneously emerge within a technological vacuum. Instead, it emerged from a complex network of social interactions, novel objects, and specific environmental conditions where preexisting technologies, such as the Indian gin or *charka,* provided a method to approaching Whitney's problem. The *charka* provided a means to clean long staple cotton, but failed to provide a solution for cleaning short staple cotton. Within this complex network of actors and networks, Whitney possessed several approaches to cleaning long staple cotton and proceeded to adapt those methods to the environmental conditions presented by short staple cotton. In this model, the inventors have access to a complex body of novel artifacts that were then reassembled to resolve a particular problem/limitation presented by the surrounding environment.

Basalla further elucidates this complex network by specifies *continuity* as the mechanism that produces diversity. From this large body of novel objects, Basalla explains, the inventor(s), through a process of selection, redistributes these objects and recombines them in hopes of meeting "fundamental human needs."[15] For example, in the case of English philosopher Francis Bacon's production of scientific thought during the sixteenth century, the continuity was found outside the universities in the "mechanical arts," specifically where diversity flourished and had in "them some breath of life" that was "continually growing."[16]

A contemporary of Bacon, French philosopher Rene Descartes also attributes crafts knowledge as a fertile ground of diversity from which selection occurs. He suggests a survey

[14] Moreover, MIT's One Lap Top Per Child defies a new era in understanding technological innovation by displaying what I like to call a failed-solution. It failed in its original intentions but provided a novel example of the importance material barriers have in stimulating innovation over time (e.g., trans-reflexive screen).
[15] Basalla, *The Evolution of Technology*, 25.
[16] Francis Bacon, *The New Organon* (Adelaide: University of Adelaide Library, 2004), 78.

of "those arts of less importance; those which are easiest and simplest, and those above all in which order most prevails. Such are the arts of the craftsmen who weave webs and tapestry, or of women who embroider or use in the same work threads with infinite modification of texture."[17] This complex network of innovation can be further expanded as developing a relationship with the environmental conditions that the inventor or, perhaps more appropriately, a group of inventor experiences in everyday life.

According to historian Edgar Zilsel, experimentalism did not arise from Galileo's defiance of Aristotelian science or Francis Bacon's championing of inductive logic. Zilsel states that "the experimental method did not and could not have descended from the metaphysical ideas of the natural philosophers."[18] Zilsel maintains that modern science arose in early modern Europe through the interaction of artisans and elite intellectuals within their environments. Moreover, this network of communication and environmental conditions provided the raw material for scientific experimentation where the "artisans, the mariners, shipbuilders, carpenters, foundry men, and miners were the real pioneers of empirical observation, experimentation, and casual research."[19]

For example, Philippus von Hohenheim, also known as Paracelsus, is often considered the "Martin Luther of medicinal practices" and a rival of Francis Bacon's model of utilizing craft knowledge. Paracelsus expands upon this complex network of artisan knowledge. His model can be considered an open-medicinal approach where knowledge is widely distributed and largely focused on developing a harmonic relationship between the microcosm of the body to the macrocosm of nature. Emphasizing an unmediated experience with nature, he develops certain body-nature harmonies through "crafting" or manipulating

[17] René Descartes, *Descartes: Philosophical Letters* (Oxford: Clarendon Press, 1970), 64.
[18] Edgar Zilsel, "The Genesis of the Concept of Physical Law," *The Philosophical Review* 51, no. 3 (1942), 14.
[19] Ibid., 15

minerals and chemical processes. Bacon responds to Paracelsus's model by drawing comparisons between his adoration of the artisanal understandings of the material world to that of the "radical reformers" who "attacked established authority in the name of social justice and equality." Bacon continues by arguing that these types of attacks inspired "German peasants to rise up against rural priests and landlords in the great Peasants' Revolt of 1525."[20]

Reorganizations of complexity have given rise to what is quite possibly one of the most important inventions of the modern era: the digital computer. A by-product of the Cold War, the digital computer was originally designed and utilized solely by the U.S. military and was later adopted by large, centralized firms to perform highly specialized tasks. In the 1970s, these sluggish, unwieldy, and inefficient machines increasingly interacted with the complex network of self-taught amateur electronics hobbyists that eventually created the Altair 8800. This device, along with its interactions with the complex network of newly emerging electronic hobbyists, uncovered the profound inefficiencies found in the computers produced by IBM, Wang, UNIVAC, and Control Data Corporation. Among these hobbyists were Bill Gates, Paul Allen, and Monte Davidoff, all of whom who began developing the coded programs that the Altair needed to function. Shortly thereafter, they invented the first personal computer, sparking the technological explosion of the 1980s. Moreover, Steve Lohr, a historian of computing, claims, "Programmers are the artisans, craftsmen, bricklayers, and architects of the Information Age."[21] Complex networks of programmers later gave rise to an alternative to Bill Gates' brainchild: Microsoft. Among these agents of complexity were Ted

[20] Margaret C Jacob, *The Cultural Meaning of the Scientific Revolution* (Philadelphia: Temple University Press, 1988), 27.
[21] Steve Lohr, *Go To: The Story of the Math Majors, Bridge Players, Engineers, Chess Wizards, Maverick Scientists, and Iconoclasts--The Programmers Who Created the Software Revolution* (New York: Basic Books, 2008), 7.

Nelson, Richard Stallman, and Bob Albrecht, all of whom believe that the wellspring of technological innovation is and has always been a commitment to an open source infrastructure to ensure that ideas propagate quickly to new products. W. Brian Arthur, a contemporary evolutionary economist, views systems of "order, closedness, and equilibrium as ways of organizing" technologies and claims that economies "are giving way to open-endedness, indeterminancy, and the emergence of perpetual novelty."[22]

In regards to the necessity of an open source approach to economic development, Cortright argues, "The non-rival quality of ideas is the attribute that drives economic growth." He continues: "We can all share and reuse ideas at zero, or nearly zero cost. As we accumulate more and more ideas, knowledge about how the world works, and how to extract greater use out of the finite set of resources with which the world is endowed, we enable the economy to develop further."[23] Consequently, knowledge acts as a catalyst for economic growth via technological innovation. Increased technological innovation stimulates economic growth because knowledge is allowed to freely traverse between individuals and institutions. However, Cortright also clarifies that under the current neo-classical model of economic development, "patents, trademarks, and copyright law allow individuals to have certain rights to exclude others from the benefits of the ideas they have created. Keeping ideas secret – trade secrets, confidential business information – also allows their owner to exclude others from their benefits."[24] In order to promote the most widespread exchange of knowledge, practitioners need to reevaluate the methods for intellectual property right ownership and development. Such reevaluations can come in the form of creating industrial relationships

[22] W. Brian Arthur, *The Nature of Technology: What It Is and How It Evolves* (New York: Free Press, 2009), 211.
[23] Cortright, "New Growth Theory, Technology, and Learing," 6.
[24] Ibid., 5.

based on free exchange of open source technologies. Other methods for dealing with the problem of hard-line intellectual property ownership models include reformatting the current model of inclusion and ownership of patents.

Not only does an open source approach foster innovation within various processes of program development, it can also prompt technological change through modular design. Perhaps more importantly, by situating these design approaches within a network of manufacturing clusters, small entrepreneurs can stimulate innovation as well as redistribute the overall R&D processes, thereby increasing the occurrence of innovation spillovers. Using the same focal point of the open source design above, the Altair 8800 incorporated a number of open "slots" that allowed for additional memory and other devices to be added if the consumer so desired. This "open" design was later adopted by the Apple II and then radically upgraded by IBM. In a bold move, IBM adopted the role of assembler and began to delegate all of the PC component acquisition to individual competing markets (e.g., processor, hard drive, key board, and mouse). This caused a positive feedback on the level of technological change and the institutional make-up of the computer industry.

Perhaps the best motive for supporting modular design is found in its effects on the institutional structure of a particular industry. A 2002 study performed by two Harvard scholars discovered an institutional tendency towards heterogeneity within the computer industry. It also correlates this to the industry's decision to adopt modularization as an industry standard. Figure 1 (below) elucidates this institutional tendency of moving from a highly homogenous industry, with IBM acting as the dominant firm in 1969 (where 71 percent of the market value of the computer industry was tied up in IBM stock) to a

heterogeneous industry where, by 1996, no firm accounted for more than 15 percent of the total value of the industry.[25]

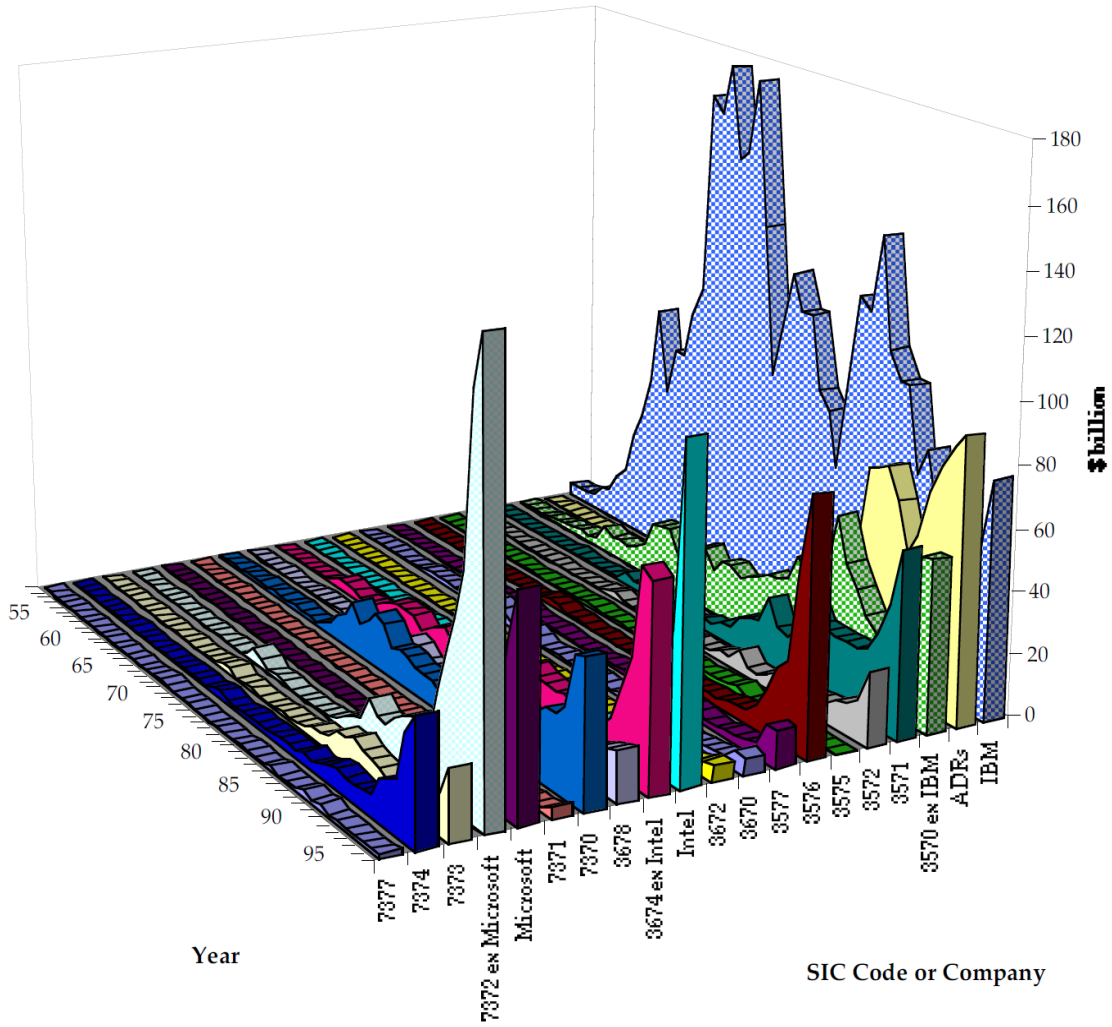


**Figure 1 Market Value of the Computer Industry by Sector, 1950-1996 in Constant US Dollars (Baldwin, "The Option Value of Modularity in Design," 4)**

By combining these histories of continuity, practitioners can begin to see the importance of agglomeration and modular design in prompting technological change and the expansion of the DER industry within central Appalachia. On the development of the DER industry and its relation to applied sustainability's emphasis upon inter-generational ethics,

[25] Carliss Y. Baldwin and K. Clark, "The Option Value of Modularity in Design," *Design Rules, Volume 1: The Power of Modularity, Harvard NOM Research Paper* (2002): 12-13.

Cortright's insights are invaluable. He writes: "New growth theory implies … that we continue to increase living standards for centuries to come by steadily improving our knowledge of how to produce more and better goods and services with ever-smaller amounts of physical resources."[26] The following section will compare various attributes of two growth models in hopes of steering federal policies and funding towards the direction of demonstrative economic benefits in central Appalachia. Hopefully, the region can achieve the benefits without falling into the pitfalls of archaic growth models that have done little more than subsidize noncompetitive environments.

**Conceptual Market Analysis of Scale vs. Agglomeration**

This section focuses on the particular economic attributes of economies of scale and agglomeration. I will provide a snapshot of the two developmental approaches by juxtaposing both models in relation to technological innovation. By comparing the economies of scale model (representing the neo-classical growth model) to the economies of agglomeration model (representing an endogenous, or new growth theory), we can better understand how each model stimulates or discourages innovation.

The model of economies of scale emphasizes stimulating growth through increasing productivity, which is essentially a homogenous model. Alternatively, the endogenous growth model represents a heterogeneous model in which policy measures can have an impact on the long-run growth rate of an economy. Federal and state subsidies for R&D or education, for instance, may increase the growth rate by incentivizing innovation. As such, this section will address why specific development theories differ in their ability to generate, imitate, or apply new variety. It will also identify the economic and institutional structures

[26] Cortwright, "New Growth Theory, Technology, and Learning," 6.

through which the central Appalachian region can use to increase its competitiveness in national and international markets.

Based on neo-classical economic theories, scholars assume that innovation emerges from an economy of scale (ES); as such, this will be the first term that is defined. An ES occurs when an increased number of units – a good or a service – can be produced on a larger scale, yet with, on average, lessening input costs. Alternatively, as the production of a particular firm increases, the overall costs of per-unit production decreases. This occurs on all levels of the firm by internalizing transaction costs as well as the means of producing a particular good or service. For DeLanda, such processes signify a tipping point where the once heterogeneous processes of producing goods comes under the control of a homogeneous, routinizing firm that constrains rather than stimulating technological innovation.[27] According to the ES model, innovation only emerges in a centralized R&D atmosphere realized within economies of scale – mainly taking the form of ownership of codified knowledge in the form of patents. However, because many viable alternative models for understanding innovation and technological progress exist, it is inherently limiting to only view innovation through the scope of an ES. Such alternative models for new forms of knowledge ownership range from distributed patent structures to a complete open sourcing of all innovative breakthroughs. Moreover, much of the competition for market shares takes place during the convergence toward oligopoly. Once convergence is realized, shares stabilize and technological innovation is impeded.[28]

[27] DeLanda, *A New Philosophy of Society*, 44-45.
[28] Steven A. Lippman, and Richard P. Rumelt, "Uncertain Imitability: An Analysis of Interfirm Differences in Efficiency under Competition," *The Bell Journal of Economics* (1982): 418-438; Richard Rex Nelson, *An Evolutionary Theory of Economic Change* (Cambridge: Harvard University Press, 1982); and Steven Klepper and Elizabeth Graddy, "The Evolution of New Industries and the Determinants of Market Structure," *The RAND Journal of Economics* (1990): 27-44.

In economic terms, an ES refers to a situation in which the average cost of producing an additional unit of output (marginal cost) of a product decreases as the volume of output (scale of production) increases, as shown in Figure 2. An ES can also be defined as a situation when an equal percentage increase in all inputs results in a greater percentage increase in output. This particular model assumes that innovation comes from centralized R&D laboratories. In other words, marginal costs are captured in the R&D stages by means of increasing volume stemming from increases in demand for a particular technology. ES assumes the centralized R&D model as the norm, whereas an economy of agglomeration would reduce the marginal cost captured in the R&D processes of technological innovation.

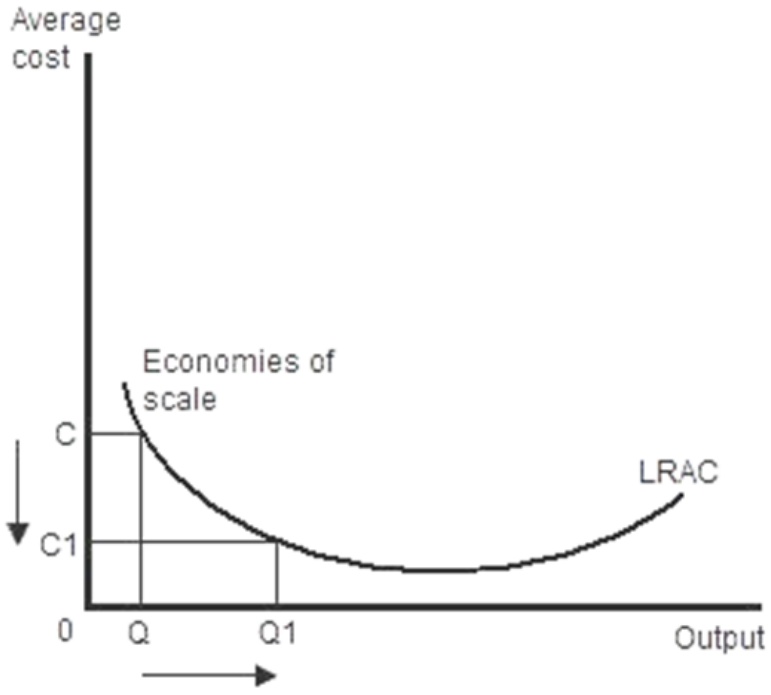


**Figure 2 The increase in output from Q to $Q_1$ causes a decrease in the average cost of each unit from C to $C_1$. (Tom Spencer, "Economies of Scale," *The Tom Spencer Blog*, March 1, 2009)**

In general terms, the marginal cost at each level of production includes any additional costs required to produce the next unit, here assumed to be the transaction cost of R&D. For example, if producing additional components for a particular DER technology requires extra investment into R&D, the marginal cost of those extra components includes the transaction cost of R&D. Furthermore, the marginal cost invested into inputting R&D does not result in an increase in the innovation of the output, especially when one considers the alternative, an economy of agglomeration.

Geographical economists use the concept of an economy of agglomeration (EA) to describe the benefits that producers obtain when locating close to other producers in a similar industry as shown in Figure 3. This concept relates to economies of scale and network effects. When related companies are clustered together, production costs fall (e.g., firms have multiple competing suppliers, greater specialization, and division of labor as a result) and the greater the market share the firm can sell into by competing on a price level.
In addition, geographic clustering of related industries leads to a dramatic increase in knowledge spillovers, an event largely due to the non-rival nature of knowledge.

Industrial clusters are interdependent firms representing various sectors that usually find themselves in a multi-country, county, or community-defined region. As such, clustering promotes economic growth and development simply because of geographic knowledge spillovers; moreover, additional economic growth through innovation can recognized if open source approaches are incorporated within the geographic cluster. The prevalent tacit knowledge found within an employee is also much different from the codified knowledge that can be exchanged without regard to geographic location. For this reason, geographic clustering remains an important means of encouraging knowledge spillovers even in the face

of the Internet and other sophisticated communication systems. Cortright coyly explains the importance of noting the difference between tacit and codified knowledge, saying, "Acknowledging the economic importance of tacit knowledge requires little more than admitting that it requires more than a good accent and a copy of *LaRousse Gastronomique* to operate a successful French restaurant."[29] Thus, the need for openly exchanged information and tacit knowledge within a framework of geographically localized industrial clusters should lead to technological innovation and economic development.

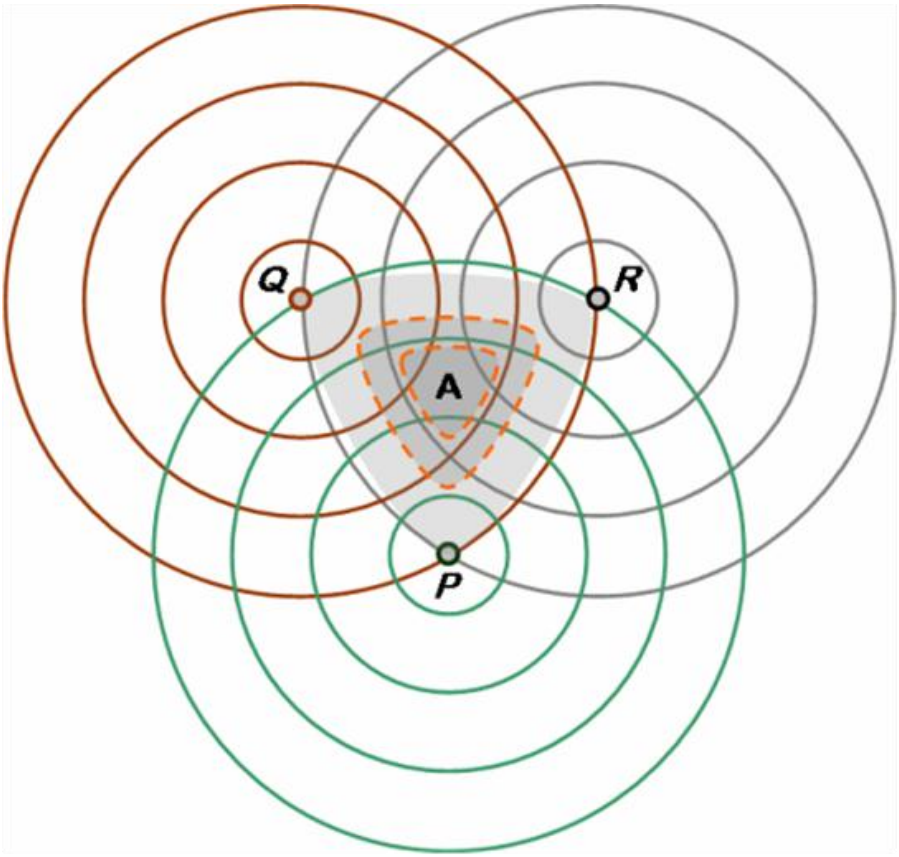


**Figure 3 Three activities (P, Q, and R) having their respective locational constraints can benefit from agglomeration economies if they locate at A. The cheaper functional linkages between the activities will more than compensate for the additional transport costs that may occur. ("Agglomeration Economies," The Geography of Transport Systems, http://people.hofstra.edu/geotrans/eng/ch2en/conc2en/agglomerationeconomies.html, accessed November 24, 2013)**

[29] Cortright, "New Growth Theory, Technology, and Learning," 20.

Localized geographic clustering also has the added advantage of being largely affected by regional variations in environment. Local ecological niches ultimately reinforce the processes of trial and experimentation that drive economic growth.[30] However, geography and market incentives will not be enough to bolster industrial clustering alone. Institutions and initiatives will be needed to "boost" these industrial clusters either through "specialization" or "association"; specialization refers to the investment of public or private sector resources, while association refers to the influence of business relationships and increased interactions between firms. As a Ford Foundation's report, "Generating Local Wealth, Opportunity, and Sustainability through Rural Clusters," explains:

> Specialization affects business and technical assistance, research and development, market assistance and information, and – often most importantly – education and training, shaping it to the particular needs of the companies in the cluster. Association encourages and facilitates business networks and cluster-specific business associations by supporting facilitators and collaborative projects.[31]

Modern industrial clusters found in rural areas are typically borne out of the evolution of a private company, a pre-developed set of skills in the region, or the exploitation of a natural resource. Therefore, these clusters often emerge from an economy of agglomeration rather than from an economy of scale. Quite simply, the top-down implementation approach found within economies of scale provides little room for novel conditions or relational networks to emerge.[32] Moreover, according to the Ford Foundation study, "the evolutionary nature of clusters implies that cluster strategies implemented comprehensively and from the top down are more likely to contribute to adverse lock-in effects than promote growth."[33] As

[30] Peter Maskell and Anders Malmberg, "The Competitiveness of Firms and Regions: 'Ubiquitification' and the Importance of Localized Learning," *European Urban and Regional Studies* 6, no. 1 (1999): 9-25.
[31] Rosenfeld, *Generating Local Wealth*, 14.
[32] CASE's emphasis on a "nested policy strategy" is paramount in this distinction between top-down and emergent approaches.
[33] Rosenfeld, *Generating Local Wealth*, 16.

such, it is important not to force unrelated industry into a particular area, but to utilize the naturally occurring resources, or assets, of an area to their fullest potential. Instead of recommending specific industry types, institutions should aid in the formation of industrial clusters by removing barriers from otherwise impenetrable markets such as those found within the DER sector.

Even when multiple competing producers in the same sector cluster, there may be innovation advantages due to the clustering having attracted more R&D firms, suppliers, and customers than a single producer could alone. A 2005 study entitled "Entrepreneurship, Agglomeration and Technological Change," for instance, found that an EA encouraged technological innovation and the emergence of small entrepreneurs.[34] According to Maryann Feldman and Richard Florida, this type of infrastructure consists of "sources of knowledge: networks of firms that provide expertise and technical knowledge; concentrations of R&D that enhance opportunities for innovation by providing knowledge of new scientific discoveries and applications; and business services with expertise in product positioning and the intricacies of new product commercialization."[35]

When considering these two economic models, the economy of scale model assumes that marginal cost can decrease as the volume of output increases. This occurs for several reasons, one being that larger production volumes allow for fixed costs to be spread over more units of output. Fixed costs are those that remain unchanged regardless of the amount of use, or at least change relatively little as a function of use. These costs must be incurred even if production were to drop to zero. For the DER industry, fixed costs could include

[34] Zoltan J. Acs and Attila Varga, "Entrepreneurship, Agglomeration and Technological Change," *Small Business Economics* 24, no. 3 (2005): 323-334.
[35] Maryann P. Feldman and Richard Florida, "The Geographic Sources of Innovation: Technological Infrastructure and Product Innovation in the United States," *Annals of the Association of American Geographers* 84, no. 2 (1994), 210.

factories, warehouses, and machinery. Alternatively, in regards to the newly emerging technologies found in the DER industry, the costs of machinery are more variable than fixed. The rapid development of newly emerging technology requires a continual change in machinery in order to keep up with specific market and environmental demands for efficient technological processes. When applied to an EA, innovation in technology can be distributed over a large area, thereby enabling the producer to absorb these changes in efficiency more rapidly; the producer still remains reflexive and allows technology to rapidly adapt and meet specific requirements of a particular market. There are current costs associated with any DER technology, and some of them will likely relate directly, at least in part, to output level, such as maintenance. However, these costs tend to be relatively small according to the costs of the main production of DER technologies themselves. In contrast to fixed costs, variable costs change directly as a function of use. For instance, DER technology's use value can be seen in its relationship to optimal output of energy as well as its location within the transmission network, often understood as capacity. Examples of variable costs would be any of the following: feedstock and labor for producing electricity, diesel fuel for hauling biomass feedstock, and skilled labor for creating new DER technologies (e.g., R&D).

Large economies of scale are most likely found in industries with large fixed costs and, consequently, are not entirely reliant upon sustaining a competitive advantage in relation to technological innovation and/or market acceptability. Large fixed costs are prevalent in capital-intensive industries such as large wind farms, coal fired power plants, petroleum refining, and photovoltaic manufacturing. In these industries, very large levels of production are required to bring unit costs down to the lowest possible levels – or so it is assumed. To

attain such levels of output, it is necessary to have massive investments in production facilities on the scale of billions of dollars.

This contemporary model of a high fixed cost industry fails to consider technological innovation as a key component in generating revenue for an industry by creating short-term, unsustainable economic growth through lowering the initial investment commonly associated with economies of scale. Technological innovation ultimately encourages the growth of small businesses and localized entrepreneurship (those which are typically internalized and managed by large firms found in the ES model). It also provides producers with the ability to absorb innovative changes more rapidly by externalizing the means of manufacturing the component parts of a particular DER technology and creating a positive feedback loop which again encourages the growth of small businesses and localized entrepreneurs. Such a loop, in turn, stimulates more specialization and promotes more competition on the level of technological innovation. In his classic work on innovation and capitalism, Joseph Schumpeter persuasively argues that economic growth requires technological innovation – the generator of higher quality products at lower unit costs than had previously been obtainable.[36] If the EA model, which encourages the emergence of small businesses and local entrepreneurship, is promoted within central Appalachia, we can assume that its adoption will position the region as a leader in DER innovation and development.

While considering the distinction between economies of scale and economies of agglomeration, the model of network economics presented in this chapter takes advantage of recent discoveries in nonlinear science, theories of self-organization, emergence theories and, more importantly, evolutionary economics. These recent discoveries in self-organization provide a theoretical segue for conceptualizing the transversal strategies of New Materialism.

[36] Joseph A. Schumpeter, *History of Economic Analysis* (London: Routledge, 2013), 679-680.

Like Basalla's evolutionary theory of technology, evolutionary economics can be used to describe: (1) increased novelty within localized collective learning clusters, (2) selection and adaptation within regions that are confronted with an economic environment of increasing variation, and (3) the spatial formation of newly emerging technologies as an evolutionary process, one in which the spatial connotation of increasing returns may result in a spatial lock-in that sustains the continuity of innovation.[37] In short, these theories help explain the emergence of technological innovation as more than the sum of its parts and as an emergent system.

Technology markets are synergistic wholes because they "emerge" as a result of the unintended consequences of many independent decision-makers interacting with one another. As such, the seemingly small decisions of individual actors are compounded, thus laying the framework for larger innovations to develop. This holds true for all innovations and economic growth. Innovation and technological breakthroughs do not spontaneously occur from within a technological vacuum. More likely than not, evolutionary technological breakthroughs are simply novel combinations of preexisting technologies and exhibit more of an evolutionary quality. For example, the first automobiles represent a technological breakthrough in total, but as a technological system they are simply a novel combination of subsystems: wheels, axles, and motors.

By considering these nonlinear economic theories, one begins to realize that the typical understanding of economies of agglomeration, being systems that depend upon the existence of cities and urban centers, can be utilized in a way that suits the CASE's rural model of development for central Appalachia. For example, partial relocation into a rural setting would not erode the dynamic interplay found in the original urban setting. Instead, it

[37] Basalla, *The Evolution of Technology*, 207-218.

would reinforce and reproduce the dynamic effects present in the original complex network.[38] Partial relocation could also benefit rural areas by allowing them to obtain from nearby urban centers additional sources of capital, research, skilled workers, and specialized supplies. In regards to areas like central Appalachia – which have historically witnessed economic development through the employment of natural resources, land, and low-cost labor – most rural clusters are based on commodities and value-added production from extractive industries. However, this historical clustering works as an advantage because "those rural areas fortunate enough to have exceptional natural amenities may also have developed clusters around tourism or transportation, and the few that are home to research universities may have developed some form of technology cluster."[39] In this case, technology clusters formed around multiple engineering programs at various colleges and universities around central Appalachia will serve as fertile ground for the development of novel technologies in related engineering sectors such as energy. Such industrial and academic crossovers will ultimately encourage further innovative breakthroughs and provide continually evolving workforce training.

In relation to the DER industry, EAs and self-organizing networks' innovative properties emerge spontaneously out of the interactions among a variety of elements: component parts and maintenance employees, integrated energy park (IEP$^{TM}$) stakeholders, technology producers, and utility companies and customers. Even more broadly, the growth of the DER sector directly relates to increasing concerns over global climate change and sustainability. IEP's provide practitioners an "opportunity to create a new market demand

[38] J. G. Lambooy, "Locational Decisions and Regional Structure," *Human Behavior in Geographical Space* (1986): 149-165; Giovanni Dosi, *Technical Change and Industrial Transformation* (New York: St. Martin's Press, 1984).
[39] Rosenfeld, *Generating Local Wealth*, 33.

and branding formula for products that are green."[40] According to Stuart Rosenfeld, "a set of new clusters may arise, based on alternative forms of energy such as biofuels, wind and solar, recycling, or restoration."[41] Perhaps more promising, "the fastest growing opportunities … are in clusters representing renewable energy, energy efficiency, and environmental clean-up opportunities."[42] Clearly, growing market demand for DER technology implementation already exists. By incorporating models of open source development and utilizing the tendency for knowledge spillovers within areas associated with implementation and production of DER technology, innovation and economic growth can be expected to both sustain and display emergent qualities over time.

To better understand the processes that lead to emergent innovative networks, there is a need to create new ways of conceptualizing the economic realities in central Appalachia. Rather than beginning at the top, on the level of scale (and moving down by dissecting an industry into its constituent parts), or from the bottom (at the level of the community stakeholders), reconceptualization requires a hybrid model between economies of scale and economies of agglomeration, which I refer to as a distributed open innovation network. Instead of creating a typical model of the market by using a small set of economic functions that capture the behavior of an ES in relation to R&D output (i.e., technological innovation), a new approach should be considered. This model would create institutional environments that allow a technology's population of component parts and maintenance employees, facility stakeholders and technology sellers, and utility companies and customers to interact. It would also allow technological innovation to emerge spontaneously by maintaining the benefits of

[40] Ibid., 31.
[41] Ibid.
[42] Ibid., 53.

both the top-down and bottom-up models.[43] The bottom-up strategy compensates for the weakness of the top-down strategies typically utilized by development organizations within the coal regions of central Appalachia. The top-down strategy fails to consider the topography of the region that limits the size of a particular industrial or commercial facility. A strong emphasis on the bottom-up approach increases the likelihood of imitation and, thus, could reduce the overall returns of technological innovation. Anne Knott finds that "higher expropriability leads to homogeneity which suppresses share losses and thereby pressure to create new knowledge."[44] This hybrid top-down/bottom-up strategy is essentially an emergent system that attributes causation to both strategies while maintaining the social properties of creativity, i.e., innovation, as irreducible within these causal relations.[45]

The proposed distributed open innovation network will require a continuous influx of knowledge production; in this case, individual and group knowledge stocks. By providing the means for local stakeholder and employee participation within central Appalachia, regional stakeholders can begin to build a vibrant and tangible model of economic development for both the urban and rural settings, thereby bringing central Appalachia to the forefront of DER technological innovation and development.

**Sources of Innovation**

In the dominant linear model of innovation, the creative source is private firms defined as highly centralized R&D laboratories where an agent (person or company) innovates in order to sell a given product. In this case, the accumulation of capital encourages

[43] Wesley M. Cohen and Daniel A. Levinthal, "Innovation and Learning: The Two Faces of R&D," *The Economic Journal* 99, no. 397 (1989): 569-596.
[44] Anne Marie Knott, "Persistent Heterogeneity and Sustainable Innovation," *Strategic Management Journal* 24, no. 8 (2003): 687-705.
[45] Robert Keith Sawyer, *Social Emergence: Societies as Complex Systems* (Cambridge: Cambridge University Press, 2005), 63-99.

innovation; once these institutions emerge, as in the case of private firm innovation, an ES emerges. Economist Douglas North presents an alternative model in *Institutions, Institutional Change and Economic Performance*. In it, North formulates the basic behavioral postulates that depart from the conventional neoclassical economic story of the market by focusing on the importance of formal and informal institutions in generating human behavior. Regarding this research, I am primarily concerned with informal institutions that may potentially promote innovation (e.g., employee interactions with a particular technology). Within this model, large companies not only function to make a profit, but also formalize various processes (R&D) to routinize them and increase profit margins. In other words, technological innovation being produced from centralized R&D spillovers becomes normalized. However, as Cortright discovers, "the traditional solution to dealing with spillovers, granting strong property rights for the fruits of an invention, may also have negative consequences."[46] His research seeks to develop a process for formalizing the informal networks of industry participants that stimulates technological innovation and retains the participant's active role in the production of technological change.

It is also paramount not to limit the production of knowledge to a specific group of firm participants (i.e., a specific, isolated R&D department). Case studies of the automobile industry have shown the importance of worker-led teams for continuous innovation and quality improvement.[47] This active role assures the participation of DER employees in the patent process by securing a financial share in the technology produced. The role also maintains a competitive edge within the specific DER industry via technological innovation. An inclusion into the patent process effectually leads to a larger investment in knowledge by

[46] Cortright, "New Growth Theory, Technology, and Learning," 7.
[47] Ibid., 29.

the particular industry in which the patent is realized. It also addresses the lack of incentives for entrepreneurs to distribute (i.e., invest) in more knowledge creation.

Technological innovation and economic growth are highly present in industrial clusters largely due to knowledge spillovers between the firms in both related and unrelated sectors. There are, however, other factors that must be considered when analyzing the innovative capacity of industrial clusters. According to a Ford Foundation report:

> Which people and businesses gain and which lose in the economy depends to a large extent on connections, relationships, and trust. These factors affect the exchange of knowledge – about innovations, markets, and job opportunities – and they affect collaboration. The real strength of clusters lies in the tacit knowledge that resides within the employees of companies in the cluster and its dispersion across companies and institutions.[48]

In the end, geographic locations ripe for close-knit industrial clusters are those that already have a strong pre-existing cultural identity and sense of community. Both of these conditions are present in central Appalachia. This region represents a unique area for focused industrial clustering within the newly emerging markets of DER technologies through IEP deployment.

Another source of innovation is end-user innovation, whereby an agent (a person or company) innovates for their own personal or in-house use because existing products fail to meet their particular needs. In *Sources of Innovation*, Eric von Hippel identifies end-user innovation as one of the most important aspects for understanding the emergence of innovation. More recent theories of innovation have traversed the simple dualism of the private firm and end-user models, although both are still accounted for. These studies show that innovation does not just happen within the industrial supply-side or as a result of the articulation of user demand, but through a complex set of processes that links many different

[48] Rosenfeld, *Generating Local Wealth*, 24.

players together.[49] This complex network includes not only developers and users, but also a wide variety of intermediary organizations such as consultancies, Standard Development Organizations (SDOs), renewable energy developers, entrepreneurs (e.g., community energy projects) and, in the case of this research, informal industry participants and community stakeholder networks.

Actor Network Theory (ANT) suggests that successful innovation often occurs at the boundaries of organizations and industries where the problems and needs of users are not mutually exclusive. In central Appalachia, DER manufacturers and developers confront problems linked with the inherent potential of technologies in a creative process that challenges both parties. As an alternative to the dominant linear model of innovation, ANT provides a theory of innovation translation. This approach offers an explanation of innovation that does not rely on inherent characteristics of the change agents or society that may take the form of a reified generality or static category. On the contrary, in "Actor-Network Theory in Information Systems Research," Authur Tatnall and Anthony Gilding argue that ANT encourages the practitioner to engage in a process of network formation, one in which all actors seek to "persuade others to become their allies in promoting the acceptance of their own view of the way the problem can best be solved."[50] According to this model, the key to technological innovation is the creation of powerful collaborative partnerships through a distributed open innovation network. In such a system, if an innovation fails to be taken up, this can be considered to reflect the inability of those

[49] Eric Von Hippel, *Democratizing Innovation* (Cambridge: MIT Press, 2009); Henry William Chesbrough, *Open Innovation: The New Imperative for Creating and Profiting from Technology* (Cambridge: Harvard Business Press, 2003); and Don Tapscott and Anthony D. Williams, *Macrowikinomics: New Solutions for a Connected Planet* (New York: Penguin, 2010).
[50] Arthur Tatnall and Anthony Gilding, "Actor-Network Theory in Information Systems Research," (Paper presented at 10th Australasian Conference on Information Systems, 1999): 45.

involved to construct the necessary network of alliances among actors within the network.[51] Gaining acceptance for a particular technological innovation calls for collaborative strategies aimed at the enrollment of others in order to ensure useful technological change and acceptance.

How the technology itself is designed is another source of innovation as well as an essential part of creating an innovation network. In systems engineering, *modular design*, or "modularity in design," subdivides a system into smaller parts (modules) that can be independently created and then later used in different systems to drive multiple functionalities. As Brian Arthur and other scholars have demonstrated, new products are the outcome of a process based on the principle of novelty by combination.[52] Benefits of modularity include: reduction in cost due to less customization, a reduction in learning time and flexibility in design, augmentations that add innovative solutions by merely plugging in a new module, and exclusion of unpractical designs. Examples of modular systems are cars, computers, high-rise buildings, renewable energy technology, and smart grid technologies.[53] Computers also use modularity to overcome changing consumer demands and to make the manufacturing process more adaptive to change. In sum, modular design attempts to combine the advantages of standardization and compatibility (i.e., high volume normally leads to diminished manufacturing costs) with those of customization.

When situating modular design within an urban EA and its partial relocation within a rural setting, I am able to develop a conceptual understanding of the particular development

[51] T. Vidgen McMaster and D. G. Wastell, "Towards an Understanding of Technology in Transition: Two Conflicting Theories," (Paper presented at Information Systems Research Conference in Scandinavia, 1997): 42-46.
[52] Nicholas Georgescu-Roegen, "The Economics of Production," *The American Economic Review* 60, no. 2 (1970): 1-9.
[53] Earlier examples include looms, railroad signaling systems, telephone exchanges, pipe organs, and electric power distribution systems.

model that is being proposed through the CASE network. Regarding DER, the production of components typically found within the ES model is internalized by way of vertical integration. This is usually a repercussion of the firm's approach to reduce various transaction costs associated with externalizing the production of the component parts. For example, there may be four component parts involved in producing a particular DER technology (See Figure 4). More often than not, if the profit margin is large enough, the firm that is producing the particular DER technology will remain static and the emergence of new components will not occur. However, if the design of the DER technology is compatible with other technologies, adopting certain industries standards as well, then the original firm is forced to cooperate in order to sell its particular product on the market. This competitive atmosphere increases a particular technology's ability to adapt to a rapidly changing market – within both the demand and supply side – through component integration, expansion of knowledge stocks, R&D spillovers, and an increase in returns for a specific DER industry. To put it another way, the positive feedbacks of encouraging compatibility through industry standards stimulate technological change and innovation.


**Figure 4 Components of DER Technology**

The production of new DER technologies would then come to resemble Figure 5 only if the larger firm decides that internalizing the production of components 6 and 7 is beneficial.


**Figure 5 Components of Improved DER Technology**

If this is not the case and the larger firm decides not to internalize the production of components 6 and 7 (much like IBM's choice not to internalize production of all computer components in the 1980s), then firm 2 and 3 are then created from the knowledge spillovers found within the newly emerging EA (see figure 6).

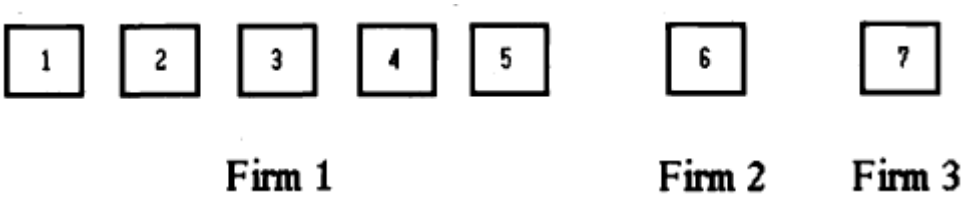


**Figure 6 Firms Involved in Improved DER Technology**

The emerging EA then creates alternative components that were once found in the larger firm such as component 4 (see figure 7). This could occur for a variety of reasons. Perhaps the RE customer decides to purchase a technology with the traditional components of 1, 2, 3,and 5, while finding that the particular attributes of component 4, which is produced by a competing firm, fits within their particular interests (see figure 7). This could occur if the alternative component 4 is better suited to a particular need found in the customers' region – here customers being the RE employees as well as local owners and stakeholders.

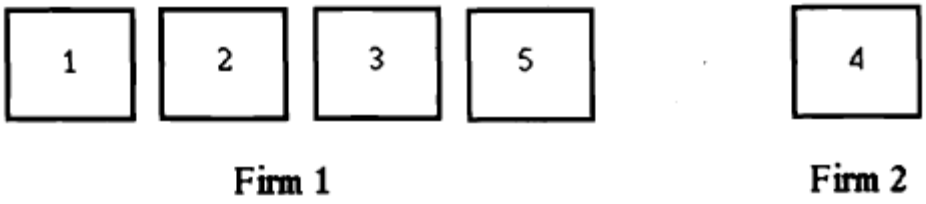


**Figure 7 Production of DER Technology with Changing Component 4**

When situated within a supply side, these demand-side attributes of technological innovation encourage knowledge spillovers and the establishment of distributed innovation networks between producers. The first type of network is a centralized one in which suppliers

are tied to lead supply firms as in the typical Japanese R&D firm (see figure 8). These firms integrate their R&D labs with factory floor employees in order to close the knowledge gaps found in the typical U.S. high technology firms. The U.S. structure of spatial separation, or, disintegration, stifles the competitive advantages found in the Japanese model. The centralized firms found in the Japanese model pioneer new modes of integration that enable them to generate a continuous flow of new products (i.e., total quality management, keiretsu, etc.). While recognizing the competitive advantages of the integrative approach, these centralized firms did not account for the positive feedbacks found within modular design, specifically, in compatibility.

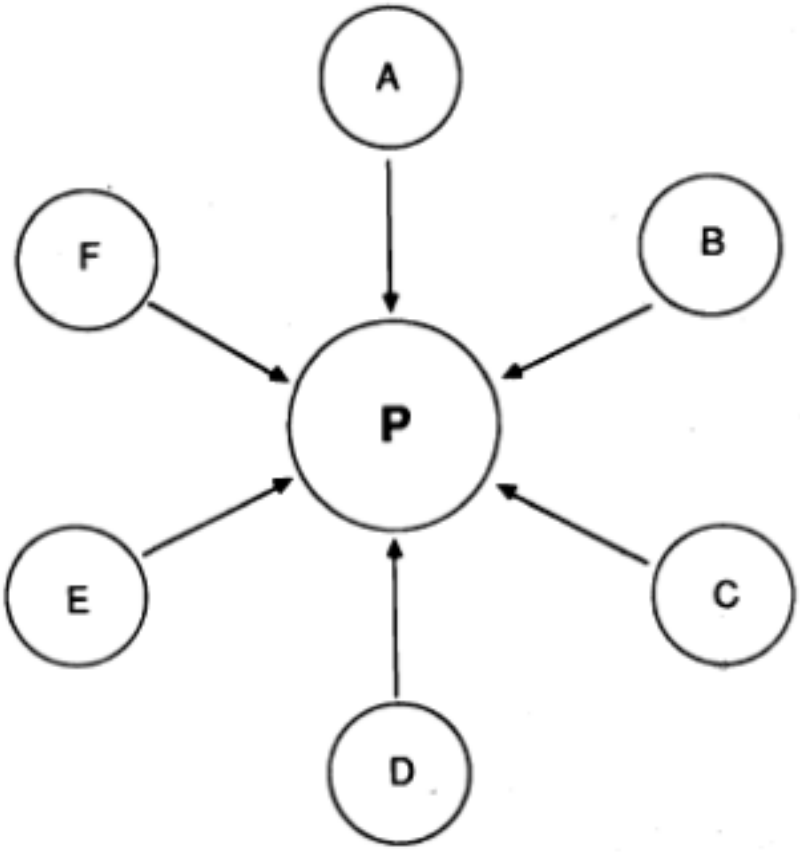


**Figure 8 Centralized Network**

Although this research notes the importance of the integrative model utilized by Japanese firms, it seeks to expand these integrative effects into a distributed open innovation network with the hope of increasing technological innovation in central Appalachia. In figure 9 (below), W1, W2, and W3 represent the localized knowledge stocks – the local DER owners/users, stakeholders, and employees – at a particular DER facility with three different types of processes all suited for independent variables. These variables are found within the specific IEP that the facilities are operating (e.g., biomass feedstock variability, natural gas resource, economic constraints, ecological conditions, etc.). The local knowledge stocks are connected to R&D facilities (D1, D2), both public and private, as well as a centralized information trader (E1). A1, A2, A3, C1, C2, and C3 are the manufacturer of components A and C which are found in a standardized DER system and future DER systems that are suitable to all facilities. Based upon the collective nature of standardization and its relation to modular design, subassembly B, is a product of technological innovation, needs to be compatible only with component C and not directly with other components. The continual splitting of components (technological innovation) and a sustained emergence of new component manufacturers and community based IEP's is a result of the relation between W and the respective public (D1) or private (D2) R&D firm. The relationship between W and D1/D2 fosters knowledge spillovers and, in turn, cultivates a functioning distributed open innovative network. Taken together, all the component manufacturers (A,B,C), the localized knowledge stocks (W), the public and private R&D firms (D), and the centralized information trader (E) make up a distributed open innovation network.

Centralized innovation networks differ by having one dominant firm that establishes the standards of compatibility. Distributed open innovation networks jointly determine

standards by establishing a precedent for negotiations between component manufacturers, R&D departments and firms, and localized knowledge stocks. No single actor in this network has control. Additionally, any actor who tries to dictate standards risks being isolated if other network actors decide not follow.[54]

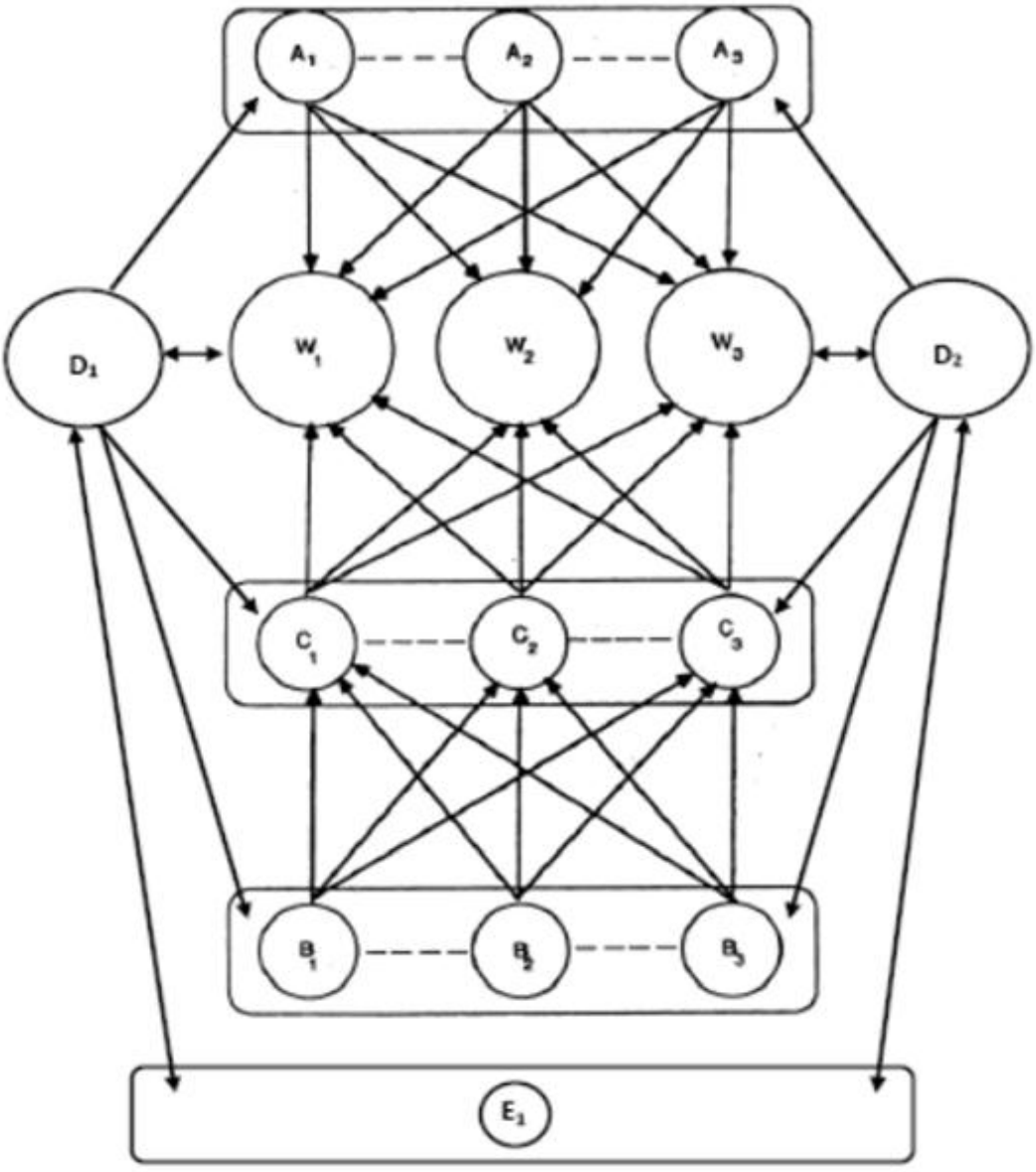


**Figure 9 Distributed Open Innovation Network**

[54] Richard N. Langlois and Paul L. Robertson, "Networks and Innovation in a Modular System: Lessons from the Microcomputer and Stereo Component Industries," *Research Policy* 21, no. 4 (1992): 297-313.

When situating the above distributed open innovation network within a cluster of manufacturers or a rural/urban economy of agglomeration (e.g., the CASE network), the development of skill and know-how, and the easy communication of ideas and experience allow the networks to develop and fortify. By enhancing the formation of distributed open innovation networks and their strengths, rural/urban agglomeration can affect central Appalachia by accelerating the rates at which:

1. New technologies and sustainable practices are developed in central Appalachia
2. The knowledge of new DER technologies enters into and is diffused throughout central Appalachian communities.
3. New technologies are incorporated into the products of manufacturers.
4. These new or renewed products are adopted by potential customers.
5. Central Appalachia can mitigate the negative economic effects of America's transition from a carbon intensive to a carbon neutral economy.

**Practical Applications in Central Appalachia**

Open innovation networks must ultimately employ interdisciplinary teams because a study on emergent networks requires a simultaneous analysis of the following: individuals, their communication networks, and the group or industry that these interactions are situated within. Moreover, every introduction of a "new" DER technology into the market tends to be characterized by a high degree of uncertainty.[55] All new DER technologies are likely to be introduced in several variants, each with its own specific design that is not yet standardized. New products are typically un-standardized because of the need for continual adaptation and improvement of their designs to suit customers' needs.[56] Since market needs are ill-defined, the CASE network can never be sure which technological design will eventually dominate or when a dominant design will establish itself in the market. Hopefully, this proposed strategy of development for central Appalachia will contribute to absolving many of these barriers by:

[55] William J Abernathy, "Patterns of Industrial Innovation," *Technology Review* (1978): 40-47.
[56] Peter J. Buckley and Mark Casson, *The Future of the Multinational Enterprise*, Vol. 1. (London: Macmillan, 1976), 32-65.

1. Creating a new approach to standardization that emphasizes technological change and modular design as opposed to a single firm standardizing a technological design, which can be replicated within the DER market.
2. Creating production assurances (i.e., new technologies are able to produce a predictable amount of energy and/or energy optimization) that ensure investment in the new technology.
3. Increasing technological adaptation and improvement by stimulating "random collisions" of knowledge by creating and maintaining distributed open innovation networks via social and virtual (web based) interactions.
4. Ensuring a better understanding of market acceptance of new technology through employee/engineer collaboration via O&M database and active participation in technological development.

In "Society in the Making: The Study of Technology as a Tool for Sociological Analysis," Michel Callon proposes that entities, such as those making up the CASE network, gain credibility by strategically creating collaborative partnerships, what he refers to as a "mass of silent others."[57] A distributed open innovation network may become emergent not only because of the durability of the bonds that hold it together, but also because it is composed of a number of robust and simplified networks. This solidity, then, results from a structure where each point is at the intersection of two networks: "one that it simplifies and another that simplifies it."[58] However, care is needed with the term network. The network should describe shifting alliances of actors and collaborative partnerships and not some fixed thing; thus, the need for an *information trader* to track and organize these shifts (refer back to figure 7). Comprised of complex networks, CASE is often converted into inscriptions or devices such as, but not limited to, briefing papers, business models, strategy reports, academic papers, virtual models, sustainability indexes, and web-based integration tools. The following examples of simplified networks promise to contribute to the overall creation of a durable distributed innovation network within Central Appalachia:

[57] Michel Callon, "Society in the Making: the Study of Technology as a Tool for Sociological Analysis," *The Social Construction of Technological Systems* 550 (1987): 83-103.
[58] Ibid., 97.

**CASE regional/national advisory committees:** These will act as central advisory nuclei for maintaining the social networks necessary to sustain a durable distributed open innovation network.

**Steering committee:** This committee will provide localized/regional knowledge for assessing all three indices (i.e., the cultural, economic and ecological index) for maintaining the sustainable nature of our development model.

**Livable Communities Index (LCI):** Technological innovation will be intimately integrated into the DER technologies surrounding environments via local knowledge stocks who will account for how specific changes in technology will affect the areas in which the facilities will be operating. The LCI will play an essential role in accounting for how technological innovation is related to its social, economic and ecological environments by accounting for the technologies lifecycle.

**R&D departments and firms:** As an important link for supporting the model that is presented in this research, university R&D departments within central Appalachia will function as the central innovation nucleus for stimulating technological innovation within established as well as emerging integrated energy industries.

**DER industry participants/employees:** This will be one of the most important aspects of the distributed open innovation network as these participants/employees will be the material link to everyday O&M and installation practices. They will also provide technological "tweaks" for a specific DER technology. By identifying interested parties who wish to further develop their DER skills, this innovation network will provide educational pathways for expanding DER use and development in Central Appalachia and possibly the world.

**Modular design:** This design approach will supply valuable information for R&D as well as stimulate RE innovation. The basic premises for the design approach is to stimulate as opposed to inhibit the creation of new entrepreneurs and component part manufactures and developers.

**Locally-owned LLCs and entrepreneurs:** These entities will provide invaluable information for various aspects of a particular renewable energy facility such as: marginal costs, business models, transaction costs, local revenues generated, ecological footprint and much more.

**Manufacturers of component parts:** These manufacturers will provide insight into the generative nature of the distributed innovation network.

**Information trader:** The CASE network, in partnership with MATRIC, will be the primary entities that will organize the information links into a management database. This may include the creation of a closed information management web tool that will capture information, organize data, and establish information links according to the evolving interests of stimulating technological change.

**Integrative Education:** Development of an integrative education network which seeks to develop a coalfield based hybrid educational institute linked to community and technical colleges as well as local and national universities through internships, fellowships, service learning, workforce development, and volunteer programs.

Once formed, however, a distributed open innovation network will require constant upkeep as these networks are always unreliable and can become unstable. The entry of new actors, desertion of existing actors, or changes in alliances can cause the virtual network – advisory committees and management databases – to shift and reconsider its contents. Distributed open innovation networks rely on the maintenance of its simplifications for its continued existence. These simplifications are constantly challenged, and if they break down, the network could collapse, perhaps forming into a different configuration and ultimately a less open network (e.g., tendency to monopolize). Recognition of institutional interests, both innovative and profit driven, and integrating the innovation network within CASE's "nested policy strategy" are two examples of maintaining the overall stability of a network.

In light of modular design, within an object-oriented DER environment, each component of the technology is an object with its own properties, methods, and actions.[59] In common with the encapsulation of objects in object-oriented DER environments, the actors, or heterogeneous entities, encountered in Actor Network Theory have attributes and methods and may themselves be composed of other objects or actors.[60] As such, an actor consists of a network of interactions and associations, and one particular network may be simplified to look like a single point actor.[61]

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[59] Jeffrey Parsons and Yair Wand. "Using Objects for Systems Analysis," *Communications of the ACM* 40, no. 12 (1997): 104-110.
[60] Trevor J. Pinch, Thomas P. Huges and Wiebe E. Bijker, ed. *The Social Constructions of Technological Systems: New Directions in the Sociology and History of Technology* (Cambridge: MIT Press, 1987), 99-182.
[61] John Law, "Notes on the Theory of the Actor-Network: Ordering, Strategy, and Heterogeneity," *Systems Practice* 5, no. 4 (1992): 379-393.

The purposes of the CASE network are to "punctualise" a stable distributed open innovation network and to consider it in the form of a single administrative entity, the information trader. To an administrative entity, it is useful to simplify, whenever possible, a network that acts as an element to make the part to whole relationship function more smoothly. An actor within the distributed open innovation network then "can be compared to a black-box [informal network] that contains a network of black-boxes that depend on one another both for their proper functioning and for the proper functioning of the network."[62]

Some considerations, in particular, the effects of economies of scale and agglomeration, should be taken into account during the development and integration phases of the distributed open innovation network. If there are economies of scale associated with the development of new technologies, a more than proportionate number of innovations may be developed in urban and rural areas. Actually, cumulative effects in both areas can be expected. A large supply of innovations spurs product development in the urban sector while also stimulating DER implementation within the rural areas. On the other hand, a high volume of DER research and development spurs innovative activities among the suppliers of component parts in the urban areas. And, on the demand side, a similar process is working. An agglomeration with many qualified and demanding customers in the rural setting encourages product development and a rich supply of product developers. These results spur the adoption of new DER technologies among the customers. Hence, I take into account two cumulative processes that stimulate DER development in agglomerations. In turn, we should expect technological innovations, the creation of new DER technologies, and the renewal of

[62] Callon, "Society in the Making," 95.

old technologies by means of innovation adoption to appear in manufacturing clusters throughout central Appalachia.[63]

[63] Michael E. Porter, *The Competitive Advantage of Nations* (Cambridge: Harvard Business School Management Programs, 1993), 84-85.

## Conclusion

Along with being a primer for enriching a concept still in its infancy (i.e., applied sustainability), this thesis served two other functions. The unfolding of my own intuitional embodiment of being both a practitioner of sustainability and a realist philosopher was my first action. The second was the thesis itself. As the unfolding process began to unravel my innermost truths, I began folding pasts into the present with the goal of capturing a glimpse into central Appalachia's future. Before describing two important components of that vision, I should restate the thesis's central argument: Ideology served as an important cause of poverty in central Appalachia from an external perspective and was reflected in symbolic community action. From an internal position, the causes become more complex and nuanced. They take many forms such as the lack of entrepreneurial infrastructure, health disparities, and impoverished communication networks. In the end, practitioners must address these barriers from the bottom-up, beginning with local communities like the one I have worked with over the past five years: Williamson, West Virginia.

Accounting for both the connective and symbolic forms of community action, Chapter 1 utilized New Materialism to define a unique path for exploring how ideology played a significant role in discouraging localized development. Chapter 2, for instance, found that the ideology of the "feuding hillbilly" prevented local entrepreneurs from succeeding in the emerging industrial economy brought about by natural resource

development. Additionally, Chapter 3 provided two examples of how dispositional ideology and national ideology, both rooted in conflict, inhibited connective community action from developing in central Appalachia. First, symbolic forms of community action impeded localized development by adopting a conflictive strategy that pitted local elites against the people of whom reformers sought to help. Second, proponents of the culture of poverty and urban-centric planners encouraged rural outmigration, arguably one of the most significant problems in central Appalachia. In Chapter 4, I provided a theoretical solution already underway in the region, that is, a market-based approach to applied sustainability. I will now offer further insights on ideology and define a localized approach to applied sustainability in the coalfields of central Appalachia.

A worldview or ideology is as a limited set of belief systems that inform our understanding of and interactions with the world. In many of his works, most notably *The Sublime Object of Ideology* and *The Plague of Fantasies*, Žižek argues that ideology is not an illusion obfuscating reality but an (unconscious) fantasy structuring our reality itself.[1] Akin to processes of overcodings, Žižek points out that "fantasy creates a great amount of 'subject positions,' among which the free floating subject is able to move from one identification to the other."[2] At this point, we enter the strange and often frightful world of ideology or disavowed realities of the world that we either consciously or unconsciously choose to ignore through the processes of "fantasy building."

Upon considering the merits of adopting the distinction between symbolic and connective community action, practitioners must not reify the problems associated with such dualisms as "Us vs. Them" that can be simplified as an internal and external opposition. The

[1] Slavoj Žižek, *The Sublime Object of Ideology* (New York: Verso, 1989), 27.
[2] Slavoj Žižek, *The Plague of Fantasies* (New York: Verso, 1997), 16.

external opposition fuels a mutual reliance between the two poles of "Us vs. Them" or as Michel Serres states:

> An idea opposed to another idea is always the same idea, albeit affected by the negative sign. The more you oppose one another, the more you remain in the same framework of thought.[3]

Following this logic, symbolic community action is "primordially not the opposite of" connective community action; the symbolic emerges only because a strategy rooted in connectivity can never "complete itself, it 'is' a structural effect of incompleteness."[4] Whether the symbolic maintains a position as the "master-signifier," as Lacan would refer to it, is another question. My "dispositional" reading of Žižek affirms the importance of Hegelian dialectics and situates the practitioner's dispositions towards "inserting new possibilities into" these connective realities.[5] In the end, these connective realities provide practitioners with the wherewithal to endure the constant bumping up against normative dispositions that are structured by Hegel's – via Žižek's – self-reflective disposition.

Žižek argues that the primary way to affirm the reality of Hegelian dialectics is to "establish the normative conditions or presuppositions of our cognitive ethical claims."[6] Unlike Deleuze's universal ontology of the virtual where the practitioner confronts the complex realities of Appalachia by dealing with the dynamic context of social change that is reality itself, Hegel's logic is a "systematic deployment of all the ways available to us of making claims about what there is, and the inherent inconstancies of these ways."[7] Žižek's

[3] Michael Serres and Bruno Latour, *Conversations on Science, Culture, and Time* (Ann Arbor: University of Michigan Press, 1995), 81.
[4] Slavoj Žižek, *Living in the End Times* (New York: Verso, 2011), 36.
[5] Ibid., 203. I argue that the dialectics signifies a dispositional as opposed to a fundamental structure of the human mind. I also took certain liberties in connecting Žižek's positive prescription to Bergson's virtual.
[6] Ibid., 28.
[7] Ibid.

goes on to shed light on the importance of Hegel and the dispositional structure of the human mind:

> Hegel's starting point is the fact that the fundamental structure of the human mind is self-reflective: a human being does not simply act, he or she (can) act(s) upon rational freely assumed norms and motivations, which means that, in order to account for our statements and attitudes, we can never simply refer to some positive data (natural laws and processes, divine reason, God's Will … [E]ach of these references has to be justified; its normative binding power has to somehow be accounted for. The problem with this elegant solution is that, in contrast to the robust metaphysical reading of Hegel is presenting the structure of the Absolute, it is too modest: it silently reduces Hegel's logic to a system of global epistemology, of all possible epistemological stances, and what gets lost to it is the intersection between the epistemological and ontological aspects, the way "reality" itself is caught in the movement of our knowing it.[8]

According to Deleuze, the act of knowing reality through symbolic reasoning "is still psychological and inseparable from our own condition." In short, the practitioner tends to homogenize her/his space of possibilities. For Deleuze, this tendency carries a "sort of artifice or symbol separating us from reality," however it is "the case that matter and extensity are realities, themselves prefiguring the order of space."[9] Furthermore, Žižek's reading of Hegel aligns with Bergson's distinction between analysis and intuition where the practitioner is simultaneously confronted with two very different fields of reality: 1) the dialectical underpinnings of the human mind which generate concepts about central Appalachia and 2) the realities of the material conditions found in Appalachia that provide a base for the integration of change. To clarify, practitioners should integrate multiple energy resources within a context that has traditionally limited central Appalachia's potential within a few fields of possibility (e.g., coal, natural gas, and timber). Given this context, I have to consider specific overcodings (i.e., dialectical synthesis) in order to translate the symbolic idea of economic diversification into a connective action (i.e., embodied synthesis). My

[8] Ibid.
[9] Deleuze, *Bergsonism,* 34.

proposed embodied synthesis poses a transversal as opposed to a dialectical movement within the symbolic and connective logics of community action.

Žižek prescribes a potential path for practitioners interested in producing generative societal change in central Appalachia. Žižek states that "what we need to do is to take a step further from this external opposition (or mutual reliance) into direct internalized overlapping, which means: not only does one pole ["Us"] when abstracted from the other and thus brought to the extreme, coincide with its opposite ["Them"], but there is no 'primordial' duality in the first place, only the inherent gap of the one."[10] Žižek continues:

> The primordial gap is thus not the polar opposition of two principles (masculine and feminine, light and dark, opening and closure … but the minimal gap between an element itself, the Void of its own place of inscription.[11]

This relationship to the symbolic void is where I draw a definitive line with Žižek by adopting Bergson's positive prescription for the practitioner who continuously attempts to "reverse the normal direction of the workings of thought."[12] At this point, Žižek assumes a cognitive trap or feedback loop where "the struggle for democracy is in what it will mean, which kind of democracy will hegemonize the universal notion" or, in the case of Appalachia, where hillbilly strong is indeed a sign of strength.[13] For Bergson, this reversal "has never been practiced in a methodical manner." He continues:

> [A] careful study of the history of human thought would show that to it we owe the greatest accomplishments in the sciences, as well as whatever living quality there is in metaphysics. The most powerful method of investigation known to mind, infinitesimal calculus, was born of that very reversal.[14]

[10] Žižek, *Living in the End Times*, 36.
[11] Ibid.
[12] Bergson, *Metaphysics*, 160.
[13] Žižek, *Living in the End Times*, 37.
[14] Bergson, *Metaphysics*, 160.

Moreover, Bergson provides insight on the practical nature of developing a framework that successfully navigates the difficult task of facilitating regenerative societal change. Stressing the importance of an embodied synthesis when discussing the merits of infinitesimal calculus, Bergson writes:

> It is true that it has been able to realize these marvelous applications only through the invention of certain symbols, and that, if the intuition we have just mentioned is at the origin of the invention, it is the symbol alone which intervenes in the application.[15]

Here, the practitioner's task is to continually build more bridges between symbolic and connective community action. My proposed Livable Communities Index will build such a bridge by aggregating localized data and reconfiguring this data into a conceptual tool for measuring the sustainability of the practitioner's work in terms of livability.

In collaboration with an interdisciplinary research team, I will create the first-ever index of livable communities. In support of the President Barack Obama's Open Government Initiative, the Livable Communities Index (LCI) seeks to empower "the public – through greater openness and new technologies – to influence the decisions that affect their lives." Moreover, the LCI could provide the ARC with "specific steps to achieve key milestones in transparency, participation, and collaboration."[16] The LCI will integrate widely-accepted indicators of human development and environmental sustainability, including the United Nations Human Development Index (HDI) and Yale University's Environmental Sustainability Index (ESI), into one complex, but easy-to-use index. In the end, the LCI will measure the true level of livability for any given area in Appalachia.

Once generating the LCI, I will create a map in Google Earth that presents the LCI and the descriptive data in multiple and interactive ways, using Kentucky and West Virginia

[15] Ibid.
[16] "Open Government Initiative," Last modified December 8, 2009, http://www.whitehouse.gov/open/about (accessed January 1, 2014)

as pilot states. Within the LCI, each county will include a dynamic dashboard pop-up and will be represented by a corresponding Google Earth place marker (see Appendix A: "LCI Dashboard"). This dashboard will include LCI graphs and charts that allow for easy readability of complicated data. The "dynamic dashboard" interacts with the user's point of inquiry and changes the corresponding graphs and charts accordingly (see Appendix A: "Mock-up Sequence"). By embedding the dashboard within Google Earth, users will be able to visually contextualize the data as it applies to the Google Earth satellite images. The Rural Connectivity and Entrepreneurial Social Infrastructure components described below, for instance, can be used to visually assess the overall "entrepreneurial eco-system."

The LCI scorecard will be presented on a graded polygon scale, whereby users will geo-spatially compare sustainability scores based on the varying heights and colors of the county-shaped polygons as they are perceived through a Google Earth flyover (see Appendix A: "Graded Polygon"). The LCI's open-source feature will be an interactive element embedded in the dashboard pop-up linking users to relevant pictures and videos uploaded by community members. The interface will also allow users to generate their own local, county-level, or regionally-specific descriptive sustainability scorecard reports of how proposed or potential economic development initiatives will impact their respective level of livability.

One of the most exciting aspects of the LCI, this open-communities component will allow local stakeholders to self-identify both barriers and opportunities to economic development such as degraded sidewalks, nature trails, and walking paths connecting neighborhoods. Communities can also self-identify Entrepreneurial Social Infrastructure such as: civic clubs, walking and biking paths, Integrated Energy Parks, and local businesses. The on-line LCI Guide will provide a user's manual of the LCI database highlighting the social,

economic, and environmental components of the index. It will also include sample LCI applications and basic user-skills that will be available to individuals, businesses, and local/regional organizations via web-based outreach. The distribution of the LCI Guide is intended to stimulate and measure LCI usage and expansion.

Hopefully, the original LCI program created for Kentucky and West Virginia will operate synergistically as a model for other states in the Appalachian region that see an advantage in taking part of this regionally available measure of livable communities. The following assessment analyses should be understood as working synergistically in order to analyze "network qualities" such as scale-free networks or topological characteristics within the region that signify the evolving concept of livability:

- **Cognitive mapping (in-out migration):** Very much akin to George Towers's research discussed in Chapter 2 that analyzed brain drain in West Virginia, our research team will analyze migration patterns throughout Appalachia over the past 50 years. In addition, our team will also conduct a cognitive mapping survey of high schools students throughout the region. The purpose of this research is threefold: 1) To build upon present cognitive mapping research as it relates to Appalachia; 2) analyze present high school residential intentions; 3) compare present findings with past migratory patterns in order to identify correlations between migration and the persistence of distressed regions in Appalachia as suggested by Towers's research.

- **Rural connectivity:** Informed by my research in Chapter 2 and building from the ARC's present collaborations with the Center for Disease Control in targeting the "Diabetes Belt" as well as Mingo County Diabetes Coalition's innovative spatial mapping project in collaboration with Duke University, this analysis will assess rural connectivity in several counties to provide a baseline for conducting a regional assessment that will consider several indices including lower body mass index (BMIs) as well as spatial connectivity as an economic and health indicator for assessing livable communities. Using this as a backdrop, my team will historically trace spatial connectivity over the past 50 years.

- **Entrepreneurial Social Infrastructure (ESI):** Building on my research in Chapter 2 concerning entrepreneurship, this assessment tool will analyze both present and historical relationships between ESI and economic development efforts of ARC. The central hypothesis is that communities and counties with more ESI are more likely to have successfully implemented economic development projects than localities lacking in ESI. One example of assessing ESI is measuring both participation and

> institutional density of local civic groups (e.g., Lions Club, Rotary Club, etc.). The methodology identified in Jan Flora, Jeff Sharp, Cornelia Flora and Bonnie Newlon's *Entrepreneurial Social Infrastructure and Locally Initiated Economic Development in the Nonmetropolitan United States* will strongly influence this research.[17]

Although the LCI will serve as a beneficial tool to assess sustainability, this dashboard for practitioners has to be coupled with actual projects that demonstrate entanglements of the symbolic and the connective. Chapter 3 examined two specific dispositions that practitioners can adopt when they engage in community action: the active or reactive approach. Utilizing the active approach, we can develop programs that define a new strategy to community action in central Appalachia. Chapter 4 began the necessary theoretical work for developing a market-based approach to applied sustainability. Informed by these theories, the Energy Optimization Network will take center stage for integrating the central component of applied sustainability: a market-based approach. The follow three programs are a part of Sustainable Williamson's Six Components for Sustainability: Food Systems, Sustainable Construction, Sustainable Tourism, Integrated Education, Healthy Communities, and Energy Optimization.

**Integrated Education**

My proposed integrated education program will support the efforts of Sustainable Williamson to help local, regional, and national innovators understand and replicate successful community-based programs that provide diverse employment options in the form of environmentally sustainable jobs and entrepreneurship. This project will expand upon these ideas by including a service learning program targeted at university level students from across the country. The goal of the project is to add value to both the existing projects and the

[17] Jan L. Flora, Jeff Sharp, Cornelia Flora, and Bonnie Newlon, "Entrepreneurial Social Infrastructure and Locally Initiated Economic Development in the Nonmetropolitan United States," *The Sociological Quarterly* 38, no. 4 (1997): 623-645.

students' educational experiences. The program aims to be a mutually beneficial sustainable program providing financial support in the form of continuing service learning programs to the community of Williamson and valuable experiential learning programs for students.

By integrating service learning into the class curriculum, students will create fundamental connections between theory and practice that will provide them with real world experiences and build the capacity of the emerging CASE network. Utilizing Sustainable Williamson as a regional hub, central Appalachian communities will work with local practitioners of applied sustainability, university faculty, and college students on specific projects. Synthesizing both local needs and the specific course goals and themes of each faculty member, our team will develop a curriculum and service learning program with the goal of ensuring a just transition throughout the coalfields of central Appalachia. The following are some general examples of classes I plan to develop:

- **Healthy Communities:** In collaboration with an identified university, I will develop a practicum focusing on measuring the specific health outcomes of Sustainable Williamson's programs.
- **Food Systems:** In collaboration with an identified university, I will develop a practicum focusing on developing a market-based approach to local food production with an emphasis upon organic farming and permaculture.
- **Sustainable Tourism:** In collaboration with an identified university, I will develop a practicum which focuses on building a regional outdoor recreation plan.
- **Sustainable Building:** In collaboration with an identified university, I will develop a practicum which focuses on integrating LEED and other certifications into planning and design.
- **Energy Optimization:** In collaboration with an identified university, I will develop a practicum which focuses on developing financing models for a variety of renewable energy, energy efficient and demand-response applications.

At this point, all potential practicums are tentative. Upon obtaining funding, I will begin to secure commitments from interested universities and utilize Amizade's established network of universities across the country to develop one or more pilot programs. This project will also provide eight interested faculty members and administrators with the

opportunity to visit Williamson in order to explore future project ideas and service learning programs.

**Health Innovation HUB**

The U.S. health care system relies heavily on public funding, with the federal government spending billions of dollars a year on health care alone. Moreover, the prevailing methodology utilized by our current health care system is a treatment-based approach. There is a significant opportunity for government to increase the quality of healthcare, get better value for its investment, and help generate additional export revenue by encouraging preventative health care innovations found in enterprises and associated communities that emphasize a triple bottom line approach. Specifically, the purpose of the HUB is to develop an entrepreneurial ecosystem which assesses its overall impact upon social, ecological, and economic factors in a way that does not jeopardize and/or limit the sustainability of future generation's overall health and well-being.

Key barriers preventing further growth in the health sector are difficulties in commercializing preventative care and the inability to scale up prevention through the domestic market. Businesses and innovators have struggled to undertake required proof of concept, establish domestic reference sites, and develop the evidence basis required for national acceptance of their projects. Because of the treatment vs. prevention debate, monetary fragmentation of the health care system has also constrained international companies from conducting large scale clinical trials that bridge the gap between treatment and preventative based approaches. According to a 2009 article in the *Global Health Report*:

> The U.S. medical system, as currently set up, rewards cardiac surgeons at a much greater rate than it does programs for avoiding weight gain or controlling high blood pressure. About 5% or less of the U.S. budget on health care is spent on prevention,

according to Don Wright of the U.S. Department of Health and Human Services. Most of the rest is spent on treatment.[18]

The proposed health innovation hub will overcome major health care and health outcome barriers by encouraging treatment and preventative approaches within one of the unhealthiest regions in the United States. The health innovation hub will involve a small team of experts, based in Williamson, and a consulting team with The Write Choice Network to provide services that will help clinicians and the health industry develop business propositions, products, and services geared towards creating a replicable applied sustainability model for regions throughout the country.

HUBs are located in rural and urban communities and comprise a global community of like-minded entrepreneurs who work together to create an environment for life-changing ideas. The HUB model encourages the regenerative power of innovation through collaborative-competition. Practitioners involved with a HUB believe that there is no shortage of good ideas to solve contemporary issues. But there is an acute lack of collaboration and support structures to help make them happen, especially when a community is trying to achieve healthier outcomes – a goal that can only be realized through effective collaboration and integration of the core elements of a community including health care, business development and industry, local/state/federal government policies, housing, food and water systems, and environmental programs. To date, there are over 30 HUBs operating in London, San Francisco, Johannesburg, and other cities throughout the world. Hopefully, Williamson will eventually become a part of this global network.

[18] Christine Gorman, "Prevention vs. Treatment: A False Choice," *The Global Health Report*, January 29, 2009, http://globalhealthreport.blogspot.com/2009/01/prevention-vs-treatment-false-choice.html (accessed January 1, 2014)

Whether a practitioner is working on a concrete project or just wants to contribute their time, the HUB provides a carefully curated experience to help take a particular initiative to the next level. If Williamson becomes a part of the HUB global network, this partnership will build on the experiences that are already in place in Williamson such as the Smart-Office, Farmers Market, Walkable/Bikeable Communities, and Williamson Towers Community Garden, and provide a coordinated HUB based strategy to take these experiences to the next level through a coordinated approach for collaborative ventures. In general, the HUB experience includes three core elements that are interconnected and run by dedicated local coordinators whose role it is to make the otherwise delayed connections happen, a form of engineered serendipity: vibrant communities, meaningful events, and inspiring spaces.

**Energy Optimization Network**

The purpose of developing an Energy Optimization Network is to maximize outputs based on Sustainable Williamson's goal of ensuring measurable improvements in market conditions for solar replicability within the coalfield regions of central Appalachia. Sustainable Williamson will increase market maturity by identifying potential challenges and risks to success and propose smart strategies for overcoming obstacles that arise. As a regional leader at the forefront of "bridging the gap" between traditional and emerging energy resources, Sustainable Williamson will also develop the following "smart strategies" which will be built from the "nested policy strategy" presently being deployed through the CASE network:

- Identify business models and systems to streamline cooperation and collaboration in the central Appalachian energy industries.
- Conduct outreach and research on resource development in the coalfields of central Appalachia to locate opportunities for solar industry collaboration.
- Consult throughout all stages of solutions framework drafting and finalization for optimally beneficial systems, processes, and technologies.

As a part of the CASE network, Sustainable Williamson will hopefully serve as a test site to develop the Energy Optimization Network and achieve the following goals:

- Streamlined and Optimized Permitting and Interconnection Process
- Easy-to-understand "Financing Score" to jumpstart solar financing options
- Planning and zoning

Building from the above goals, this emerging network will develop a comprehensive approach for bundling Renewable Energy and Fossil Fuel use, Energy Efficiency upgrades, Smart-Grid/Demand Control integration, workforce development, and local wealth generation into a comprehensive financing ecosystem. This strategy is presently emerging with the City of Williamson's Sustainable Williamson project, thus providing the CASE network with a replicable model capable of adapting to a variety of situations and barriers typically found within the coalfield region of central Appalachia. The adaptive component is based upon the regenerative capacities of the network itself by allowing the user (municipality, neighborhood, etc.) to pick from a variety of approaches to solarize a given customer base whether they be residential, commercial, government, or non-profit. I will utilize the city of Williamson as an incubator to develop what is commonly referred to as a virtual power plant (VPP), which includes financing and wealth creation models as well as a workforce development component by identifying proven models. Many of the models have already been identified by Sustainable Williamson's team. A VPP offers extra benefits such as the ability to deliver peak load electricity or load-aware power generation at short notice. Such a VPP can replace a conventional power plant and provide higher efficiency and more flexibility.

Central Appalachia's story of applied sustainability has only begun. This research should operate as a guide to ensure the emergence of livable, vibrant, and innovative

communities throughout the coalfields. Learning from the past, both internal and external interests should not replicate the same mistakes of the region's missed opportunities by continuing the legacy of "Us vs. Them." To the contrary, all reactive and disconnected elements of community action should be avoided at all cost if central Appalachian residents are interested in being successful during their present transition. The case for this transitional strategy is not only being made with this thesis but is presently emerging in Williamson, West Virginia, in the form of real-world projects. More importantly, this praxis of theory is quickly becoming an emergent whole and, thus, no longer reliant upon a few leaders. In the end, this thesis and the real-world work it reflects provides a glimpse of a far more complex strategy that may one day define central Appalachia as a national and perhaps international leader in sustainability.

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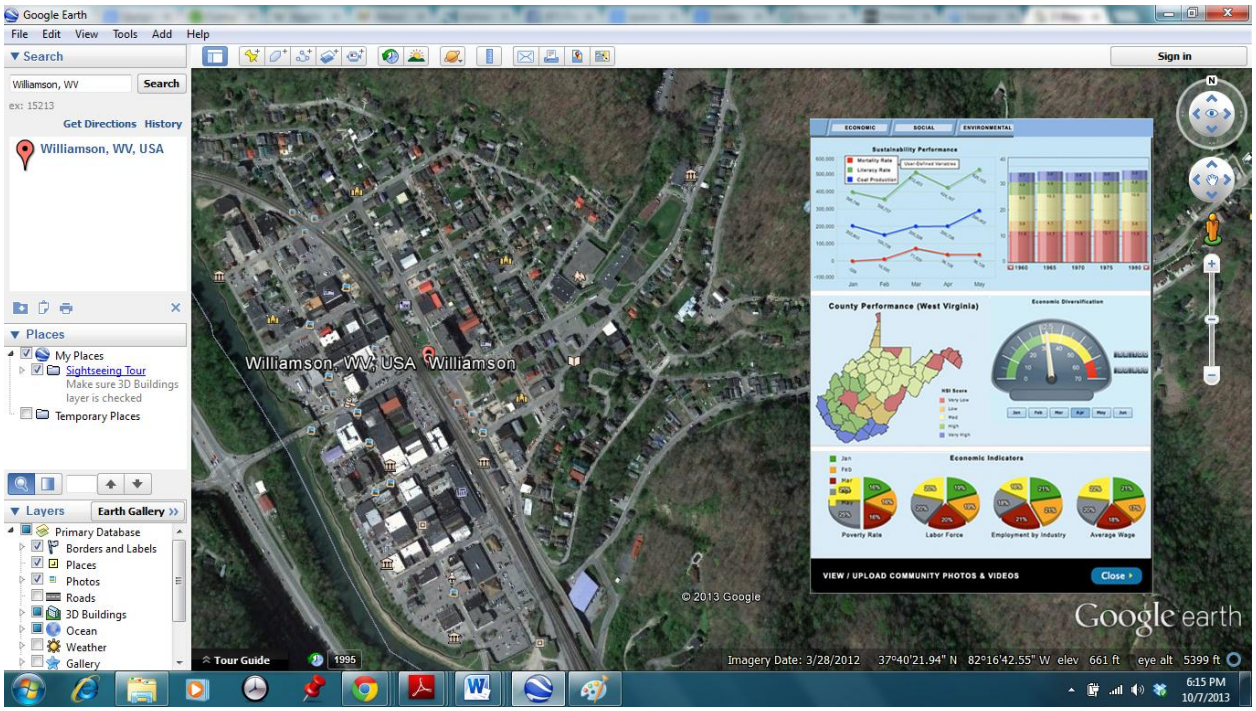
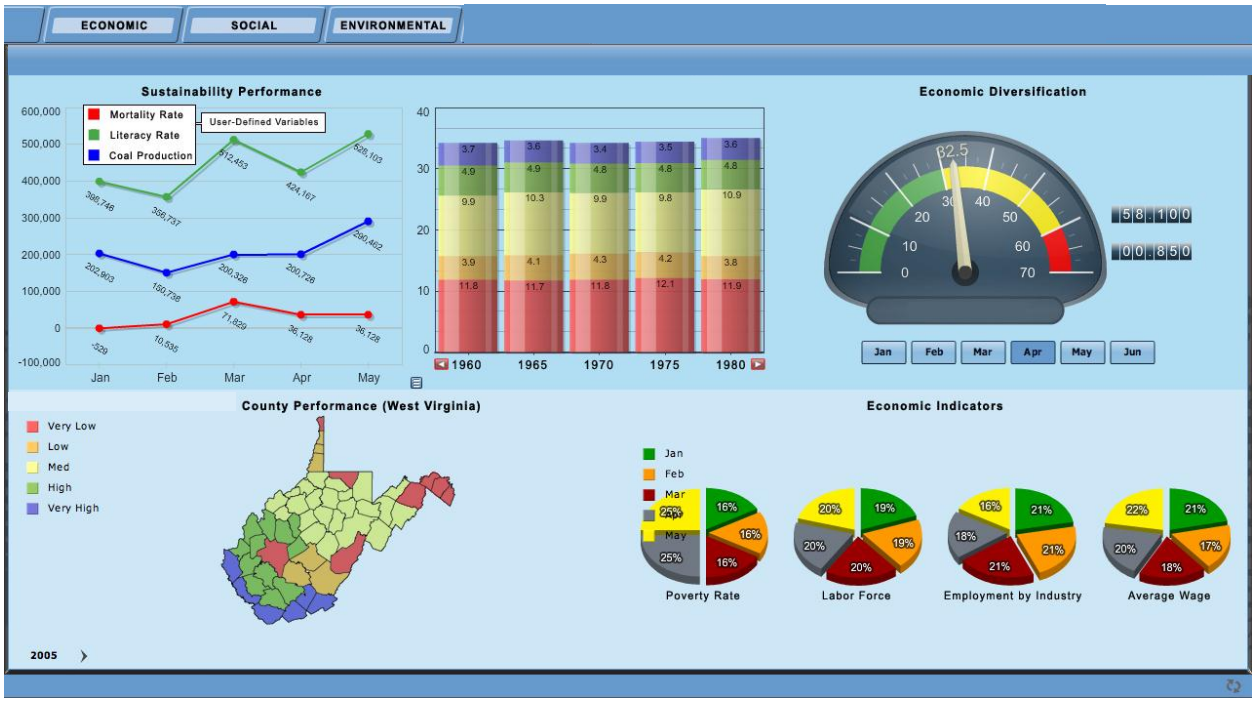
## Appendix A

**LCI Dashboard:** Contexualizes livability within google earth (e.g., Williamson, West Virginia).

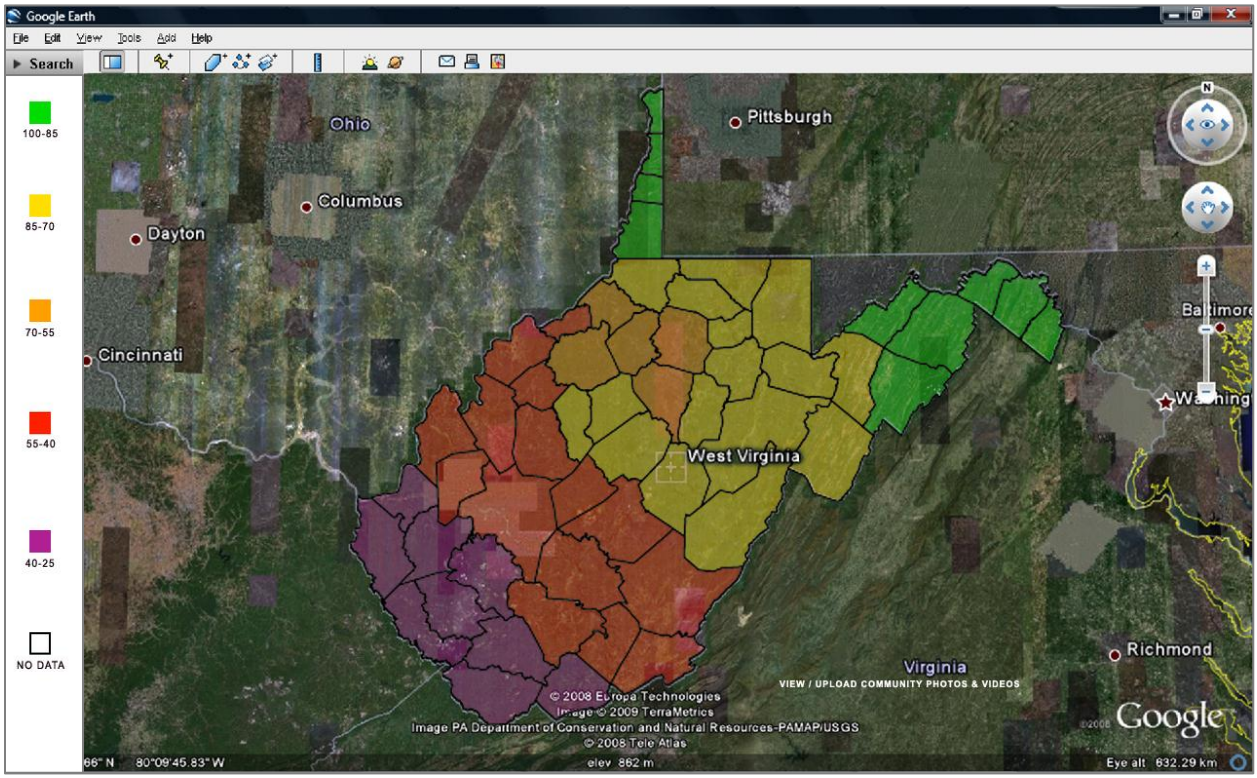


**Mock-up Sequence:** Interactive dashboard contextualizes health data temporally to assess change (e.g., Health Care).

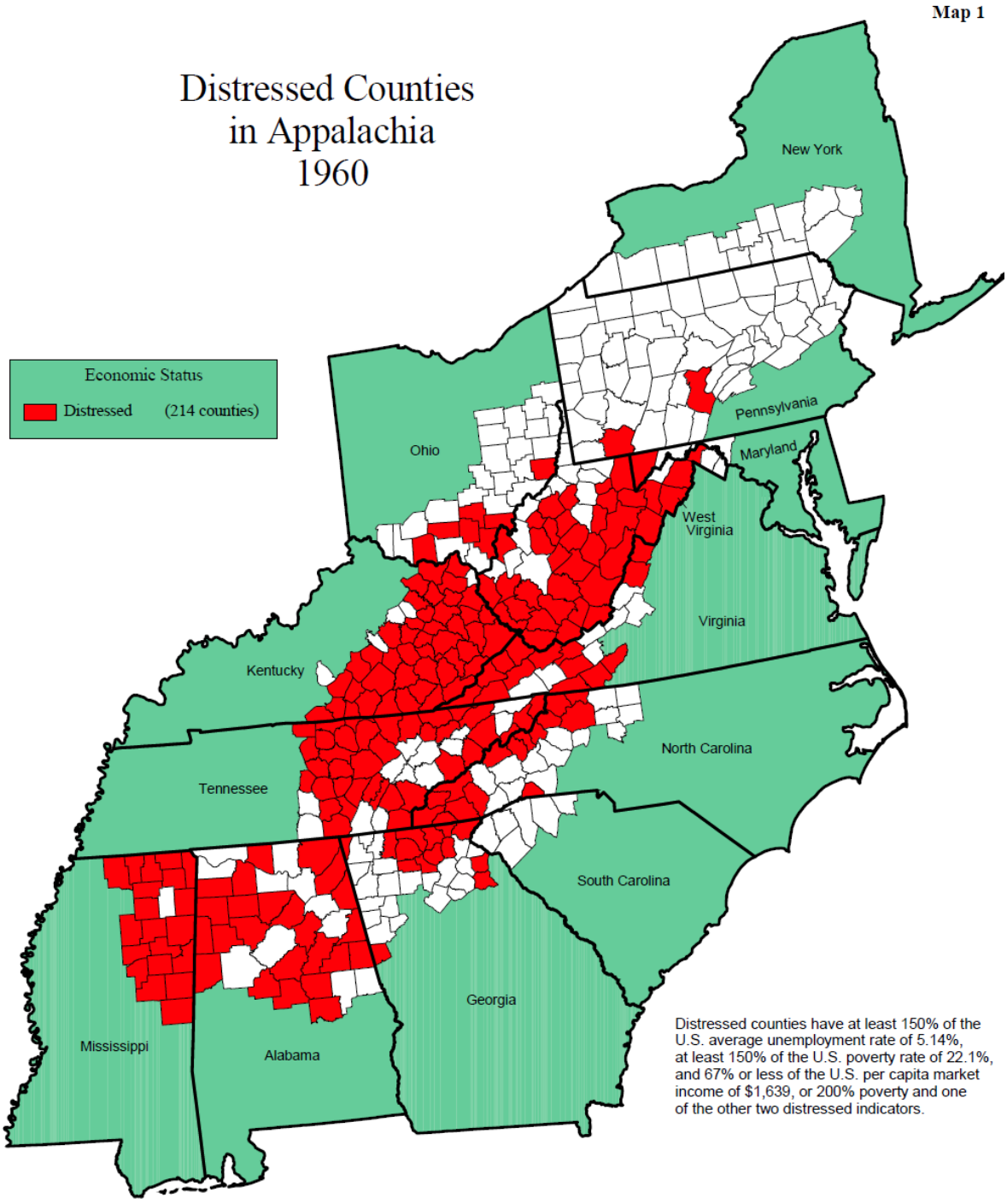


**Graded Polygon:** Contextualizes livability score (e.g., West Virginia).



## Appendix B

**Map 1**

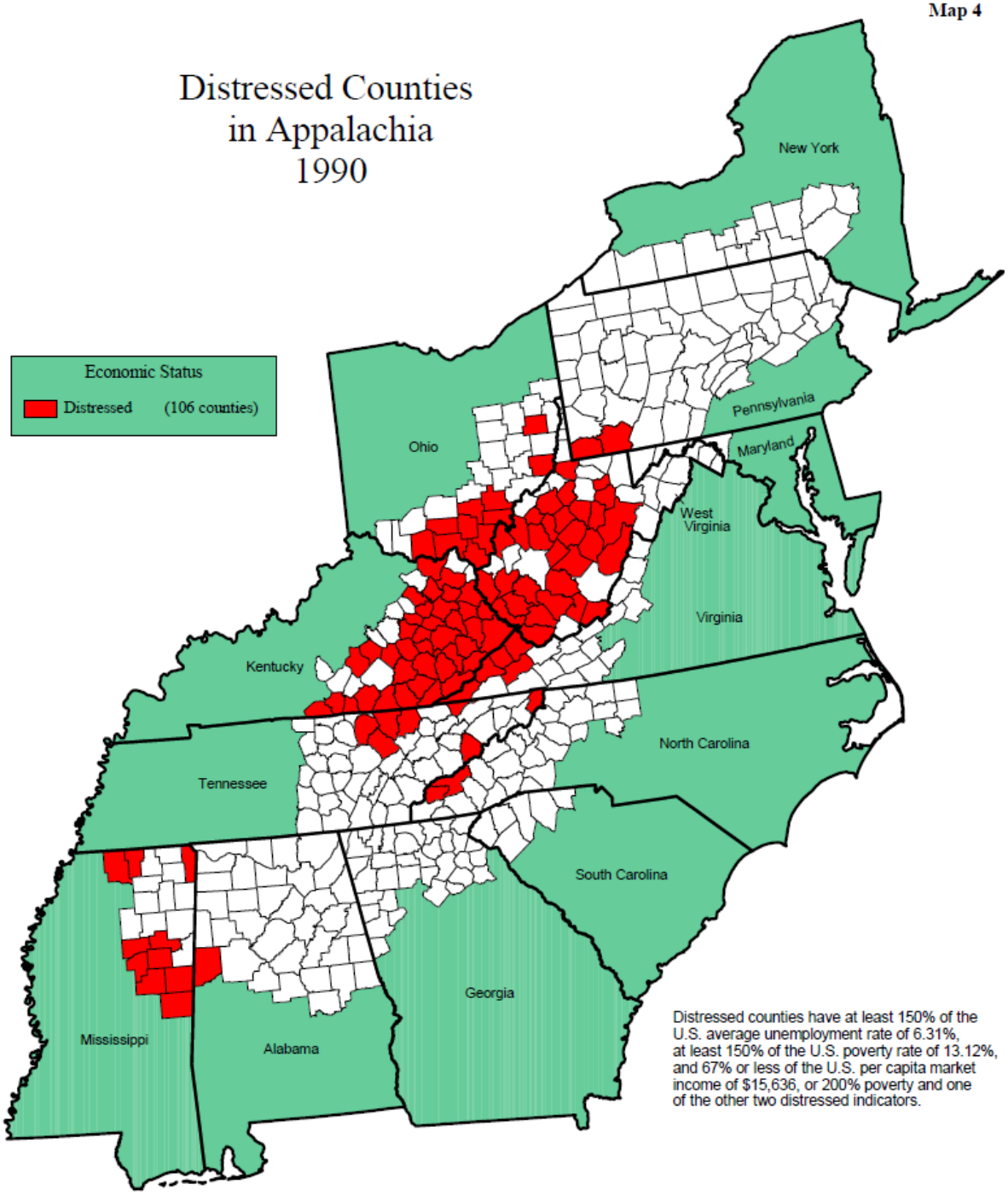



ARC

Data Sources:
Unemployment: Census data from USDA, Economic Research Service (ERS), 1960;
Poverty: Office of Economic Opportunity data from USDA, ERS, 1960;
Income: U.S. Department of Commerce, Bureau of the Census, 1960.

Map 4

# Distressed Counties in Appalachia 1990




Distressed counties have at least 150% of the U.S. average unemployment rate of 6.31%, at least 150% of the U.S. poverty rate of 13.12%, and 67% or less of the U.S. per capita market income of $15,636, or 200% poverty and one of the other two distressed indicators.

ARC

Data Sources:
Unemployment: U.S. Department of Commerce, Bureau of the Census, 1990;
Poverty: U.S. Department of Commerce, Bureau of the Census, 1990;
Income: U.S. Department of Commerce, Bureau of Economic Analysis, 1990.

## Vita

J. Eric Mathis has been at the forefront of initiatives to bridge the gap between the fossil fuel and renewable energy industries through the development and implementation of innovative finance and business models. These models are designed to be beneficial to both industries, creating mutually productive economic linkages between the fossil fuel and renewable industries, and most importantly between the surrounding communities. As an active member of the community, he is helping to develop a comprehensive project entitled Sustainable Williamson that emphasizes health and wellness as a key component for economic revitalization. Using Sustainable Williamson as a template, his most recent endeavor is participating in the creation and implementation of the Central Appalachian Sustainable Economies (CASE) network, an interactive regional network of innovators cultivating new ideas and resources in central Appalachia to grow healthy communities.

Eric is a proud Green for All Fellow, a 2010 recipient of the Interstate Renewable Energy Council's Innovation Award for Community Renewables and a 2012 White House Champion of Change for Greening our Cities and Towns. As a self-described "evolutionary" and a nationally recognized practitioner of applied sustainability, he helped spearhead one of the America's first student lead Renewable Energy Initiatives (ASUREI), he has lectured at MIT as part of the 2013-2014 Sloan Sustainability Speaker Series, he has been both a speaker and a moderator of panels at many economic/sustainability conferences and he is a frequent contributor/blogger for the world's #1 renewable energy network.