THE POLITICAL ECONOMY OF THE PACIFIC NORTHWEST:

A SURPLUS APPROACH

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THE POLITICAL ECONOMY OF THE PACIFIC NORTHWEST:
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ABSTRACT

The dissertation is comprised of three independent essays. Each essay examines the process of qualitative change in the provisioning process from a different vantage, while remaining fixed in relation to the Columbia River. Among the three essays the period 1866 to 1945 is covered. The first essay examines development of the region's railroad system, and the aspirations on the part of its financiers to realize speculative gains. The region is situated in the context of the post Civil War imperial stance of the state, and the rise of global finance. It is argued that while other colonial processes had operated in the region since the arrival of the fur trappers, construction of railroads embodied a watershed in the commitment for absentee owners to engage in transformational development.

The second essay traces the emergence of the electric utility globally, and in reference to the Pacific Northwest. It is argued that the electric utility emerges directly from the railroad - finance nexus. Key social relationships are explored that explain the emergence of the electric utility as a going concern, with particular emphasis placed upon Henry Villard. Villard's financial connections were instrumental

in establishing the markets in which Edison's patents would become successful in general. Villard's relationship with Edison, both social and pecuniary in nature, would shape the subsequent process of electrification for the region.

The third essay argues that transformation of the Columbia River basin into a hydrological machine emerges as a response to the abuses of the electric utilities. Development of the basin for power, navigation, and irrigation were viewed as a means by which the inhabitants of the region might break the colonial yoke under which the utilities absentee owners had placed them. Private utilities had squandered the wealth embodied in the social technology, failing to provision inhabitants of the region with electricity uniformly at a fair rate. Utilities at the base of a holding company pyramid were used to extract surplus incomes from ratepayers, in part, by inflating their rate bases. Moreover, private utilities wielded political power and worked to undermine efforts to institute municipal or public power projects. Such tension was felt regionally and nationally, galvanzing a countervailing force capable of ushering in large-scale, public, hydroelectric projects. Notwithstanding the dreams of New Deal planners, the Organic Machine would be placed into the narrower service of powering the WWII aluminum plant.

The undersigned, appointed by the Dean of the School of Graduate Studies, have examined a dissertation titled "The Political Economy of the Pacific Northwest: A Surplus Approach," presented by Mitchell Ray Green, candidate for the Doctor of Philosophy degree, and certify that in their opinion it is worthy of acceptance.

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DEDICATION

In memory of Frederic S. Lee. You never died, says we.

If the workers take a notion
They can stop all speeding trains;
Every ship upon the ocean
They can tie with might chains.
Every wheel in the creation,
Every mine and every mill
Fleets and armies of the nation,
Will at their command stand still.

Joe Hill

CHAPTER 1

INTRODUCTION

Before the emergence of capitalism in the Pacific Northwest there was a social provisioning process[1] in which the Columbia River was central. From the end of the last ice age until recently indigenous groups interacted directly with the river and the watershed that drained it, provisioning themselves through a mix of salmon production and other hunter-gatherer techniques. Complex kinship networks connected indigenous peoples of the region and embedded them in a social fabric in which the institution of gift exchange was central[2]. At the center of this institutional fabric was the Columbia River and the ceremonial reproduction of the salmon.

The aforementioned system was viable in the classical sense. A system is viable if it can reproduce its own conditions of existence. The objective relations of production are organized so they reproduce themselves within the system. In the 'surplus approach'(Chiodi, 2010; Lee & Jo, 2011; Mongiovi, 2011) viability of the simplest circular production system may be expressed formally as

[1]The term *social provisioning process* will be used infrequently henceforth. Heterodox economists have used the term to describe economic systems in response to the tendency among mainstream economists to ignore social facts. The concept, however, is redundant as all economic systems are inherently social. The term will be used only in reference to discourses on the term itself.

[2]Lichotawich (1999) provides a broad overview. Hunn & Salem (1990) provides a detailed analysis of the Mid-Columbia Indians with regard to the gift. The Lower-Columbia groups are studied in Hajda (1984).

$$a + c \to 1 \tag{1.1}$$

$$1 - (a + c) \geq 0 \tag{1.2}$$

where $a \in (0, 1)$ is the quantity of salmon used as means of production per unit of salmon produced, and $c \in (0, 1)$ the quantity of salmon used as sustenance for persons engaged in the production of salmon, as well as that used for gift exchange, per unit of salmon produced [3]. Obviously, the provisioning process was more complicated than suggested by (1.1) and (1.2). The point here is to demonstrate that while the gift exchange economy in which tribal groups of the Pacific Northwest were central was viable for several millenia following the last ice age, it was rendered unviable as the region became increasingly incorporated into the capitalist system. Before considering the factors that effected such change, further elaboration of the concept of viability in the surplus approach is warranted.

The Heterodox Surplus Approach

The heterodox surplus approach associated with Fred Lee connects the classical tradition in political economy, that which had been 'submerged and forgotten' (Sraffa, 1960) by the neoclassical tradition, with other discourses that seek to analyze economic systems as they are socially embedded. The central core of the surplus approach consists primarily of the problem of interconnectedness, and a commitment to explaining the processes that ensure that these relations may be reproduced going forward. As a starting point the surplus approach revived by Sraffa (1960) and his

[3]See Gregory (1982) for an application of the surplus approach to gift economies.

followers, takes the surplus as given and proceeds to analyze distributional patterns that allow for systemic reproduction. A comprehensive review of the surplus approach is not offered here, however, Kurz and Salvadori (2000) provides a thorough treatment of the classical approach undergirding input - output analysis. See (Carter, 2011; Eatwell and Milgate, 1983; Garegnani, 1984, 1987; Mongiovi, 2002, 2011) for a thorough treatment of the surplus approach as it is distinguished from both neoclassical and other heterodox traditions in economics. For connections between the surplus approach and institutional economics, see Forstater and Murray (2009).

Lee's 'heterodox' surplus approach addresses a different set of questions. Lee and Jo (2011) builds a model of the economy as a whole, one that incorporates the interdependency of the surplus approach, while preserving its historical contingency by reserving questions of agency and qualitative change for analysis in an evolutionary framework. That is, optimizing and reductionist models of human behavior cannot provide a foundation for a theory that purports to link agency with qualitative change, because such interplay exists in historical time with a degree of complexity that renders closed-system analysis as invalid. Agency, then, becomes a fact to be explained in light of the historical conditions in which it is exercised, but it cannot be reduced to an abstraction in logical time, for no such human behavior exists under these conditions. The exercise of agency in capitalist economies, of an economic nature, emerges as parties transact among themselves. One defining action is the decision of what to produce and how much to commit the resources of the going concern over a given period of time, a decision which must occur under conditions of uncertainty. In capitalist economies the business enterprise emerges as the dominant

site from which agency is exercised (Jo, 2007)

Lee does not take the surplus as given, suggesting instead that discretion over production of the surplus drives the provisioning process in a capitalist economy. Class privilege conditions the distribution of preferential access to the surplus as well as the discretion over which goods constitute the surplus. Individual action occurs within networks of social relations. Economic action is embedded in the social fabric at large, which is conditioned by the many factors that serve to reproduce the institutional fabric.

Viability

Recall, an economy is viable if it produces enough in the current period to ensure that the system as a whole will generate the requisite inputs for each sector to carry out production in the subsequent period. The mechanisms that ensure self-replacement give rise to exchange ratios between sectors, known as technical coefficients in the input - output literature. Embodied in each exchange ratio are a set of social relations that form the basis for social production. Conceiving of the economy as a social embedded suggests that the social relationships that undergird these technical relations ought to be subject to consideration of their viability, just as their material counterparts. As Gugliemo Chiodi argues on Sraffa's notion of viability:

> Exchange [ratios] exclusively spring from those numerical values which, were they adopted, would allow each industry to obtain back, after the exchange, the necessary amount of the commodities needed to start production again.... they have to be regarded as the basic reference *for making the reproduction of the whole system actually realizable.* The property of 'viability' is then the other side of the coin, for it expresses the possibility of the system to continue production over time. That possibility, it must be emphasized, is the reflection of the specific numerical relations existing among *all* the commodities

> used and produced in the economy at a given point of time; rather, they are the result of the far more important *entire history* which as been characterizing the society considered, *viz.* the complex of *social and political relations among the people* which have progressively come into being over time (Chiodi, 2010; emphasis in original).

Thus, an examination of the viability of a given institutional fabric emerges as a central object of inquiry in the heterodox surplus approach. Accordingly, the social relationship serves as the fundamental unit of analysis in this dissertation. The decision is borne of an attempt to avoid the methodological error of reducing the analysis to a single, isolated agent. Economic action is never an isolated affair - the individual always stands at one side of a transaction with another party - so individual action should always be taken in relation to the parties to which such action would concern. Nor can social action be specified as an independent outcome of a single agent, but rather one embedded in networks of social relationships.

Embeddedness and Change in the Provisioning Process

Changes in the provisioning process to such a degree as that which we have witnessed in settling the West, introducing commodity production for the sole purpose of realizing pecuniary gain, and reorganizing the institutional fabric so that capitalist institutions become central, involve a process whereby unequal power relations are brought to the fore (Robbins, 1994). In our quest to engage in a social theory that avoids the methodological errors of reductionism, essentialism, reification and functional teleology (Sibeon, 2004), we may proceed by conceiving of the problem as a relationship between social structure on the one hand and agency on the other. The institutional fabric conditions, mediates, and gives form to the provisioning process; wherein individuals carry out their economic life process, acting upon these struc-

tures and affecting reproduction. Power emerges as embedded individuals realize the capacity to exert a disproportionate effect upon the reproduction of social structures relative to others, by leveraging their privileged positions at the central junctures of intersecting social networks.

On the Embedded Individual

In exploring how the concept of embeddedness contributes to the development of the structure-agency problem in social theory, John B. Davis in *The Theory of the Individual*, writes:

> to say that individuals are embedded in historical social relationships is quite close to saying that individuals disappear into those relationships. Indeed, many would argue that the embedded individual conception is not a conception of individuals at all, but rather a proposal to ignore individuals, in order to focus on groups, classes, movements, historical forces, history, and so on. According to this interpretation, in fact, rather than there being two traditions of thinking about the nature of the individual, there are really just two great traditions of thinking about society - one that is individualist and includes individuals as agents, and one that is collectivist in which it is not individuals that are agents but instead groups, classes, movements, etc. (2013, pg. 123)

Davis identifies an important problem for the economist: how does one theorize about the relationship between the individual and society without veering the analysis toward the polar extremes of methodological individualism and methodological collectivism? One way out of the dilemma is to seek to understand how the embedded individual affects the social structures in which they are embedded, through a framework that encompasses agency as an emergent outcome of the complex interaction of a range of social and institutional forces. In doing so one may question how some individuals have the capacity to condition the evolution of the institutional fabric

whereas others do not. Such differences in so-called "agency" cannot be reduced to the individual nor can they disappear into the social structure[4]

One challenge facing this analysis is the confusion in usage of the term embeddedness. While it would be redundant to reproduce the work of a number of scholars that have surveyed the literature on embeddedness, it is important to define usage and understanding of the term here to avoid further confusion of the issue (Krippner & Alvarez, 2007; Dale 2011). Defining what embeddedness means in the context of the capitalist transformation of the Pacific Northwest benefits from engagement with some of these differences in both the various strands of heterodox economics and economic sociology.

Krippner and Alvarez (2007) distinguish between approaches to embeddedness that follow in either the Polanyian (1944) or Granovetterian (1985) traditions among economic sociologists. When used as an analytical device for examining the degree to which the economy becomes embedded in or disembedded from the social, the research question follows in the Polanyian tradition and is directed toward resolving macro-level problems; the Granovetterian tradition focuses on micro or meso-level phenomena situated in social networks (Krippner & Alvarez, 2007, pg. 221). For Krippner and Alvarez either approach serves as a "powerful platform for launching a critique of neoclassical economics but is much less useful when turned toward the task of developing a positive research program for economic sociologists" (2007, pg. 221).

[4]Agency, as it is defined here, and influence are not equivalent in meaning. While it is likely that a person so empowered to act in an institutional capacity will also be influential, it does not follow necessarily that such agency depends upon influence.

Hence, insofar as embeddedness establishes the foundation for a research program in economic sociology it fails in providing coherence and internal consistency apart from its criticism of *Homo economicus*.

Supporting Krippner and Alvarez (2007), Dale (2011) argues that Granovetter (1985) has cast the problem of embeddedness as a problem of economic action, situating the atomic individual in a relational context in which social relations give meaning to action. Accordingly, the embeddedness approach in economic sociology diverges from the meaning and use established by Polanyi.

The present purpose of the dissertation is not to resolve the tension in divergent approaches to embeddedness. Rather, in using the concept of embeddedness it is acknowledged that analysis of the cumulative development of any provisioning process begins by situating those elements of the institutional fabric that are conceived of as economic as mutually constitutive of the institutional fabric. The institutional fabric may be analysed in a relational manner, suggesting a role for the Granovetterian tradition *a la* social network analysis, as well as from the Polanyian tradition of critiquing the liberal thesis of the ontologically prior economy as an analytic category with independent meaning. To the extent that I employ embeddedness in the Polanyian fashion, I reject the notion of the disembedded economy as a concept devoid of meaning (Beckert, 2009; Block, 2003; Dale, 2011; Jessop, 2001; Krippner, 2002; Somers & Block, 2005). Markets do not exist in the absence of social systems and do not operate independent of them. Therefore, they are always embedded in a nexus of social relations.

Integrating the concept of embeddedness with the understanding of the econ-

omy as a provisioning process, allows one to envision provisioning from an historically contingent vantage; the interplay between structure and agency may be viewed as the moment at which the evolutionary process unfolds. The concept of the embedded individual acting within an institutional framework enables analysis that does not run afoul of Sibeon's four cardinal sins of social theory: reductionism, essentialism, reification and functional teleology (2004).

Why Did the Provisioning Process Change?

Capitalists from the east managed to change the provisioning process so that it no longer reproduced itself as an embedded process within the social system in which peoples indigenous to the Pacific Northwest were central. Because some persons embedded in capitalist social networks were able to exert their agency over the region as whole, a new set of productive relations took root that rendered the old system unviable. One of the central moments in this process was the arrival of the railroads and the capital[5] that emerged with it in the region. Once this capital structure was in place, those that sought to maintain its viability went to work to incorporate other technologies, such as electricity, in the process of creating and maintaining markets in the region. Such development proceeded in direct relation to the Columbia River basin, culminating in the rationalization of the river itself as an important aspect of the machine process. Figure 1 illustrates the distinction between the two provisioning

[5]Capital is taken here to mean an articulation of a set of economic, political, and social relations that allow for the production and appropriation of pecuniary value. This definition is constructed so that both Classical and Institutional theoretical issues may be dealt with on common ground.

processes. In the economic system that precedes capitalism (SPP_G) the provisioning

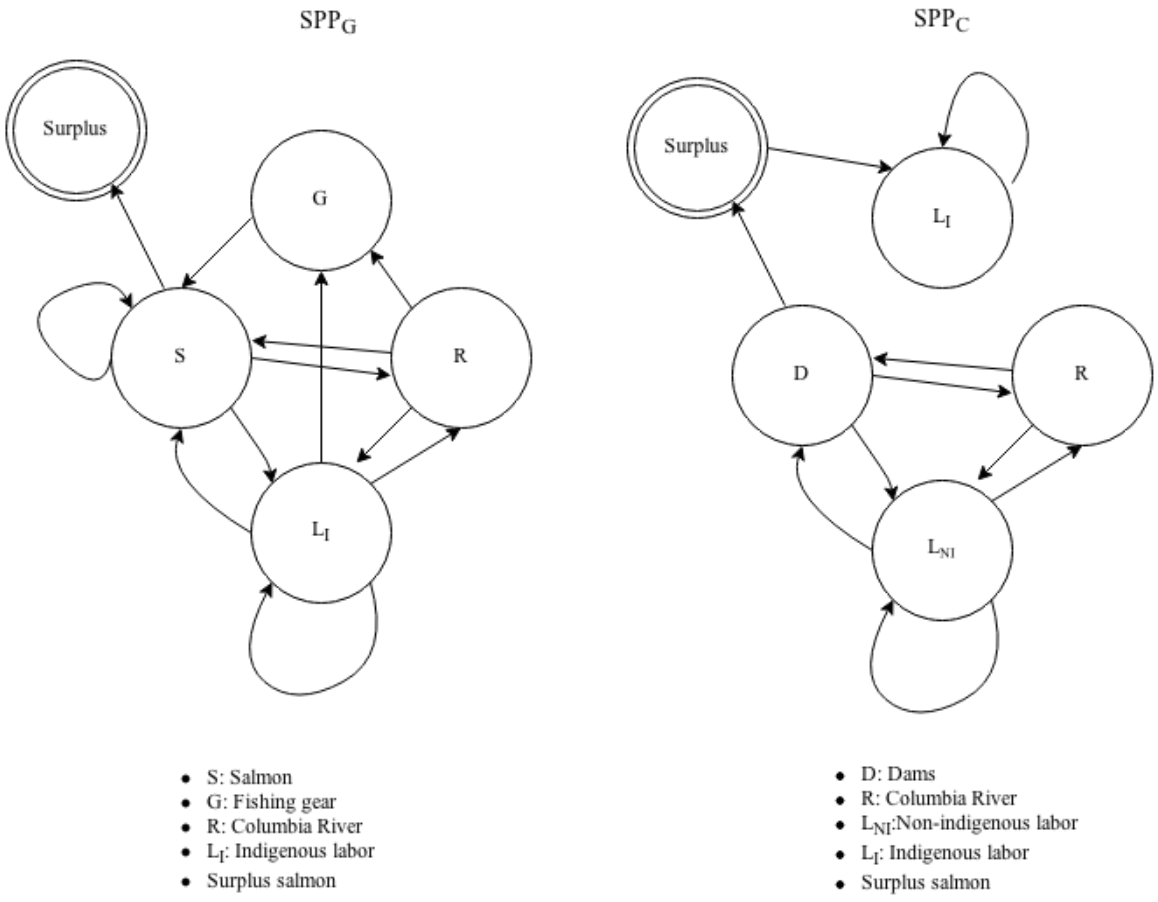

Figure 1. Two qualitatively distinct provisioning processes.

Source: Constructed by author based upon historical data related to each provisioning process.

process is embedded in a society in which gift exchange and ceremonial reproduction of salmon are central. Indigenous labor (L_I), using produced means of production

(G), fished the Columbia (R) for salmon (S). The relations between L_I, G, S, and R must be reproduced for the system as whole to remain viable. In the capitalist economy that follows (SPP_C) the provisioning process is embedded in a society in which the institution of private property is central and the river is placed in the service of the production and distribution of commodities. While it remains centered upon the Columbia River (R), the new provisioning process is fundamentally different. Reproduction of the social relations of production between salmon, indigenous labor, and the river are no longer necessary for the viability of SPP_C. Rather, the relations between non-indigenous labor (L_{NI}), a hydroelectric complex (D), and the Columbia emerge as central to the viability of the new system going forward. Accordingly, the relations that govern the production and distribution of the surplus are determined on the basis of the institutional fabric in which the economy is embedded. In the Pacific Northwest white settlers were granted property rights at the expense of previous institutions governing communal use. Salmon is now produced within the machine process, but as a 'non-basic' good, following Sraffa's (1960) classification for which goods must necessarily be reproduced to ensure viability. Ceremonial attachment to Columbia River salmon notwithstanding, whether L_I may access such surplus salmon depends upon sufficient monetary claims or the right to fish granted by the legal framework. While a relationship between Northwest Indians, the Columbia River and its fish still exists, it is mediated by the capitalist-controlled machine process and lies peripheral to the provisioning process in general.

In the modern era the industrial economy determines, largely, the process by which the river-region relationship is socially constructed to reflect the view that the

Columbia ought to serve as a hydrological engine. The Federal Columbia River Power System (FRCRPS) emerges as a set of multi-purpose dams that have transformed the once free-flowing Columbia into a series of slow moving lakes. The Bonneville Power Administration, in concert with the Army Corps of Engineers and the Bureau of Reclamation operate the Columbia so that it functions, to use Richard White's language, as an "Organic Machine" (1996). The organic machine rationalizes and governs an electric utility industry that emerged from the capitalist development of the region. Because we are interested in the question of qualitative change in the provisioning process in relation to the Columbia River, we enter the economic history of the region by tracing the electrification of the region through its railroad roots and examine how the men that built and controlled these institutions acted in an institutional capacity, while embedded in a social fabric.

The Essays

The dissertation is comprised of three independent essays. However, each essay examines the process of qualitative change in the provisioning process from a different vantage, while remaining fixed in relation to the Columbia River. Among the three essays the period 1866 to 1945 is covered. The first essay (Chapter 2) examines development of the region's railroad system, and the aspirations on the part of its financiers to realize speculative gains. The region is situated in the context of the post Civil War imperial stance of the state, and the rise of global finance. It is argued that while other colonial processes had operated in the region since the arrival of the fur trappers, construction of railroads embodied a watershed in the commitment for absentee owners to engage in transformational development.

The second essay (Chapter 3) traces the emergence of the electric utility globally, and in reference to the Pacific Northwest. It is argued that the electric utility emerges directly from the railroad - finance nexus. Key social relationships are explored that explain the emergence of the electric utility as a going concern, with particular emphasis placed upon Henry Villard. Villard's financial connections were instrumental in establishing the markets in which Edison's patents would become successful in general. In reference to the Pacific Northwest, Villard's relationship with Edison, both social and pecuniary in nature, would shape the subsequent process of electrification for the region.

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CHAPTER 2

OF RAILROADS AND FINANCE

Introduction

To those unacquainted with the business enterprise of the late nineteenth century it would appear the development of market society in the Pacific Northwest is the stuff of tall tales. The exploits of early railroad promoters is littered with chicanery and fraud, and reads like a farce by Mark Twain[1]. Yet these men of railroads and finance were real and through their persistent failure influenced a process of change from which emerged a qualitatively distinct provisioning process. Whereas prior to investment on the part of the modern business enterprise in extractive industries, e.g., fur trapping, fishing, logging, mining, and later a rationalized transportation and navigation system, the provisioning process was oriented towards a fundamentally different sort of society. For roughly 9,000 years humans inhabiting the region have employed a provisioning process that places salmon at the center of its valuation process, organizing its institutional fabric in such a way that provides for its reproduction as a viable economic system. The economy was embedded in a set of communal social relations, oriented towards the ceremonial reproduction of Columbia River salmon runs.

With the arrival of Western settlers, a new articulation of the social relations of

[1]For an example of the ambiguity between story and reality in this regard, see Twain's, *The Gilded Age* (1874).

production began to emerge, initiating a sequence of events that would ultimately lead to the transformation of the provisioning process as whole: the emergence of an economic system that placed absentee ownership at the center of the institutional fabric while moving non-capitalist forms of social integration to the periphery[2]. Throughout the process the Columbia River basin remains central to the emerging social order, where navigation and transportation, together with its tributary markets, would continue to tie humans to the watershed. Yet, to effect the transformation of the regional economy into a fully rationalized machine process, required control over markets and the mighty Columbia River. The process of rationalization[3] is was rather abrupt: in less than a century the region was transformed from a traditional society[4] organized around a set of customs that directly or indirectly bear some relevance to the problem of reproducing Columbia River salmon runs, to the corporate economy which more or less resembles what we see today.

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[2]Richard White in *Railroaded: The Transcontinentals and the Making of Modern America* (2011), emphasizes that through their failures in the construction of their railroads, as judged from either financial solvency or technological serviceability, the corporate managers and directors of the railroads managed to usher in a radical transformation of the relationship between the economic and the social.

[3]Rationalization is used here in the same context as the Continental experience, especially Germany, in which industries are organized for the sake of control.

[4]The term "traditional society" is not without difficulty. It is not employed here to refer to a natural, idyllic state in which social relations are essentially harmonious. To do so would commit the analysis to the same teleological error for which criticisms are leveled against the Social Darwinists of the late 19th century. Rather, we follow Polanyi's (1944) scheme by which to compare the onset of market society characterized chiefly by the advent of fictitious commodities as central mediating processes in the social fabric, with a general process in which social intercourse was conducted on the basis of custom and tradition.

The process of transformation was neither accidental nor passive. Capitalism did not emerge spontaneously in the region as the result of the heroism of a Turnerian "rugged individual"[5]. To the contrary, the region was brought under the control of institutions, and persons acting in an institutional capacity, embedded in a set of social networks that reflected the power of corporate finance. These networks were centered on the great financial centers of the U.S. East, London and Germany. Further, the outcomes of the capitalist transformation of the West, and the Pacific Northwest in particular, were not unrelated to the process of imperialism.

Manifest Destiny and the Ideology of Imperialism

William G. Robbins, in *Colony and Empire* (1994), criticizes the traditional view of the settling of the West (after Frederic Jackson Turner) as ahistorical and teleological. The object of Robbins's criticism reflects the ideology of imperialism. Envisioning the West as empty or Eden[6], or as "the last refuge for man and God" in this mythical garden "where woe and wail would be no more," is fraught with the bastard evolutionary approach of a Herbert Spencer or William Graham Sumner (Robbins, 1994, pg. 6). Of course the West was not empty; that we view the West as empty is suggestive of the racism embedded in the legitimating ideology of imperialism. The appeal to settle the west for God's chosen people presupposes those already inhabiting the region were not people at all. Encapsulating the aborigine within nature and pitting the Anglo-Saxon, Christian individual against nature, situ-

[5]See Frederick Jackson Turner's, *The Significance of the Frontier in American History* (1921).

[6]See Robbins (1998), for a criticism of the Willamette Valley in Oregon as Eden.

ates the imperialist history of the West within the broader cannon of Western thought (Sahlins, 2008).

A critical appraisal of the development of market society in the West ought to take into account the interrelatedness between the rise of business enterprise in the credit economy[7], and the movement toward imperialism. To this end, Robbins writes:

> critical to understanding new bursts in economic growth is a recognition of the evolving dialectic between changes in world capitalism and local conditions. Hence, there are obvious social and regional contradictions in the development of the United States, conditions - that resemble the relationship between an imperial center and a dominated periphery (1994, pg. 15).

Historians such as Robbins, seeking to reinterpret the historiography of the West through a class-analytic or core-periphery framework have, not surprisingly, been dismissed as substituting ideology for evidence. Robbins counters by pointing out that "all interpretations are political in their potential for shaping myth"(1994, pg. 6), rejecting the very positivism that plagues the social sciences in general and economics in particular. For Robbins, not unlike many heterodox economists, the rejection of positivism is linked with the struggle against imperialism as it is understood as both process of oppression in ways of doing economics and its very real manifestation as violent expression of power.

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[7]The term "credit economy" follows Veblen in his characterization of the modern provisioning process animated by pecuniary ends, similar to Keynes' "monetary production economy" and the value circuit in Marx. The choice of Veblen's terminology follows from the desire to situate the analysis in the context of the business enterprise, as Veblen knew it, as the contradictions associated with its existence as a going concern bear on the economic life of the community.

To ignore the centrality of imperialism in our interpretation of the history of capitalist development in the West obscures the violence embedded in its historical transformation. To conceal this violence requires a legitimating ideology that relies upon the fraudulent claims of a) the existence of a timeless, invariant human nature (Henry, 2012) and b) the proposition that inequality among socially constructed racial categories is an inherent feature of the progressive development of the human species (Briffault, 1936).

To illustrate the ideological framework placing the chief institutions of capitalism at the center of the institutional fabric, thereby justifying their preeminence in the social valuation process, it is useful to draw upon John Fiske (2003, pg. 65) who lauds the natural and "gradual transfer of the preponderance of physical strength from the hands of the war-loving portion of the human race into the hands of the peace-loving portion." For Fiske, it is a mark of progress to place power, "into the hands of the dollar-hunters, if you please, but out of the hands of the scalp-hunters." Fiske apologizes for the ethnic cleansing of so-called "scalp-hunters" through his implicit assumption that genocide simply clears the path for the expansion of American empire, whose inhabitants of Christian, Anglo-Saxon descent represent the highest stage of development for the individual.

Clearing the way for the free development of the American individual requires the extermination of those racially inferior native inhabitants. On behalf of the imperialism that effected the capitalist transformation of the West, Fiske (2003, pg. 69) suggests that, "[war] as we have seen, is with barbarous races both a necessity and favorite occupation; as long as civilization comes into contact with barbarism it

remains a too frequent necessity; but as between civilized and Christian nations it is an absurdity." Such is the price of progress.

Fiske's ideology of imperialism provides an apology for the centralized power of a federal state enmeshed with the corporate business community: that which advances the interests of the capitalist class advances the public purpose of peace and progress. In the process, which is a violent parallel to the transition from feudalism to capitalism in Europe, the provisioning process was remade; the extant tribal relations centered upon a ceremonially encapsulated working relationship with the Columbia River, in which reproduction of the salmon runs dominated the social valuation process, were displaced and moved to the periphery of an emerging set of relations that placed the functioning of the machine process at its center.

According to Robbins (1994, pg. 7), avoidance of the American exceptionalism that has plagued histories of the West in the 20th century, requires confrontation with the subject as a study of conflict and change. The critical approach stands in sharp relief to the harmonious, peaceable qualities of the history of a Fiske or Turner. For Robbins this involves reconciling the historical narrative with a critical understanding of capitalism as it constitutes "a set of values and perceptions associated with that [capitalism] phenomenon, its structural framework as expressed in social and political relations, and its pervasive reach through American life" (1994, pg. 7).

The remainder of the essay follows Robbins as it endeavors to construct a narrative of the transformation of the region that explicates the power of embedded persons in bringing the new machine process to bear on the community. It is shown that the transformation was a process of integrating the region into the capitalist

system, albeit as periphery to the financial core in Europe and the U.S. East.

Henry Villard and the Social Construction of the Pacific Northwest

In the Pacific Northwest the development process follows Henry Villard's own movement within corporate capitalism and the spaces it creates[8]. Because he was vested with the authority to take action on behalf of German bondholders, who had by 1873 assumed the bulk of $11 million in claims on the Oregon and California Railroad Company between themselves and English financial houses, Villard was able to exert his influence through a range of social networks, making his efficacy greater than if it were examined in isolation (Hedges, 1930; Villard, 1944; Wilkins, 1989). Villard occupied a central position in financial networks that linked Frankfurt-on-Main, Berlin, London, New York, and Boston. Villard's role in the financial network was to directly manage the affairs of the concerns engaged in railroad construction, with the purpose of making such concerns financially viable. Through Villard's attempts to control the transportation situation, to rationalize it, the Pacific Northwest remains tied to a legacy in which its identity is defined by the boundaries of the very markets that Villard helped to establish.

To better understand the role of Villard as an embedded person in the emerging class of corporate financiers and railroaders, let us consider in some detail the

[8]White has argued that one of the outcomes of the transcontinental railroads was a reconstruction of our sense of space and time. The once familiar spaces of the premodern era, insofar as modernity is associated with the advent of the machine process, are rendered unfamiliar as a result of the always shifting relative spaces created by changing rate structures. The closing of the frontier by steam power contorts time and brings forth a new spatial situation, ultimately necessitating the need for a new, spatial politics. (2011, pp. 140-174)

early history of the transportation system in Oregon prior to his arrival in 1874 and subsequent dealings. It will be shown that Villard, acting on behalf of the protection of the bondholding class in Europe, emerges as an agent of power in effecting the development of the region. The social fabric, consisting of relations between debtor and creditor, reflecting the pecuniary nature of its institutions, provided the situation in which power becomes something to be leveraged by the acting person embedded therein. As John Commons (1936) would put it, the social fabric in which Villard was embedded allowed for the expansion of his individual action.

Albro Martin argues, "No other single factor contributed so much to the settlement of the North American continent, to the rapid development of its natural and human resources, and to the transformation of the material and cultural aspects of American life as the maturing railroad system" (quoted in Wilkins, 1989, pg. 190). Following the speculative euphoria resulting from the desire to promote the development of a transcontinental railway in early 1860s, an association of capitalists centered in the Sacramento Valley in California organized the California and Oregon Railroad Company in 1863 (Ganoe 1924; Hedges 1930, pg. 7; Villard 1944). The *Association of the Upper Sacramento Valley and Southwestern Oregon,* in conjunction with other private Californian interests and the California delegation lobbied Congress seeking similar claims on the public largesse similar to those granted to the Central and Union Pacific railroads (Villard, 1944, pg. 1).

While failing to obtain direct subsidizes, The California and Oregon managed to secure passage of legislation on July 25th, 1866, that conferred upon the concern the right to secure franchises in Oregon and California. The franchises provided for

land grants - twenty alternating sections per mile on either side of the road (Villard, 1944, pg. 1). With the legal framework in place, the associates acting through their newly established corporation sought to secure the franchise in Oregon[9].

What remains of this brief historical sketch concerns the importance of fraud in conditioning the manner in which economic relations were established and reproduced. The social networks in which these railroaders were embedded were, in large part, constructed on the basis of fraudulent claims and practices, serving to condition the reproduction of fraudulent behavior going forward. The conditions enabling Villard to emerge as a central force in the development of the region were closely related to the financial structures that emerged as the result of the fraud. Once established these financial relations between the railroad concerns and Eastern and European financiers required ongoing fraud to remain viable.

While the California and Oregon Railroad Company expired as a going concern, the social networks that birthed it remained. On September 3rd, 1866, the Associates of the Sacramento Valley, of whom Alpheus Bull, C. Temple Emmet and Simon G. Elliot were most active, entreated a group of Oregon based capitalists to join in a scheme to secure the Oregon franchise (Villard, 1944, pg. 2). The Oregonians to whom the Californians appealed for support were well connected to the political Establishment in Oregon, and would be well placed to influence positive legislation in favor of the Californians.

[9]The California and Oregon did claim the California franchise. However, it failed in raising the sufficient funds to actually begin construction of the road. It was immediately absorbed by the Central Pacific.

That the Oregonians did not initiate the drive for railroad development in Oregon may be explained, in part, by the fact that Portland based interests were well represented by the influential Oregon Steamship Navigation Company, a successful shipping concern with a monopoly over traffic along the Columbia River[10]. Portland, Oregon enjoyed pre-eminence at the center of a lucrative trade that extended into the Inland Empire (the region east of the Cascade Mountains in Oregon, Washington and extending into Idaho via the Snake River Valley). Prior to the arrival of the Northern Pacific and the Great Northern Railroads in the Puget Sound, Portland's location at the confluence of the Columbia River and Willamette Rivers resulted in its supremacy in trade. As Hedges (1930, pg. 6) puts it, "The officials of the Navigation Company, growing wealthy through the river traffic were quite indifferent to the question of railroad promotion, which they were not disposed to encourage with either financial or moral support, lest their control of water transportation in the Columbia Basin should be endangered by railway competition."

However, despite vested interests in Portland advances by the California interests would upset their complacency. The memorandum addressed to the Oregonians mentioned above offered to:

[10]Not all Oregonians were created the same. The Oregonians indifferent to the railroad fever of the period are more aptly "Portlanders", who were vested in their interest with the Columbia shipping trade. However, as a result of gold strikes in Southern Oregon, in the Rogue River valley in particular, cities such as Roseburg, Oregon were more aligned with interests in the Sacramento Valley and sought to establish firmer market relations in San Francisco, and effectively redirect the flow of trade southerly through its burgs. For these reasons Elliott was successful in subscribing support from the Southern Oregon interests for his California & Oregon scheme (Ganoe, 1924; Lichatowich, 1999)

> build and equip the road for a company to be formed under Oregon laws according to the stated specifications, for a bonus of $2,000,000 of preferred stock to the California & Oregon Company and $35,000 for every mile of completed and equipped, provided that the General Incorporation Act of the state could be so amended as to authorize the issue of $16,000,000 of share capital (including the $2,000,000 preferred for the company), together with a corporate existence of fifty years, and provided that financial aid from the state and any other procurable legislative favors be obtained (Villard, 1944, pg. 2; parenthesis in the original).

The signatories to the memorandum enclosed a confidential covenant which laid out the terms by which the Oregon party would be compensated for the necessary bribery expenses to persuade their friends in the legislature:

> The California & Oregon Company in consideration of the expense to be incurred in obtaining the necessary legislation in Oregon to accomplish the results named in the foregoing memorandum agree with the company to be incorporated of citizens of Oregon to assign back to said company, as they may designate, $1,000,000 of the $2,000,000 preferred stock stipulated to be conveyed to them (Villard, pg. 2).

The two parties failed to strike an agreeable contract, despite considerable higgling and haggling over the terms proposed by the Californians, as conveyed through an exchange of letters (Villard, 1944, pg. 6). That the offer was not rejected out of hand suggests the Portlanders did not find it to be a breach of good conduct; to the contrary, bribery was commonplace as a means by which establish and control markets during the Gilded Age[11].

Other efforts were underway to secure the land grant established by the Act of July 25th 1866. Joseph Gaston, an earlier associate of S. G. Elliot and therefore

[11]White (2011) argues that corporate interests did not see it is bribery, but rather the price of maintaining "friendship" with their counterparts in the state.

connected to the California party, had spent the month of September 1866 organizing a concern with the aim of securing the Oregon land grant and right of way to construct the line from Portland to California (Ganoe, 1924, pg. 250). On October 6th, 1866, Gaston delivered the articles of incorporation to the Oregon Secretary of State for filing, which would establish the Oregon Central Railroad Company as the concern with legal claim to the grant; however, the Secretary had provisionally endorsed the articles on the understanding Gaston would return with additional signatories from the Portland interests (Ganoe, 1924, pg. 250)[12]. Gaston did succeed in recruiting the support of key Portland capitalists, especially those vested in the Oregon Steam Navigation Company, but not before some defected and filed for incorporation for a competing concern under the same name[13]. The defecting incorporators - most notably I. R. Moores, J. S. Smith, and E. N. Cooke - filed two days prior to Gaston, who upon return from Portland had nullified the previously endorsed date of October 6th as a result of substantial changes to the articles of incorporation for the Oregon

[12]The early incorporators were not united in their support for Gaston; interests were split over the preferred survey. Two surveys were conducted in the early 1860s, one led by Gaston that would proceed north to Portland via the Tualatin Valley and another led by Elliot that would run through the Willamette Valley. The California interests were more closely enmeshed with the Southern Oregon interests, whom favored the Willamette route.

[13]Much of the struggle between these two factions stems from the fact that on October 10th, 1866, the Oregon legislature, in establishing the legal basis for the franchise and land grants, named the Oregon Central Railroad Company specifically as the concern to effect the law. The law was enacted in favor of Gaston, however, due to disagreements among his fellow incorporators after the law had been enacted Gaston's control over the name was no longer assured. Here lies a clear example of the importance of goodwill capital in shaping the course of economic affairs, as well as instructive to the manner in which it emerges from the institutional fabric.

Central Railroad Company.

Ganoe points out that "the company of November 17th, 1866, was not organized for the purpose of building a railroad, but to beat out Gaston since the capital stock was only placed at $500,000" (1924, pg. 251); a notable example of the problems associated with the degrees of separation inherent to the modern business enterprise, as it is controlled by persons acting in a pecuniary interest whose interests diverge from the those of the community at large (Dean, 2013; Veblen, 1904).

Yet another Oregon Central would be incorporated, this time with the suffix "of Salem" on April 22nd, 1867, by J. H. Moores, I. R. Moores, J. S. Smith, George L. Woods, E. N. Cooke, S. Ellsworth, and S. A. Clarke[14]. Clarke, Cooke and Smith were among the Oregonians to whom the first offer to join with the California party was made, effected chiefly by Elliot. Villard recounts that, "J. S. Smith, who also had knowledge of the California & Oregon Company scheme, accidentally met S. G. Elliot early in April 1867 in San Francisco. They discussed the railroad outlook in Oregon, and, as Elliot spoke very confidently of his business connections and ability to control capital for carrying out a construction project on the lines of proposal submitted [referring to the Willamette Valley survey in the articles of November 17th], Smith urged him to go to Oregon and provided him with a letter of introduction to I. R. Moores" (1944, pg. 3).

Given Smith's prior knowledge of the memorandum of September 3rd, 1866,

[14]I. R. Moore was the Assistant Secretary of State at the time Gaston filed, albeit unfinished, articles of incorporation. Moore asked to see the articles and upon learning that they were not physically on file in the Secretary's office, he moved to preempt Gaston (Ganoe, 1924, pg. 251).

it is unlikely that his meeting with Elliot was accidental. A more convincing account would have Smith travelling to San Francisco to seek out Elliot for the purpose of renewing the previously aforementioned offer so that the road could actually be built, thereby cementing claim to the land grant. Nevertheless, Elliot did travel to Oregon on Smith's advice to meet with I. R. Moores and defrauded him and his associates into believing that he represented the interest of capitalists in California and the East (Ganoe, 1924, pg. 251). Passing himself off as 'attorney-in-fact' for Albert J. Cook, whom Elliot claimed to be a wealthy railroad contractor from the East, he managed to connect himself with the fate of the concern and continue to defraud his fellow owners and managers in the enterprise, his suppliers, and his financiers, ultimately undermining the viability of the going concern (Ganoe 1924, passim; Villard, 1944). The chief fraud lied in the fact that Albert J. Cook never existed. Elliot would continue operating on false pretense until he was pushed out by Ben Holladay, the stagecoach magnate, who had grown wealthy as a result of his contractual relationship with the Union Army during the Civil War. Holladay managed to dump his assets on Wells Fargo prior the decline of the stagecoach as a financially viable transportation technology, freeing him to pursue an interest in the very railroads that replaced it (Hedges, 1930; Villard, 1944).

Prior to the discovery of Elliot's fraudulent practices, the outcomes of his efforts to enrich himself at the expense of the going concern had the effect of stitching together two social networks: one based in the Sacramento Valley and another in Oregon serving the Willamette Valley interests. To this end, Elliot was central in the emerging corporate finance and railroad networks. Unfortunately for Elliot, de-

frauding fellow business partners was a breach of acceptable conduct in the corporate community, thus tainting his associations with the pall of poor worthiness. It would require Ben Holladay's name to place the "Eastside" Oregon Central Company in good standing with the bondholders, so that it could obtain the funds necessary for its reproduction as a concern[15].

Villard (1944, pg. 15) argues that Holladay, having been previously interested in the Union Pacific and the Credit Mobilier, was keen to the riches that await those successful in laying claim to public lands and subsidies. Holladay was confident that with his lobbying experience and financial connections, obtaining control of the railroad concerns in the region would afford him the basis from which to secure the land grant. In September of 1868, Emmet and Holladay, who had known each other from previous associations, met with Elliot and convinced him to relinquish his controlling stake in the company. On September 12th, 1868, control of the Eastside company passed into the hands of Holladay.

Immediately Holladay mobilized his lobbying efforts in conjunction with his ownership of the local press to persuade the public opinion in favor of the Eastside company. Holladay was successful: In October, 1868, the Oregon legislature annulled the previous language that, two years prior, placed the land grant in favor of the Westside company of Gaston and associates. Unable to secure finance for the construction of the road, the Gaston interests sold out to Holladay in 1870. Subsequently,

[15]This is not to suggest that Holladay was not himself a fraud. In fact, Holladay would later be removed by Villard and the Frankfort Committee for failing to make regular coupon payments in full on the bonds

Holladay incorporated a new concern to consolidate his interests: On March 17th, 1870, the Oregon and California Railroad Company was formed under Oregon law (Hedges, 1930, pp. 8-9).

Ganoe remarks (1924), "we see how the early political history of Oregon was connected with the railroads. Holladay had bought and subsidized papers as well as politicians. Not only that, by such a plan [Gaston plan] the whole of Southern Oregon would be cut out of a great deal of traffic. It must be remembered that Southern Oregon since the gold rush of '49 had not been an insignificant factor[16]." Such politicians included the likes of John H. Mitchell and Joseph N. Dolph, each connected directly with the railroad - finance nexus. According to Dorothy O. Johansen and Charles M. Gates (1967), Senator Mitchell remarked, "Ben Holladay's politics are my politics and what Ben Holladay wants I want." Of course, the politician also served as legal counsel to both the newly formed Oregon and California Railroad and the Northern Pacific, and had been an original incorporator of the Oregon Central (Johansen and Gates, 1967, pg. 351). Senator Dolph, Johansen and Gates observe:

> was also vice-president of the Oregon and Transcontinental Company [a holding company that Villard would later organize to govern the joint interests of the Northern Pacific and Oregon and California] and hence was linked not only with the interests of every important railroad in Oregon and Washington but with timber and mining interests as well. State legislators bought by the railroads were vigilant in warding off public scrutiny of freight rates, and in defeating every effort to establish effective regulatory agencies.

By 1872 Holladay had constructed the road from Portland as far south as

[16]Cf. Lichatowich, 1999, pp. 52 - 80, for discussion of early mining interests in the Rogue River Valley, in the context of its impact on the viability of a salmon-based economy.

Roseburg (roughly 180 miles). However, in order to finance the construction of the road Holladay relied upon extensive issues of bonds. To place these bonds Holladay leveraged his close relationship with Milton S. Latham, president of the London and San Francisco Bank, who managed to organize a syndicate that joined the English and German financial circles (Hedges, 1930, pg. 9; Villard, 1944, pp. 30 - 34)[17]. Latham's success in placing the bonds was due, in part, by his centrality in international finance, explaining why despite limited knowledge of Oregon in European financial networks, "little difficulty was encountered in disposing of the bonds" (Hedges, 1930, pg. 10). The remoteness of the relationship between creditor and debtor in this circumstance, however, created the opportunity for deceit (Hedges, 1930, pg. 10)[18].

There was significant foreign investment in American railroads from the 1870s through to 1915 (Wilkins, 1989, pp 191 - 236). German financial houses took a considerable interest in the bond issues of the Oregon and California R.R. Co, so that by 1872 they had accumulated $11,000,000 in gold bonds (Buss, 1978; Hedges, 1930; Villard, 1944; Wilkins, 1989). However, Holladay had failed to invest the borrowed

[17]It is important to note that, in the main, railroad bonds were only salable on the understanding they were undergirded by land grants and subsidies. Further, their value depended upon the perceived creditworthiness of the personalities involved, which is evidenced by the fact that once news broke of Elliot's A. J. Cook fraud, any bonds he wished to sell were worthless.

[18]Distance takes on both a social and geospatial meaning. Obviously, Europe and the Pacific Northwest are quite removed - a distance of several thousand miles. But, social distance possesses meaning in the network context. Holladay was one degree removed from the German bondholders that would ultimately wrest control from him upon learning of his deceit. His deceit through Latham, who was adjacent to the bondholders, served to place Holladay at arm's length of the bondholders, placing enough distance between Holladay and his creditors to enable his deceit.

funds in a manner that best supported the viability of the concern to reproduce itself, relying instead on the view he would always be able to borrow more funds to service his outstanding liabilities[19]. Of course, Holladay had assured the bondholders that the fundamental business of the railroad was sound, securing the basis for his favorable credit terms. Holladay's deceit, as well as that of his predecessor, S. G. Elliot, combined with failure to complete the road per the language of the franchise, contributed to realized losses in the capitalized value of the assets in the Oregon & California Railroad.

Bondholder Response

Default of railroad bonds was common during the period (Wilkins, 1989, pp. 191 - 236). The conventional response to default was the formation of bondholder protection committees. In Frankfort-on-Main, the Committee for the Protection of the Bondholders of Oregon and California 7% Bonds was established. In 1873 the Committee dispatched an agent, Dr. Paul Reinengum, to survey the situation in Oregon; Reinengum discovered that bondholders had been misled. The Pacific Northwest

[19]It is unclear to what extent Holladay was to blame for the default on the Oregon and California bonds. MacColl (1976) describes Holladay as exemplary of the habit of conspicuous consumption, which suggests Holladay used his control over the enterprise to plunder its cash balances for his own enrichment. Villard's (1944) account supports this view. However, the lifeblood of any railroad during this period - especially those aspiring to the status of major regional trunk or transcontinental - was easy money. Judged on the basis of sound finance the Western railroads were always a losing venture, with perhaps James J. Hill's Great Northern as notable exception. The crucial distinction lies in whether or not the persons engaged in managing, financing, or "undertaking" the railroad venture were well connected or central to the dominant financial networks prevalent at the time.

lacked the necessary markets to sustain sufficient financial flows to at least service its debts, which had the effect of rendering the bonds worthless. Ganoe points out that at best the bonds paid 2 or 3 percent, which gave the Germans cause for panic.

In the interest of sustaining the value of the bonds the Committee charged Henry Villard with managing the affairs of the Oregon & California directly. Due to the inability of Holladay to honor the terms of the bondholder oversight, Villard, on behalf of the bondholders, sought control of the Oregon & California by buying Holladay out of his other interests in navigation and railroading in the region. In this they were successful (Hedges, 1930; Villard, 1944, Wilkins, 1989).

Villard's activities thenceforth would have lasting effects on the development of the provisioning process in the region. His consolidation of the regional transportation system, including the Oregon Steam Navigation Company, was part of a process in which Villard sought to actively develop capitalist development in the region, by joining the shipping hub at Portland with the emerging Northern Pacific. Following his arrival in Oregon in 1874, Villard would rationalize the transportation situation in the region through a process of market governance. Engaging his friends in a "blind pool," Villard secured sufficient subscriptions to finance the consolidation of the Oregon Central Railroad, Oregon and California Railroad, Oregon Steamship Company and Oregon Steamship Navigation Company into the Oregon Railway and Navigation Company. In doing so, Villard gained control over the region-wide transportation and navigation system (Buss, 1978; Hedges, 1930; Villard, 1944), allowing him to integrate the system with the encroaching transcontinental: the Northern Pacific Railroad.

Recall, the Oregon Steamship Navigation Company controlled the market for river traffic in the Columbia River basin, which a connection with the Northern Pacific would undermine. Villard, recognizing that the viability of the Northern Pacific, a concern he eventually controlled and for whom he represented the interests of the bondholding class in Europe, required a longer planning horizon than that of the Navigation Company, sought control to preclude any potential steamship - railroad rate wars that may ensure.

Thus, a problem faced Villard: in order for the transportation system to remain viable, in the financial sense, the liability structures that emerged with them required validation. Financial validation required markets. Commodity production for sale on the world market was necessary to make the emerging machine process rational, because the scale and scope of local markets was insufficient to generate a flow of income to the railroad. In an effort to resolve this issue, Villard, like his contemporaries in the railroading business and finance, engaged in a propaganda campaign aimed at convincing a mass population to immigrate to the Pacific Northwest in order to bring about markets, and to serve as a ready supply of labor power. To this end, Villard actively promoted migration to the Pacific Northwest in Europe (Buss, 1978, pp. 143-147).

Ideology, Immigration, and Imperialism

The process of immigration, promotion of railroads, and the development of an ideology of imperialism are interconnected themes. Villard was secretary to the American Social Science Association in 1865. During his tenure as secretary he was very active in promoting their mission which included:

> the development of Social Science, and to guide the public mind to the best practical means of promoting the Amendment of Laws, the Advancement of Education, the Prevention and Repression of Crime, the Reformation of Criminals, and [sic] the progress of Public Morality, the diffusion of sound principles on questions of Economy, Trade, and Finance-It will aim to bring together the various societies and individuals now interested in these objects, *for the purpose of obtaining by discussion the real elements of Truth; by which doubts are removed, conflicting opinions harmonized, and a common ground afforded for treating wisely the great social problems of the day* (emphasis added)[20]

Reflecting on the history of the association, F. B. Sanborn (1909), remarked "[our] most energetic Secretary was the late Henry Villard, who increased our membership, got out our Handbook of Immigration, and drew to these shores several hundred thousand, not to say millions, of those citizens who now govern us in finance, industry, economics, history, and fiction. I believe I succeeded, [but] nobody could replace him."

The significance of this association highlights the fuzzy boundaries between the properly social and properly economic: the two interests are mutually constitutive. Villard's role in promoting settlement performed a threefold function: 1) to attract immigration from the continent, thereby supporting the development of markets for the emerging railroad, corporate system; 2) 'Americanizing' these immigrants so as the imbue in them the sense of American exceptionalism; and 3) it offered Villard entrance to the financial circles which would later become the basis for his ascendancy, while simultaneously helping to validate those very financial structures.

While Villard's association with the ASSA may appear unrelated to the central

[20]Article 2, Constitution of the American Association for the Promotion of Social Science. 1866.

issue of explaining the development of the region in particular, and a corporate system based upon high finance in general, it remains relevant regarding his membership in what Dorothy Ross, in *Origins of American Social Science* (1991), refers to as the "gentry class;" a class that took it upon themselves to lead the development a new ideology more fit for life under the machine age. The new situation constituted by finance capitalism, the machine process, and business enterprise in the credit economy, required a new ideology, wherein the crisis of American exceptionalism might be avoided and her thrust towards imperialism unimpaired (Ross, 1991, pg. 63)

Villard's efforts succeeded in linking the Pacific Northwest with the East via the establishment of financial, social and technological networks. The advent of the railroad, especially the transcontinentals, had the effect of reorganizing social relationships of production so that they conformed to the machine process. That is, the institutional fabric changed to reflect the new technological situation; a situation that was brought about in the Pacific Northwest, in large part, through the decisions and behavior a man who directed the chief institutions vested with the power to shape the nature of the surplus on behalf of his common interest with absentee owners and the rentier class.

Conclusion

In considering this brief history of the emergence of the corporate form of organization in the Pacific Northwest we necessarily omit a great deal of detail. However, at the level of our analysis we have examined how the embedded person - in this case Henry Villard - may shape the development of the provisioning process to effect a radical transformation of the institutional fabric. The power to effect change derives

from the pattern of social relations emerging from the complex interaction of a host of factors, ranging from the technological to the social; factors which mutually constitute the basis of the "institutional fabric of habitual elements that governs the scheme of life" (Veblen, 1914). Reducing the analysis to the individual, suggesting that men of railroads and finance acted in isolation to bring about the rise of the machine age, ignores the social and historical contingency of power and influence. Henry Villard does not emerge *de novo* as an entrepreneurial hero. Rather, Villard was embedded within a set of networks that constitute the basis of class rule in market society; his connections to international finance, the social elite, and the state explain his efficacy to change the situation in the Columbia River basin as any innate qualities he might have possessed.

In consequence to the advent of the machine process, of which the railroad serves as object of analysis presently, the social relations of production were rationalized. Traditional forms of integration linking the community to the Columbia River through the labor process, centered around the potlatch and salmon runs, would be displaced by a set of forces much more powerful than the fixity of ceremony and tradition. Conceiving of the institutional fabric as a set of mutually constitutive networks allows us to envision the transformation as a process in which the chief institutions of the machine process vis-a-vis the credit economy become embedded in the center of the institutional fabric, while an older set of relations move to the periphery.

The core-periphery concept possesses dual meaning: while the articulation of social relations were rearranged to place at the center persons and institutions vested in the capitalist class, the region itself moved into tributary relation to the

East. In this sense, the Pacific Northwest becomes colony to the financial core of the world system of capitalism, precisely in proportion as it develops around the machine process.

Finally, the process of transformation was not inevitable. It required the active participation of men vested with the right to act in the capacity of institutional power. The ability to exert influence over the development of new institutions relies upon a nuanced understanding of the relationship between social structure and the persons embedded within it. It has been argued in this historical example that the specific articulation of social relations determines much in the degree to which the acting person may exert his influence over the affairs of others. Centrality in the network matters in our understanding of power as an emergent process.

Indeed, the fact remains that changes in the provisioning process are discretionary. Such discretion is distributed in accordance with the hierarchy and inequality inherent to class society. Class societies are by their definition subject to minority rule, leaving the question open as to how so few can effectively rule a majority? The trick is done in part by fraud; a process which is complex and multidimensional, as we have seen in the intra-class warfare in the case of railroad promoters. However, the dimension that possesses explanatory power for the present purpose is the fraud which conceals the violence embodied in imperialism. To bring about a highly centralized class rule, in which the dictates of the machine process govern the lives of the mass proportion of its inhabits, in which the traditional working relationship with the Columbia River as the basis for an ecologically sustainable provisioning process is forever destroyed, requires concealment of the *telos* of imperial expansion under the

cloak of progress.

CHAPTER 3

THE EMERGENCE OF THE ELECTRIC UTILITY

Introduction

The electric utility emerges from the railroad corporation. It is argued in this essay that development of the two industries were not independent phenomena. Rather, the electric utility may be viewed as the lineal descendent of the railroad corporation, both in legal foundation as well as in common liability structure. One legacy of the railroads was to establish the basis for a modern system of corporate law. Given the legal framework for intellectual property (Commons, 1924), and the manner in which it was financed, electricity would be developed for the world so long as it could be used as the basis of putative earnings capacity. In the US and Germany, the development of electricity was held in private hands, and the manner in which it was produced was determined largely on the basis of controlling markets.

Aside from the theoretical foundations the two industries share, each were tied to the Columbia River basin. The development of railways in the Pacific Northwest was the direct outgrowth of a navigation business that emerged from the colonial extraction of primary commodities from the region[1]. Steamship traffic along the Columbia River and its tributaries, once rationalized, formed the basis for the region's first great trust: the Oregon Steam Navigation Company (OSN) (Gillette, 1904;

[1]Lichatowich (1999) provides a broad overview of the early industries of the region, emphasizing their respective impacts on the viability of salmon reproduction. For a more detailed historical exposition, see Johansen and Gates (1967).

Poppleton, 1908). The going business of the OSN became the point of departure for the railroads of the region, and so the latter finds its roots in the Columbia basin. The roads themselves were established along the river routes for reasons of technical and pecuniary expediency. In the PNW, historically, the development of hydroelectric power was an outcome of the establishment of corporate property in the railroad and navigation business, however unanticipated.

The Willamette Falls at Oregon City, once recreated as a private, exclusive space for the generation of financial flows, was the site of the first long distance generation and transmission of electricity (Hirt, 2012; Robley, 1935; Wollner, 1990). Its potential as a site of economic importance in the electric utility business is the result of Henry Villard's interest in the property, while he was in control of the Oregon and California Railroad and interested in the development of Edison's electric light business. Since Villard was so instrumental in promoting Edison's work (Buss, 1978), and since he was vested with the right and authority to act in an institutional capacity over development of the Columbia River basin, it follows that the development of railroads in the PNW and the development of electricity are mutually constitutive. In other words, the emergence of electricity and the manner in which it affects the development of the social provisioning process in the region is embedded within a social fabric in which railroad financiers like Henry Villard were central.

This essay seeks to map how the electric utility industry emerges from the railroads, and considers the descent in terms of its effects on the social fabric as a whole. It is argued that while the nature of the going plants in the two industries are considerably different, the pecuniary aspects of the going concern are virtually

identical. This is not random. Rather, it reflects the fact that however radical the technological departure in electricity, the social networks that constitute the capitalist, corporate class remained largely unaffected. In fact, the new technology was immediately captured by this class and placed into the service of generating new flows of profit. Moreover, within the capitalist class, struggles over which method of producing and delivering electricity were fought in the trade associations, precisely because each technology implied a different set of value flows. To put it simply, the central station concept, which is what we have today, emerged in the end not so much because it was more efficient but because it was more conducive to centralized corporate control. Since, the electric utility emerges from the same social space as that which the railroad is embedded, the two are directly related.

Emergence of the Electric Utility

Markets for electricity and electric products emerged toward the close of the 1870's. At its inception, electricity was developed for use in illumination. On-site or isolated systems for arc lights were installed as early as 1878. While impractical for use in the modern experience, arc lights did have the effect of generating a spectacle. Bystanders could observe the marvel of an illuminated commercial intersection, whose source of power was unseen. More marvelous was Edison's incandescent light, which did not burn and flicker as the arc light's carbon filament did when it shone. The warm, steady glow of the Edison light symbolized a progressive, peaceful and clean view of the future (Nye, 1990). Homes, streets, and factories could be lit by a device that safely contained the smoot and smog of the industrial city, keeping it away from the daily experience of the modern city dweller. And light was just the

beginning - with electricity the future was ours to make and render submissive. The first act of controlling Nature through fire was thought to have been completed and perfected with the electric light. Consistent with the prevailing ideology of the day, technological achievement enshrined in the electric light was hailed as yet another step toward to the ascension of man to its teleological end (Spencer, 1851).

By the 1920s electricity had become big business. However, from 1880 to 1925, a period marked by rapid growth, the new industry would settle into instituted norms concerning the specific manner in which electricity would be provisioned and for whom it would generate claims on the surplus. A number of possibilities would be settled: a) the type of technology employed, b) market boundaries, and c) market governance.

A thoroughgoing analysis of the electric utility industry is not of primary interest to this dissertation. Rather, this essay focuses on the interrelations between the utility, the railroads, and the Columbia River basin. The electric utility is nearly indistinguishable from the railroads with respect to the structure, conduct and performance of the going concern. Railroads and utilities rely upon a large compliment of plant and equipment, and are governed by the same logic of the machine process. The goodwill capital in each case emerges from the exclusive right of the going concern to make claims on the output of this social, machine process. The going business is governed by the same businessmen, both in class and cohort. The social networks that controlled the railroads also shaped the development of the electric utility, by capturing the technology and shaping the development of its initial market boundaries.

The Railroad Roots of the Electric Utility

The development of the electric utility mirrors that of the railroads in terms of the social construction of its markets. Such similarity should not be a surprise as it is clear that the utility emerges from the same set of networks as the railroads. Figure 3 provides a glimpse at the extent to which Eastern financiers would direct the affairs of the railroads. The very financial institutions, and in some cases particular financiers, went on to develop the electric utilities. Most notable for our purposes here are J. P. Morgan and Henry Villard.

The House of Morgan was deeply involved with a range of financial matters of concern to the railroads. Junius Morgan, through George Peabody, had dealt in railroad securities during the 1850's. Pierpont Morgan, with Morgan & Co. and Drexel, Morgan, acted as financier to the Union Pacific as early as August 1869. According to Vincent Carosso (1987), Morgan's "long association with the [UP] provides a good illustration of the many different types of financial transactions with which [the Morgans] concerned themselves." Morgan was instrumental in moving the railroad business toward greater coherence amongst their interconnected balance sheets. In regards to systemic insolvencies facing railroads in the 1880s, Morgan reorganized the Philadelphia & Reading, Baltimore & Ohio, and Chesapeake & Ohio systems, to name a few (Carosso, 1987).

The financial fragility that grew up with the extensive liability issues of the railroads, "gave Morgan the authority to achieve the financial stability and orderly development of railroad properties which the 'gentlemen's agreements' had failed to attain" (Carosso, 1987). J. P. Morgan hosted meetings in December, 1888 and January, 1889

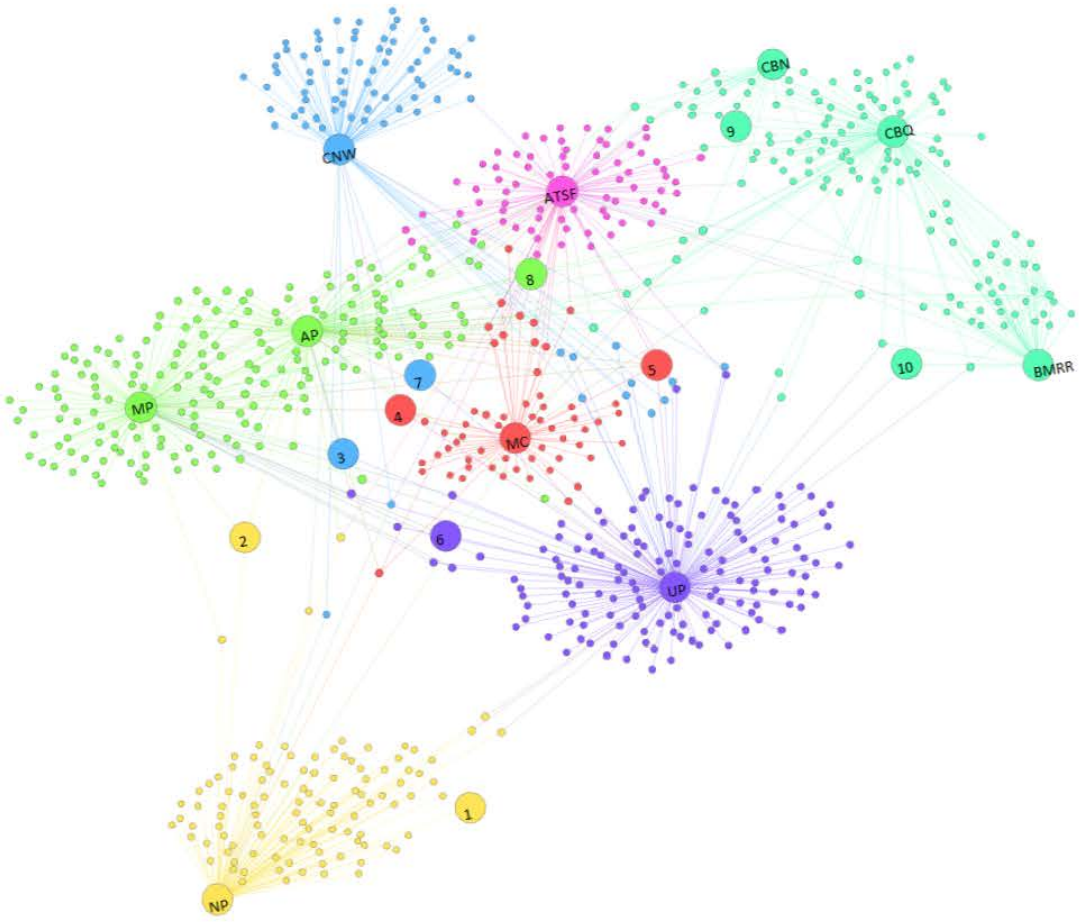

Figure 2. Financial control of major railroads 1872-1894.

Notes: Node scale is arbitrary. However, large nodes indicate either business enterprise or important financiers. Directors: 1. Henry Villard, 2. Frederick Billings, 3. Jay Gould, 4. Frederick Ames, 5. Oliver Ames, 6. Russel Sage, 7. Sidney Dillon, 8. Thomas Baring, 9. William S. Ladd, 10. William Endicott, Jr. Railroads: Missouri Pacific (MP), Northern Pacific (NP), Atlantic and Pacific (AP), Union Pacific (UP), Chicago and Northwestern (CNW), Chicago, Burlington and Quincy (CBQ), Burlington and Missouri (BMRR), Missouri Central (MC), and Atcheson, Topeka and Sante Fe (ATSF). Constructed based on data by Hanson *et al.*, (2009)

to discuss the establishment of what would become the Interstate-Commerce Railway Association (Carosso, 1987; Grodinsky, 1962; White, 2011). Morgan would continue to dominate the field of finance during the emergence of the electric utility industry, and would play a central in role its development.

Villard and Edison

The electric utility bears a direct connection to the social networks in which Villard was embedded, whether we consider the emergence of the industry as a whole or the PNW in particular (see Figure 3.)

As early as 1879 Villard was in contact with Edison concerning the development of electricity for commercial application (Buss, 1978). Villard was an early stockholder and director in the Edison Electric Light Company. The relationship between Edison and Villard was first established and introduced through Grosvernor P. Lowrey, who served as general counsel for the Western Union telegraph, and became quite acquainted with Thomas Edison as a result of extensive litigation surrounding the issue of patent infringements (Buss, 1978). Lowrey and Villard met in conjunction with the Kansas Pacific Railroad having been placed into receivership in 1878[2]. Given the significant claims on the Kansas Pacific held by Frankfurt bondholders, Villard was sent to receive the railroad, at which time Buss (1978) suggests the two likely discussed Edison's work, who by then was 'something of a public prodigy for his invention of the phonograph and stock market printing telegraph." This connection proved to be important because it was Lowrey that organized the interests at West-

[2]For a detailed discussion of the Kansas Pacific failure and its subsequent receivership, see Julius Grodinsky's *Transcontinental Railway Srategy, 1869-1893* (1962).

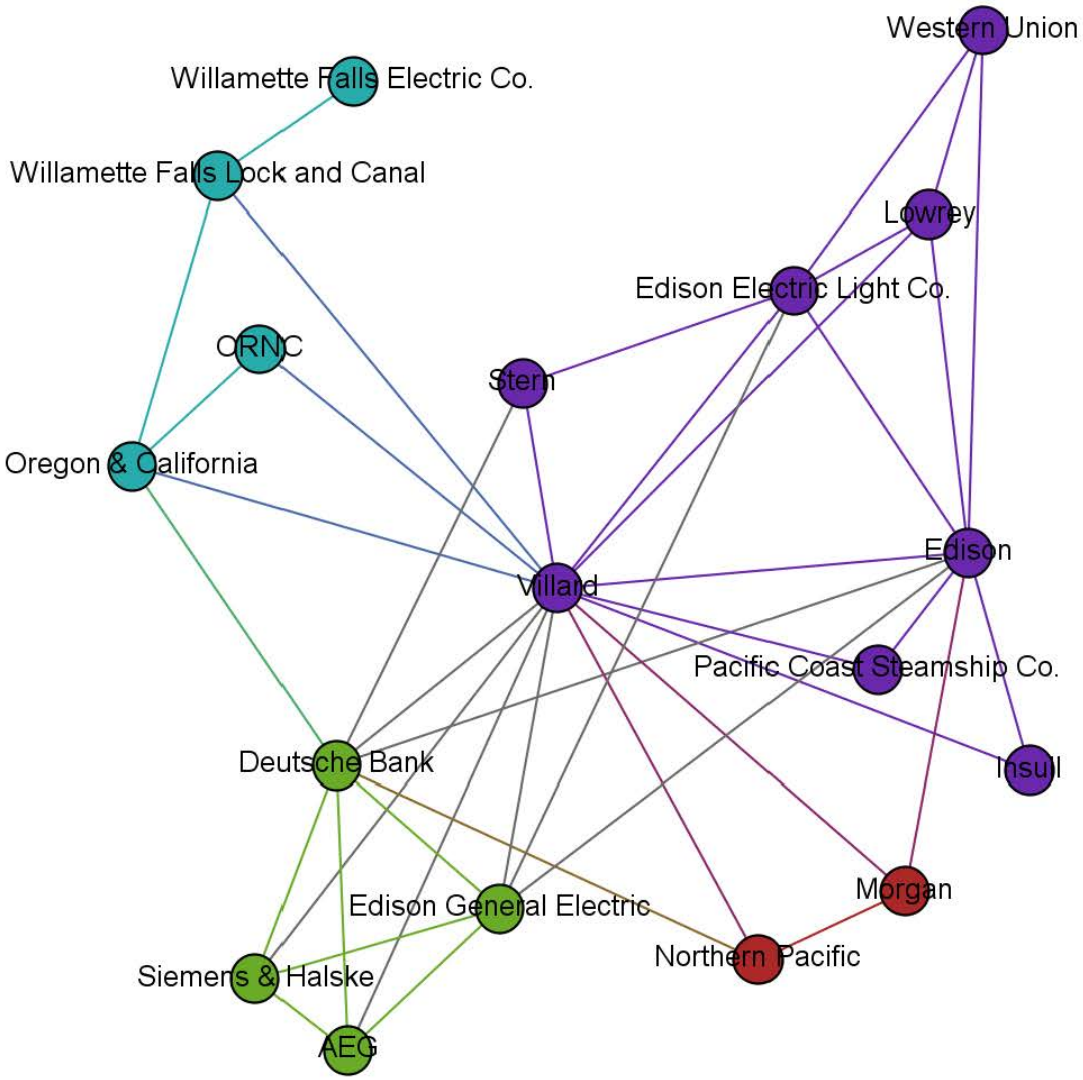

Figure 3. Villard and Edison: 1879-1889

ern Union to subscribe funds for the incorporation of Edison Electric Light Company in 1878. This initial capitalization provided for the construction of Edison's lab at Menlo Park.

In January, 1880 Villard had plans to join the interests of Edison with those of the electrical equipment firms in Germany (Buss, 1978). Villard approached Lowrey to suggest the exploitation of Edison's patents throughout Europe, to which Lowrey was amiable[3]. January 2, 1880 Lowrey wrote Edison to introduce the scheme[4]. Provided Lowrey could secure Edison's support Villard planned to sell rights to Edison's patents in Germany, Austria, Russia, France, Italy and Spain for $450,000 in total. Villard would market these to Jacob Stern, a well-connected Frankfurt banker. While Stern was less optimistic than Villard he was willing to consider negotiating the sale of patent rights for Germany and France, provided the inventions that underlie their patents proved serviceable (Buss, 1978). In another letter dated January 18, 1880, Lowrey informed Edison that he had arranged for a meeting with Villard regarding the financing of Edison's interests in Europe. Lowrey advised Edison, "if you send him to me I think I can do very well for you...Drexel Morgan and Company were not liberal enough.[5]" Indeed domestic financiers during this period, especially with regards to the emerging electric technology, were more reluctant than their European

[3]Lowrey to Thomas Alva Edison (TAE), 2 Jan. 1880 (TAED D8026)

[4]In the letter dated January 2, 1880 Lowrey refers to Villard as " a gentleman who is in intimate relations with some of the most important financial people in Germany." Since Villard was on the board of directors for Edison Electric Light Company it is rather strange that he is not referred to by name.

[5]Lowrey to TAE, 18 Jan. 1880, (TAED D8026)

counterparts to finance large ventures (Carosso, 1987; McGuire, Granovetter, and Schwartz, 1993; Wilkins, 1989)[6].

While in control of the Oregon Railway and Navigation Company (ORNC), Villard commissioned the S.S. Columbia and installed an Edison system so that he may introduce Portland to the possibilities of electric light (Hirt, 2012; Robley, 1935; Villard, 1904; Wollner, 1990). Villard's 'Brilliant Spectacle', as Paul Hirt terms it, was the first commercial application of Edison's system. According to Buss (1978) "Villard persuaded Edison to design an incandescent lighting system for the vessel despite the protest of [John Roach, the shipright,] and the objections of the marine underwriters association who feared a malfunction in the system would set the ship ablaze.[7]" Later, Villard would solicit the development of an electric engine for use in freight rail, as he envisioned electric motors driving the system of feeder lines for the Northern Pacific.

After Villard's financial troubles following the downturn of 1883, he focused more on the process of developing Edison's central stations (Buss, 1978). Villard would later organize the Edison General Electric Company, using the financial resources he had cultivated in the Duetsche Bank. Using his connections in international financial circles, Villard was able to facilitate investment between Edison and

[6]This historical example highlights Schumpeter's (1983) recognition that the banker "stands between those who wish to form new combinations and the possessors of productive means," suggesting a far more central role for the financier than serving as intermediary. Here we see the banker as 'ephor' in historical detail. See also Minsky (1990) for an analysis of Schumpeter's theory of finance.

[7]See also Villard (1904, pg. 290).

German electric interests. Villard managed to place Edison patents in Germany, as well as German investment in New York for a cable plant that would serve as an input into the Edison system domestically.

After Villard's resignation from the Northern Pacific, resulting from a combination of mismanagement and tight credit following the recession of 1882, he left for Europe in the spring of 1884[8]. However, Villard did remain connected with Edison Electric Light Company during this sojourn. While in Europe he cultivated his financial relationships with German bankers, most notably, those connected with the Deutsche Bank, which included Jacob Stern and Werner Siemens. According to Buss (1978) it was Villard's association with Edison that allowed him to establish a business relationships with Werner Siemens. Werner Siemens, as well as brothers Friedrich, Karl and Wilhelm, had established considerable interests in the production of electric cables. In addition, the Siemens brothers had established an inter-European telegraph network (Buss, 1978). Meanwhile, Siemens and Halske had diversified, financing the first electric train in 1879. Villard also cultivated a relationship with George Siemens of the Deutsche Bank beginning a period in which Villard would act as intermediary for German investment in US interests. See Table 1 delineating Villard's promotional work resulting in over $65 million dollars of securities purchased by the Deutsche

[8]According to Buss (1978) the root of the cause of his downfall in 1883 was due to his inability to gain access to liquidity. Given the recession of 1882 (March 1882 - May 1885) the position of the Northern Pacific became more fragile, requiring the further issue of liabilities just to validate its debt structure. Buss (1978) suggests that internal doubt over the ability of Villard to manage the Northern Pacific led to reduction in his ability to secure lines of credit. This would ultimately undermine his control of the NP and cause his exit from the firm.

Bank in US railroads, and later Edison General Electric.

According to Wilkins (1989) there were two main firms in Germany that dominated the industry of electrical equipment manufacture. These were Siemens and Halske and Deutsche Edison Gesellschaft (formed in 1883 by Emil Rathenau). Deutsche Edison Gesellschaft changed its name in 1887 to Allgemeine Elektrizitats Gesellschaft (A.E.G). George von Siemens was chairman of the board of A.E.G, and was also a director at the Deutsche Bank. George von Siemens was a cousin of Werner von Siemens of Siemens and Halske. Hence, the two firms were connected via family relations. Villard was connected to each. Both firms jointly owned patents on Edison's technology in Germany, as result of an 1883 accord between the two firms intended to bring about harmony in the German market (Wilkins, 1989)[9].

Villard planned to seize control of Edison interests in America and form the basis of an international cartel centered in Germany (Wilkins, 1989)[10]. Returning to the United States in 1886 Villard acted as representative of the Deutsche Bank, charged with exclusive production rights for the Siemens cable business (Wilkins, 1989). The idea was that Edison interests in the United States and electric interests

[9]Siemens and Halske was the largest single shareholder in A.E.G at the time of its founding. Wilkins (1989) notes that according to Buss (1978) Villard's sojourn to Germany in 1884 was "ostensibly to market Edison generating plants." However, apparently Villard used "Edison's name to establish a relationship with Werner von Siemens of Siemens and Halske and Emil Rathenau of Deutsche Edison Gesellschaft at the same time renewed his earlier acquaintances with George von Siemens." In 1887 Villard participated and assisted in the process which transformed Deutsche Edison into A.E.G, at which time the latter was wholly independent of American Edison interests.

[10]For more on the international electricity cartel in question, see Reich (1992)

Table 1. German Bond Finance in US Concerns: 1886 - 1890

Year	Purchaser	Issuer	Amount
1886	Deutsche Bank; Jacob Stern	Cincinnati, Hamilton & Dayton	$2,500,000
1887	Deutsche Bank	Northern Pacific	$6,000,000
1887	Deutsche Bank	Oregon Railway & Navigation Co.	$3,500,000
1887	Deutsche Bank	Cincinnati, Hamilton & Dayton	$2,166,000
1887	Jacob Stern; Speyer, Ellison & Co	Denver and Rio Grande	$1,500,000
1887	Deutsche Bank & Jacob Stern	Missouri Pacific	$1,500,000
1887	Deutsche Bank; Heidelback, Ickelheimer & Co. Rothchild	Northern Pacific	$5,000,000
1887	Jacob Stern	Illinois Central Mortgage	$5,000,000
1888	Deutsche Bank	Northern Pacific	$10,000
1888	Deutsche Bank	Chesepeake & Ohio	$1,600,000
1888	Deutsche Bank	Oregon Railway & Navigation Co.	$1,750,000
1888	Deutsche Bank; Speyer, Ellison & Co.	Houston & Texas Central	$2,000,000
1889	Deutsche Bank	Wisconsin Central	$250,000
1889	Deutsche Bank	Northern Pacific	$500,000
1889	Deutsche Bank	Houston & Texas Central	$2,418,000
1889	Deutsche Bank; Jacob Stern	Northern Pacific & Manitoba RR	$50,000
1889	Muller, Shall & Co.; Speyer, Ellison & Co.	Northern Pacific & Manitoba RR	$100,000
1889	Muller, Shall & Co.	Edison General Electric	$100,000
1889	AEG	Edison General Electric	$3,800,000
1889	Siemens and Halske	Edison General Electric	$4,000,000
1889	Deutsche Bank	Edison General Electric	$750,000
1889	Deutsche Bank; Speyer, Ellison & Co.	Central Pacific	$3,250,000
1889	Heidelback, Ickelheimer & Co.	Wisconsin Central	$22,000
1889	Speyer, Ellison & Co.	Wisconsin Central	$15,000
1889	H. P. Goldschmidt & Co.	Wisconsin Central	$21,000
1889	Jacob Stern	Wisconsin Central	$21,000
1889	Deutsche Bank	Central Pacific	$6,500,000
1890	Deutsche Bank	Northern Pacific Consols	$2,000,000
1890	Deutsche Bank	Northern Pacific Consols	$9,000,000
		Total	$65,323,000

Source: Buss (1978)

in Germany would be joined, through the exchange of patents. Edison patents were in use in Germany while Siemens and Halske patents would be used in United States. In this way, the two communities of interest could be joined together in an international market. Given the high cost of imports of steel and lead products in the United States, Villard suggested that Siemens and Halske invest in the production of a US-based plant to produce the cables. In April 1887 he was busy working out arrangements for such a scheme. Villard intended for production of Siemens and Halske cables to be undertaken by an Edison enterprise.

As Villard returned to Germany in 1888 to report these developments to Siemens and Halske, a new strategy emerged, whereby the German interests would seize control of the Edison interest in the U.S (Wilkins, 1989). Because Edison in 1889 was starved for liquidity, he was amenable to Villard's suggestion that Edison interests be consolidated under a new firm known as the Edison General Electric company. Buss (1978) notes that $8.3 million out of the $12 million capitalization of the new Edison General Electric firm represented investments from the German interests (see Table 1). After the reorganization, Villard emerged as president of Edison General Electric. Once in control, he brokered the ratification of the Siemens and Halske cable factory contract (Buss, 1978)[11].

[11]It is worth noting that pricing for the new cable factory was determined prior to its construction. Buss notes (1978), the "market price of the lead cable was to be set according to a formula developed in Germany." The Edison interest in the contract was authorized to issue any rebates it deemed necessary to build up the market. Further, and not inconsequential from the standpoint of the German interests maintaining and developing its own going concern prices, was the stipulation that Siemens and Halske was guaranteed 20% of the profits and unfettered access to the bookkeeping.

Villard and the Central Station

Villard championed Edison's central station concept (Buss, 1978; McGuire, 1986). In a letter to Siemens and Halske dated April 5, 1887, Villard described his work promoting the central stations (Buss, 1978). Villard stated that his promotional activities included the cities of New York, Philadelphia, Boston, Washington, Cleveland, Chicago, St. Paul, Minneapolis, and Denver. Whereas domestic financiers were reluctant to finance the development of the electric utility industry around the central station concept, Villard and other German finance capitalists provided support (Carosso, 1987; McGuire, Granovetter, and Schwartz 1993; Wilkins, 1989). Morgan envisioned the development of the industry around the notion that electric products would be sold as commodities, and that market boundaries would reflect proprietary claims on the patents underwriting such technology. Electric manufacturing firms would buy the right to lease the patents for defined terms, thereby generating a flow of income that may then be capitalized.

Edison, Insull and Villard sought to market electricity itself as a commodity. Centralized production and distribution of electricity through what would later be known as the utility, offered a mechanism through which the new markets might be governed. Like the railway empire Villard undertook in the PNW, the central station would pursue an aggressive growth strategy, seeking to place itself at the center of a large network of financial flows related to the provisioning of electricity. The transmission and distribution grid, like the network of steel and wooden ties in the case of the railroads, would fix in space the boundaries of the market. The business enterprise engaged in electricity provisioning along the central station model would

capitalize the load growth of cities within these boundaries. Further, through the use of market governance institutions, the holding company in particular, it would connect many urban systems into regional empires. To this end, the promise of business enterprise exemplified in the central station concept was nearly indistinguishable from that of the railroad corporations of the late 19th century.

The North American Company

The North American Company, one of the most important public utility holding companies in the 20th century, was a creature of Villard and evolved from his earlier use of the holding company as a market governance institution in the PNW. Recall, Villard had gained control of the transportation and navigation situation in the PNW by leveraging his social network via the 'Blind Pool' (Hedges, 1930). However, to ensure ongoing control of both the Northern Pacific and his own ORNC he incorporated the Oregon and Transcontinental Company in 1881. Students of market governance will recall that corporations were generally not provided the legal right to hold stocks in other corporations prior to 1888, however, this did not prevent Villard and others from seeking special legislative favors to enable them to do so[12]. Villard

[12]The legitimacy for a concern to hold stocks in another company prior to 1888 was not explicitly provided for under the general incorporation acts in any state (Bonbright and Means, 1932). The implicit right to hold stock in other corporations was commonly referred to the courts. In 1888 New Jersey amended its general incorporation laws allowing explicitily for intercorporate stock holdings. Nevertheless, many holding companies did exist prior to 1888, sanctioned by "special favors of a legislature." In 1868, the state of Pennsylvania granted the Continental Improvement Company the "full power and authority to hold and own securities of any form, either as collateral or otherwise, and to dispose of the same at pleasure" (Bonbright and Means, 1932). Bonbright and Means (1932) cite forty-one further instances between

did experiment with other forms of market governance, such as traffic pooling agreements. However, traffic agreements are typically not an enduring form of market governance (Bonbright and Means, 1932). Since Villard was determined to ensure that Portland would be the terminus for the transcontinental railroad in the region (Buss, 1978; Grodinsky, 1962; Hedges, 1930; Villard, 1904), he sought firmer control over the Northern Pacific.

The holding company offered a mechanism through which control of very large corporations could be established with a minimum stake in the subsidiary concerns. Moreover, the Oregon and Transcontinental charter allowed for a rather broad scope of market activity, to include production of the primary commodity groups that would serve as a the basis of its freight traffic, such as agriculture, mining and lumbering. In-

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1868 - 1872 in which holding companies were incorporated with identical favor as the Continental Improvement Company, and in many cases with the same language, for the same set of incorporators.

While Bonbright and Means (1932) focus their early history of holding companies in Northeastern states, apparently these practices were common in Oregon as well. Villard's Oregon Improvement Company, which held stocks in mining concerns set up to exploit the coal reserves in Western Washington, was named after the many "Improvement Companies" cited by Bonbright and Means (1932). The New York Times referred directly to the Oregon and Transcontiental Company as a holding company. A Times article dated June 16th, 1890, states, "[t]he Oregon and Transcontinental Company, according to Poor's Manual, was organized June 28th, 1881, under the laws of the state of Oregon, for the general purpose of constructing railroads, to secure harmony of action between the Oregon Railway and Navigation Company and the Northern Pacific Railroad Company by a purchase of a controlling interest in the stocks of these two companies and to furnish the means to build and equip branch lines of the Northern Pacific Railroad Company (which that company cannot under its charter construct) in order to increase the value of its land and its traffic by development of the territory tributary to it, and to protect it from the encroachment of rival lines" ("Under a new name", 1890)

deed, Villard's Oregon Improvement Company was itself a holding company engaged in these activities, and held by the Oregon and Transcontinental Company. However, with the emergence of the electric utility, his holding company system would adjust to conform with the pursuit of encapsulating this new technology under his corporate control.

In 1890 the Oregon and Transcontinental Company was dissolved in Oregon and reorganized as the North American Company for incorporation in New Jersey, allowing for a broader scope of market activity permissible to the going concern. In this example, it would be inappropriate to think of the two enterprises as distinct going concerns. The capital (in the Veblenian sense) embodied in the Transcontinental was not diminished as a result of the new charter. The plant and equipment associated with the underlying properties remained unchanged, and the going business was still going. The only difference was that new markets became available to the going concern as a result of the new charter, as well as new social relationships to be capitalized. The purpose of the North American Company was to pursue the development and proliferation of Edison's central stations in the Midwest, where he was well known among the German immigrant population, and thus carried the goodwill for the concern (Buss, 1978).

Social Construction of the Electric Utility

There were two dominant technologies through which electricity might have been provisioned: the isolated plant and the central station. Standard accounts explain the rise of the the central station as a response to the scale economies embodied in the technology (Hughes, 1983; Wollner, 1990). However, upon closer inspection,

the efficiencies resulting from scale are less certain and lend some doubt to the notion that electricity must be provisioned by the central station. The issue lies in the problem of energy usage patterns. It only takes one customer with a peak load well above the median peak, to force the central station to carry reserves well in excess of the normal capacity for most customers[13]. In the face of load uncertainty the central station must retain excess capacity to meet peak demand. Thus, there is an obvious efficiency problem on the technological side. Isolated stations are more scalable, because they are custom suited to the purposes for which they are installed. As a result, each load center may minimize the proportion of plant that lies idle for the sake of meeting peak demand.

There is also the matter of distribution. Central stations require the presence and maintenance of large networks of transmission and distribution lines. The market for central station power is limited to the extent of the transmission and distribution grid. To pursue a growth strategy, as the empire builders that ultimately came to dominate the industry during the period 1890 to 1925 did, implies that transmission and distribution must be built ahead of demand. Further, the grid cannot be scaled to match variations in load - once it has been built it must be maintained regardless of revenues. From either a technical or economic standard of efficiency, the early central station often failed the test. None of this is surprising if one leaves behind the functional teleology that undergirds mainstream theories of the firm, which reduces all agency to the single criterion of profit maximization.

During its formative years, the U.S. electricity industry was indeterminate with

[13]In the modern vernacular, these reserves are referred to as "firm resources."

respect to market boundaries, organizational forms, and technology (Granovetter and McGuire, 1998). From 1880 through 1884, Edison sought to form distinct markets for different aspects of the new, electric technologies. Edison, "drawing upon the collective resources of himself and his associates and their families, and upon a production monopoly secured by exclusive contracts, ... separated electric light current business from the manufacture of electric devices, electric trolleys, electro-plating, [and] telephone," all of which preceded his incandescent system (Granovetter and McGuire, 1998). By establishing boundaries between industries and markets, Edison sought to control its development and direct it in such a way that favored his own personal claims to the social technology. In particular, Edison wished to connect the electric generating business with the incandescent lighting business, thereby pushing manufacturers of arc lights out of the market. However, Edison was only one of many persons involved in the development of the electricity industries. Some of those persons that occupied important spaces in Edison's network held interest to a broader set of claims than Edison, and so influenced Edison to consider a broader market definition than his more narrow conception (Granovetter and McGuire, 1998).

Most load was served by isolated systems rather than urban, central stations through 1918 (Granovetter and McGuire, 1998). More than half of all electricity produced in the U.S. was done so by industrial users, who sold excess capacity to neighborhood distribution systems. However, despite these early leads in the development of the industry, and despite the advantage of lower fixed costs, isolated systems would ultimately be displaced by the central station. The key to understanding how the industry would ultimately unfold lies in understanding how "identifiable

social networks" worked to shape the selection of one system of provisioning over another. Two trade associations, the National Electric Light Association (NELA) and the Association of Edison Illuminating Companies (AEIC), would become central to understanding how the central station came to dominate the business.

NELA was formed in 1885 to represent the interests of non-Edison concerns engaged in selling electric current or in the manufacture of electric equipment (Granovetter and McGuire, 1998). By 1888 NELA was dominated by influential persons in the Electric Club, which constituted a network in which Edison was not central (Granovetter and McGuire, 1998). The Electric Club, as David Nye notes (1990), was comprised mostly of New Yorkers and those in northern New Jersey, most of whom were executives of manufacturing firms, such as Thomson - Houston, heads of utilities, or financiers. With NELA under the dominance of the Electric Club the social network centered on what Granovetter and McGuire (1998) refer to as the "Insull / Edison group," stood to lose influence and control over the development of the new electric markets. As a result, Insull formed the AEIC to organize the "mostly personal friends of Edison or Insull who were also executives of small Edison central station incandescent lighting systems" (Granovetter and McGuire, 1998).

The Insull Group and the Institutionalization of the Central Station

Recall, German electrical interests, through Villard, sought to institute an international cartel in the industry which it would then control (Wilkins, 1989). However, Villard's attempt in 1892 to merge Edison General Electric with Thomson - Houston for the purpose of consolidating further control failed, as Morgan " turned the tables" on him. Buss (1978) suggests Villard had considered merging the Edison

and Thomson - Houston companies in 1888, but "was prevented from carrying out his plans because of Edison's objections." However, with the German finance-led incorporation of Edison General Electric in 1890, "Edison's influence in the firm had been greatly reduced, and Villard then felt free to consider the merger." Functionalist explanations (Hughes, 1983; Wollner, 1990) of the emergence of the electric industries rely upon a cost-minimizing story, such that the merger between Edison General Electric and Thomson - Houston was inevitable given the complementarity between their two sets of patents. However, history shows that corporate control was the main driving force behind this consolidation.

With the formation of General Electric (GE) in 1892, Samuel Insull, who had been Edison's secretary and was personally vested in Edison interests, exited the going concern[14]. In short order Insull, with a tightly woven network of associates, would lead the social construction of the electricity industry around the development of the central station. According to Granovetter and McGuire (1998) (see also McGuire, Granovetter, and Schwartz, 1993) the "Insull circle" pursued a growth dynamic strategy, wherein central stations would "scrap and replace old technology

[14]A number of reasons explain why Insull left General Electric. First, Insull would not work for Charles Coffin, president of the newly formed General Electric Company, whom he felt unfit for the job. According to McDonald (1962), Insull was "convinced that Coffin did not understand the business and that he himself should have had the presidency." Second, Insull felt that profiting from the merger would be a breach of good conduct, as the Edison interests, with whom he was aligned, harbored "ill feelings" over the fact that they lost control over the business enterprise they built. Third, and most significant, Insull and the "Edisonians," sought development of the market for electricity around the concept of the central station, rather than equipment manufacture and sale, as Coffin had pursued with Thomson - Houston (Insull, 1992; McDonald, 1962)

with new, create and expand a territorial monopoly, increase total and per capita load and establish load balance," for the purpose of institutionalizing the central station. The earliest members of the Insull circle included Samuel Insull, John Lieb, Charles Edgar, and Louis Ferguson, all of whom worked in Edison's Goerck Street plant in the early 1880s. William Barstow, an Edison engineer, joined Lieb, Edgar and Insull on the board of the Electrical Testing Laboratory, a certifying board established in order to check GE's dominance in the industry. The Insull circle, including Barstow, would remain most central in the AEIC through 1910 (see Chung, 1997 for a network analysis), and would dominate the NELA until the collapse of the holding company system of governance in the 1930s.

In 1897 the Insull circle, allied with a broader set of AEIC central stations, established a coherent and significant faction in the NELA. From 1901 to 1910, members of the Insull faction occupied seats in two-thirds of NELA committees, which served to align the behavior of member stations with the trade association (Granovetter and McGuire, 1998). By leveraging the social network, the Insull circle was able to direct the NELA through " strategic influence...rather than overt domination" (Granovetter and McGuire, 1998).

Displacing isolated generation systems became a central objective of the NELA after Insull's *de facto* takeover. Many isolated systems were co-generation systems, supplying both electric current and steam for direct heating. Rather than expend energy to cool generators, co-gen systems sold the waste heat directly to households as commidified steam. Such isolated systems were incredibly efficient. Citing Henry Doherty, a prominent utility executive of the day, Granovetter and McGuire (1998)

point out that in order to gain market share for the central station, " investor-owned utilities ... often build otherwise unneeded steam plants to meet the full need of the customer, and ran them at a loss, just to eliminate the competition for electricity." Such examples of diseconomies cast serious doubt on the conventional story that central stations were more efficient, or that profit maximization served as the sole criterion of the business enterprise.

Insull used his control over the trade associations, especially the NELA, to lobby for regulation by state commissions (McDonald, 1958). Insull's call for public regulation of the utility business was resisted initially[15]. However, as Insull argued, and the NELA came to embrace, state regulation of public utilities was sound busi-

[15]Insull's views were not shared widely among his contemporaries in the infant electric utility business (Insull, 1992; McDonald, 1958, 1962). McDonald (1958) argues that Insull's attitude toward public utility regulation was "distinctly European." Insull himself was British, but McDonald points to Villard for influencing his views on the "natural monopoly" question. When compared to the American experience in big business, Germans had a much more amicable view toward cartels, and market governance in general.

Compared to American business in general, however, Insull views concerning market governance were not so deviant. From 1877 onward railroad men sought and won regulation of their own industry for purposes of market governance (Kolko, 1965). By proactively shaping the course of public control over their industry railroad leaders hoped to stave off more radical attacks on their right to make prime and sole claim on the surplus. In 1884 Charles Francis Adams, Jr., then director for the Union Pacific, was working with Massachusetts representative John D. Long, member of the House Committee on Commerce, to craft favorable regulatory legislation. In a letter to Adams, Long sought clarification on the intent of the bill, "[w]hat is desired, if I understand it ... is something having a good sound, but quite harmless, which will impress the popular mind with the idea that a great deal is being done, when, in reality, very little is intended to be done." In this light, Insull's movement for state commissions governing the market for electricity provisioning simply reflected earlier efforts in the railroad industry.

ness. Regulation would promote the development of the central station in two ways: First, it narrowed the field of provisioning to central stations. For instance, the Massachusetts Gas and Electric Commission banned isolated stations from selling surplus current or heat across streets or through alleys, because they were not regulated utilities (Granovetter and McGuire, 1998). Given that regulatory commissions were instituted on the presumption that natural monopolies existed and were affected with the public interest, it follows that such commissions may only regulate natural monopolies. Second, it provided a method of market governance, whereby going concern prices could be established and maintained. Vested with the authority to define the scale and scope of the electric utility, regulatory commissions presented the opportunity for a legally sanctioned restrictive trade practice, favoring the central station. To this end, Samuel Insull, "instead of denouncing the activities of the populists, socialists, anarchists, and other nascent progressives," proposed in his presidential address of 1898:

> ... that the electric utility industry seek to have itself regulated by governmental bodies, clothed with the full power to fix rates and standards of service, and seek to alter the conditions of franchises so that if a company failed to render satisfactory service, the municipality it served would have the right to acquire its plant at cost less depreciation. Furthermore, Insull asserted that the ultimate interests of the industry itself required such restrictions, and he urged that it actively lobby for legislation to bring them about (McDonald, 1958)

The Central Station and the Wright System of Rates

The method of pricing electricity was instrumental in shaping the development of the industry. In the mid 1890's the electricity industry, through the trade associations, fought to settle the question of which of two rates systems would be-

come institutionalized: The Barstow or Wright system (Yakubovich, Granovetter, and McGuire, 2005).

William Barstow, an engineer with Brooklyn Edison, proposed a time-of-day pricing system. The load shape for a given utility (or isolated system that sells its surplus power) will reflect the ebb and flows of consumer demand. A typical day will have a load shape that may divided into peak and off-peak hours. Barstow proposed charging higher prices during peak hours, while discounting off-peak hours, with the hope that doing so would allow for a utility to smooth its load shape. A more even balance between peak and off-peak demand translates into higher load factors[16] for the utility, allowing it to carry less reserves (Yakubovich, Granovetter, and McGuire, 2005).

The Wright System, on the other hand, was a uniform rate. The rate was designed to recover the individual customer's pro-rata fixed costs according to peak demand, as well as charges for actual energy used during the billing period. While the rate varied by customer based upon demand, it was uniform across all hours of the day and no rebates were allowed.

Insull and his allies dominated both trade associations, the AEIC and NELA, which were the only forums in which issues such as rate setting could be worked out coherently. Because the Insull group sought to institutionalize the central station as the vehicle through which electricity would be provisioned, their desire to build

[16]For a given utility the load factor is calculated as follows: $L = \frac{C}{(MT)}$, where L is load factor, C is the total amount of electricity generated at a given point in time, M is peak demand, and T is an interval of time (usually an hour). (Yakubovich, Granovetter, and McGuire, 2005).

empires of markets would structure their choice of rate systems. That is, Insull *et al.,* would choose that rate system most conducive to growth. Early industry leaders found that perceptions of fairness mattered in building their market, and so moved to implement a uniform system that did not offer special rebates on an individual basis. The question of fairness as it bears on the process of building a market for central station electrity is captured by one manager:

> In a small town ... we cannot make special contracts. In the city you can make special contracts on the same principle that you can live next door neighbor to a man and not know him, whereas in a small town like ours we must have some basis of charge for current that is uniform to all customers. If we make a rate with a customer on a street, within twenty four hours every customer on that street will know about it, notwithstanding the customer might have made very positive promises that he would keep the price to himself. He won't do it. If he thinks he is buying current a little bit cheaper than someone else, he can't keep from telling it. In the city that probably is different (Yakubovich, Granovetter, and McGuire, 2005).

Thus, Wright's uniform system of rates was adopted by the industry in 1898 for its conduciveness to market growth for the central station. From the standpoint of cost minimization, Barstow's rate was more efficient. However, AEIC and NELA meeting minutes reveal that early managers of central stations were not primarily concerned with cost minimization, but rather bringing as many customers as possible within the purview of their markets (Yakubovich, Granovetter, and McGuire, 2005)[17].

[17]Ironically, modern utilities have revisited the problem of using rates to shape peak demand. In the industry, this method of pricing is known as Demand Response Management. This may be explained by the fact that modern communities have come to rely upon electricity to carry out the economic life process. Electricity has been institutionalized. Customers, whether residential, commercial, or industrial, typically do not have the choice of not consuming electricity, so uniform rates no longer matter the way they did in the 1890s.

Electrifying the Northwest

Histories of electricity in the region often begin by recounting its first demonstration in Portland, Oregon. This "Brilliant Spectacle" (Hirt, 2012) was thought to be the moment at which consumers would demand electricity and thereby pass into modernity (Nye, 1990). It is easy to read into this history an inexorable drive toward electrification. Indeed, the possibilities for a clean and bright future seemed within reach (Nye, 1990), prompting a progressive, utopian response[18]. Yet, the new technology was always under the control of interests vested in the reproduction of a pecuniary, proprietary society, so that whatever technological marvel electricity promised the actual application would be limited in scope. Only those applications that generate a profit and do not undermine the pecuniary viability of the economic system as a whole, will be undertaken. The manner in which the social construction process occurs reflects the centrality of those persons embedded in the relevant networks. For our purposes it will be of interest to show how the development of the industry in the PNW was connected to the legacy of Henry Villard and the railroads he commanded.

Because the electricity industries are governed by business enterprise this analysis begins earlier than Villard's symbolic, techno-spectacle, opting instead to trace its emergence to the corporate roots that precede it. The political economy conjuncture

[18]Nye (1990) points to a number of utopian novels, including Edward Bellamy's later work, in which electricity would ameliorate most social ills. One prediction suggested that electricity could be used to prevent divorce, by allowing for the production of " Electric Equalizers" that automatically "dissipate any domestic storm and insure harmony in families."

resulting from private control of the region's watershed, provided the germ for the emergence of a new resource: hydroelectric power. While placing rivers into service as sources of power for the machine process is not unique to the PNW, with Lowell, Massachusetts as the most obvious example in U.S. economic history[19], its modern practice reflects the region's peculiar, institutional development. In particular, the struggle over control of the river for the sake of a going navigation business produced the conditions under which the Willamette Falls at Oregon City would become a site of economic importance. The growth and development of Portland's first central station began with the development of hydroelectric power at the Willamette Falls, therefore a brief examination of the economic processes that transformed that space into a resource is warranted.

During the period 1860 - 1880 the Oregon Steam Navigation Company enjoyed monopoly over river traffic into the Inland Empire[20], along the Columbia River and upper Willamette River (Johansen, 1941). Demand for navigation services was driven primarily by Idaho's gold rush in the early 1860's (Scott, 1917). Goods and persons were transported by the OSN to Wallula (the landing at present day Walla Walla,

[19]The immigration pamphlets published by corporations such as the Oregon Railway and Navigation Company and Oregon Improvement Company, as well as the city of Portland, described the region as possessing the water power potential of Lowell, MA. The verity of these claims was irrelevant; immigrants from the East understood what Lowell had achieved by placing its waterways into industrial service. Aside from the occasional mill, the rivers of the Columbia basin remained largely ungoverned until the reclamation projects of the New Deal era. (Oregon Immigration Board, 1888; Oregon Improvement Company, 1881; Oregon Railway & Navigation Company, 1880)

[20]Recall, the Inland Empire refers to the upper portion of the Columbia River basin, defined chiefly by the Snake River basin.

WA) along the Columbia, then transported by mule train to the various mining districts (Johansen, 1941; Johansen and Gates, 1967). At first the region was wholly dependent upon imports, but by the mid 1870's the production of wheat in the Inland Empire formed the basis of an export business, which the steamers of the OSN carried. Charging "all the traffic can bear," the OSN generated sufficient revenues to further consolidate ownership of the portages and docks, maintain its growing fleet, and enriching its owners. Poppleton (1908) provides a glimpse of its rate structure effective April 1, 1877 (Table 2):

Table 2. Freight rate per ton.

Leg	Distance	Rate / ton
Portland - The Dalles	121 miles	$10.00
Portland - Umatilla	217 miles	$20.00
Portland - Wallula	240 miles	$25.00
Portland - Palouse	317 miles	$32.00
Portland - Penewawa and Almota	348 miles	$37.50
Portland - Lewiston	401 miles	$40.00
Fast freight	Portland - The Dalles	$2.50 per ton extra
	Portland - all points above The Dalles	$5.00 per ton extra

Source: Poppleton (1908)

Compared to similar navigation concerns operating in the Midwest and Great Lakes areas, OSN rates were unusually high. On average, the OSN's rate per ton

was ten times that which prevailed on the Missouri, a notoriously dangerous river to navigate in the pre-dam era (Poppleton, 1908). Whereas the OSN charged $40 per ton to move freight from Portland to Lewiston, a distance of 401 miles, the same ton would travel 3,200 miles from St. Louis, MO to Ft. Benton, MT.

Differences in convention help explain part of the regional divergence in rates. The OSN maintained the convention among Columbia River steamboat captains to specify tonnage by cubic volume: the maximum reach of any part of the freight was used to define a three-dimension envelope in which the freight could be housed. For example, an ox cart would be measured so that the length include the tongue fully extended, its height with the tongue lifted vertically, and width calculated from wheel to wheel. The rule of thumb then yielded one ton for each cubic feet of this notional envelope. Under no circumstances would volume be deducted for empty space within the envelope. According to Poppleton (1908), this method resulted in overestimates of weight by as much 300% when compared to practices in the East.

The geology of the Columbia River basin also explain part of the cost of navigation. At various points along the Columbia, the river falls through cascading falls, which prior to the construction of a lock and canal system, required portage to make passage. Portage involves transferring cargo to wagon teams, and later railroads, below the falls then transporting it above the falls, where it is loaded on a new ship that continues until it encounters another obstacle. While Poppleton (1908) reflects the popular view that prevailed in 1860s and 1870s that the OSN's rates were almost all profit, Johansen (1941) points to the high cost of portage as evidence that profit rates were probably lower than people imagined. Nevertheless, the OSN's rates

were going concern prices: the mark up was sufficient to reproduce the concern and generate a flow of income to its shareholders, sometimes as high as 37% (Johansen, 1962), but usually around 12% (Poppleton, 1908).

Owing to the high cost of portage at the Willamette Falls (Oregon City) two concerns endeavored to build lock and canal systems. In 1868 the People's Transportation Company built a crude, wooden system on the east side of the river. In the same year, a legislative act provided for a state-subsidized corporation, the Willamette Falls Canal and Locks Company, with the hope that prices might be regulated by competition (Robley, 1935; Stewart, 1950). Large debts incurred in the construction of its canal, as well as the threat of a protracted rate war between rival steam and rail concerns, resulted in the sale of the People's Transportation Company to Ben Holladay in 1871 (Villard, 1944; Wright, 1875). It was Holladay's intention to control the railways in Oregon since his arrival in 1868. Maintaining the viability of the Oregon and California, which he had incorporated with the hopes of renewing the goodwill embodied in his legal claim to the Oregon Central land grant, required control over the navigation business on the Willamette. However, by 1870 public opinion had soured against Holladay and the Granger controlled legislature passed a bill that provided for further subsidies to the Willamette Falls Canal and Locks Company, with the hope of dislodging his control (H.R. Doc No. 202, 1899 Villard, 1944). It is important to emphasize that the Grangers in Oregon viewed monopoly control over steamships, docks, and silos as the source of their disadvantages, holding to the belief that market forces at the Liverpool grain exchange would yield them a fair price (Buck, 1913; Carr, 1875).

The legal device that gave birth to the Willamette Falls Canal and Locks Company also spurred the creation of two concerns that would further threaten Holladay's control: Willamette River Transportation Company and the Farmers' Dock and Warehouse Company. Holladay promptly lowered rates in an effort to expel the contestants from the market, driving the price below a sustainable level for the new concerns. The OSN joined Holladay on the Lower Columbia[21] (Villard, 1944).

In 1874 a compromise was struck between Holladay and Barney Goldsmith, who controlled the opposing enterprises and acted as agent for the Willamette Falls Canal and Locks Company, so that all going concerns engaged in the Willamette navigation business were to operate under a unified management, while the locks company would adopt the railroad freight rates. Further, a system of subsidies between the concerns would be established to level respective differences in cost.

However, the market governance agreement between Holladay and Goldsmith was foiled as the OSN held that its pursuance would breach its previous agreement in 1863 with the People's Transportation Company, which divided the market (Johansen, 1941; Villard, 1944). Per the agreement, the People's Transportation Company would leave the Lower Columbia market to the OSN, and vice versa regarding the Willamette. While Holladay purchased the former concern in 1871, its going business remained intact. In this case the going business was structured by the market division agreement with the OSN; should the agreement breakdown, the web of financial relations that constitute the going business would begin to unravel.

[21]The Lower Columbia constites the stretch from the confluence of the Willamette and Columbia to its mouth at the Pacific Ocean.

In addition, state fiscal support to the Willamette Falls Canal and Lock Company was insufficient to overcome the reduncancy of two competing canal concerns relative to the size of the market, and so it would be absorbed by the larger, more solvent OSN. Holladay's navigation concerns, which by 1872 included the Oregon Steamship Company, would pass into Villard's control in 1876 while working in the interests of the Frankfort bondholders. In 1879, Villard organized the ORNC, allowing him to secure control of all railway and navigation concerns in the region, while freeing him from the Frankfort bondholders[22]. The outcome was absolute control of the Willamette Falls, which enabled him to initiate a process that would recreate the site as an electric resource.

In 1884 Henry Villard, after he was ousted from the ORNC and the Northern Pacific, but remaining in control of the Willamette Falls, commissioned a full survey of its water power potential. In doing so, Villard sought to apply Edison's technology controlled by the Edison Electric Light Company to the property at the falls, which had become a resource as a result of cumulative development of the institutional fabric. That is, a river does not naturally yield power as a resource. To produce a resource requires a nexus of social and spatial relations so organized that a proprietary relation may be conferred upon it, in conjunction with the application of a specific technology (De Gregori, 1987).

On November 8th, 1888, Morey and Eastham, members of Portland's business elite, incorporated the Willamette Falls Electric Company. According to Wollner (1990), Easton had formulated a plan to buy the Willamette Transportation Locks

[22]See Green (2014a) for a detailed discussion of this reorganization.

Company[23] as early as 1883, due to its monopoly on the falls. In 1887 he had purchased the rights sufficient to grant him effective control over the Willamette Falls. Because the engineer's report to Villard had so thoroughly documented the enormous potential of waterpower at the falls, Morey and Eastham were able to draw upon such accretion to the joint stock of knowledge[24]. On June 3rd, 1889, Willamette Falls Electric Company demonstrated the first long-distance transmission of electricity from Oregon City to Portland using alternating current generation.

The Willamette Falls Electric Company was reorganized as Portland General Electric in 1891. The new concern was capitalized at $4.25 million, most of which flowed from the Old Colony Trust Company of Boston. The General Electric Company of Boston was also a major investor and Portland General Electric (PGE), in order to establish ties between Portland and the Boston firms so that the former would purchase parts from the latter. The Old Colony Trust Company, according to MacColl (1979), served as Boston's "old guard" financial institution[25].

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[23]This was the concern that Holladay had incorporated to consolidate his navigation holdings after his purchase of the People's Transportation Company. However, its subsidiaries as distinct going concerns remained intact, evidenced by Villard's direct reference to the Oregon Steamship Company as the navigation company he came to acquire and control in 1876 (Villard, 1944).

[24]Other stockholders in Willamette Falls Electric Company included David P Thompson, R. H Thompson, Lester Leander Hawkins and William K Smith.

[25]MacColl claims Boston as the center of high finance during the age in which the railroads, as well as the first great trusts in mining, textiles, and utilities. This claim is too ambitious: the financial center for these concerns encompassed network that spanned Boston, New York, and Philadelphia in the U.S., as well as London, Berlin and Frankfort in Germany (White 2011; Wilkins 1989)

The organization of PGE provides evidence in support of the claim that electric utilities found roots in in the railroad - finance nexus. Frederick Ames, a director for the Old Colony, was also a director at American Loan and Trust Co., as well as a number of important railroads (see Figure 3, see Figure 5 for the Boston financial network in which Ames was embedded). Henry Reed, secretary of the Lewis & Clark Centennial Exposition[26], reported on July 7th 1904 that PGE had won the contract to suppy the Exposition with electric current, valued at $82,000. Wollner (1990) dismisses the interconnections between PGE executives[27], financiers, and the governance of the Exposition as superficial to the ongoing development of the going concern. However, Wollner's analysis is teleological, and the men of electricity and finance in his corporate history of PGE are seen as heros, undertakers of a progressive

[26]World fairs and expositions were a popular way to promote electrification. They also provided a platform from which to perpetuate the ideology of imperialism. The "Great White Way" in Chicago's World Fair possessed double meaning: cities were white with illumination, with central boulevards emblazoned with electric light, but the exhibitions were structured so that the brightest, and most central displays, were those of recent Western settlement and achievement in American history. Again, the Anglo-Saxon, Christian American was held up as the pinnacle of human achievement, whereas other cultures, both extant and extinct, were displayed so that they dimmed as they grew more distal to the center. Native American and African traditions were not illuminated at all and occupied the very edges of the expositions (Hirt, 2012; Nye, 1990).

[27]At the time, Henry Goode was both president of the Exposition's planning and governance board as well as Portland General Electric. Goode originated from the Northwest Thomson - Houston Company, which was strongly tied to Eastern financiers through Charles Coffin. James R. Thompson of Portland General Electric was also the fair's electrical engineer (Wollner 1990). For a detailed account of the financial connections of the Northwest Thomson - Houston Company, regional subsidiary of the firm that would be merged with Edison General Electric to form General Electric, see the July 24th, 1895 issue of Electricity, a weekly publication.

and inevitable technology. While PGE retained local control initially, when it was incorporated into the Portland Railway, Light and Power Company (PRLP) 1906, such control passed to the hands of Eastern capital. The controlling interest in PRLP lied in the hands of the Clark family of Philadelphia. (MacColl, 1979). MacColl states that the formation of the PRLP was "Portland's first bona fide monopoly," however, such a claim is untenable given the Oregon Steam Navigation Company had consolidated total control over river traffic as early as 1862 (Poppleton, 1908)[28]. Figure 4 offers a summary of the consolidation of Portland's electric utilities between 1884 - 1906.

Political and economic consolidation

Men alone do not make their history. Rather, it is collective action that moves the wheel of time. Social networks, when controlled by a subset of persons and directed toward a common purpose, generate institutional capacity. To sustain the power of the emerging electric utility in Portland, Oregon, it became necessary to pursue consolidation of political power. Given that the underlying value of the utilities examined here rests upon the acquisition of city franchises to rights-of-way, in other words, goodwill capital, the owners and managers of these corporations sought to consolidate city government. The consolidated city government would facilitate the procurement of franchises making it easier to maintain legal claim to the capital it embodies. In 1891 the Oregon state legislature authorized the consolidation of

[28]In fact, it was the Oregon Steam Navigation Company that provided much of the capitalized value for the later incorporated Oregon Railway Navigation Company, which, in turn, provided the same for the Oregon and Transcontinental.

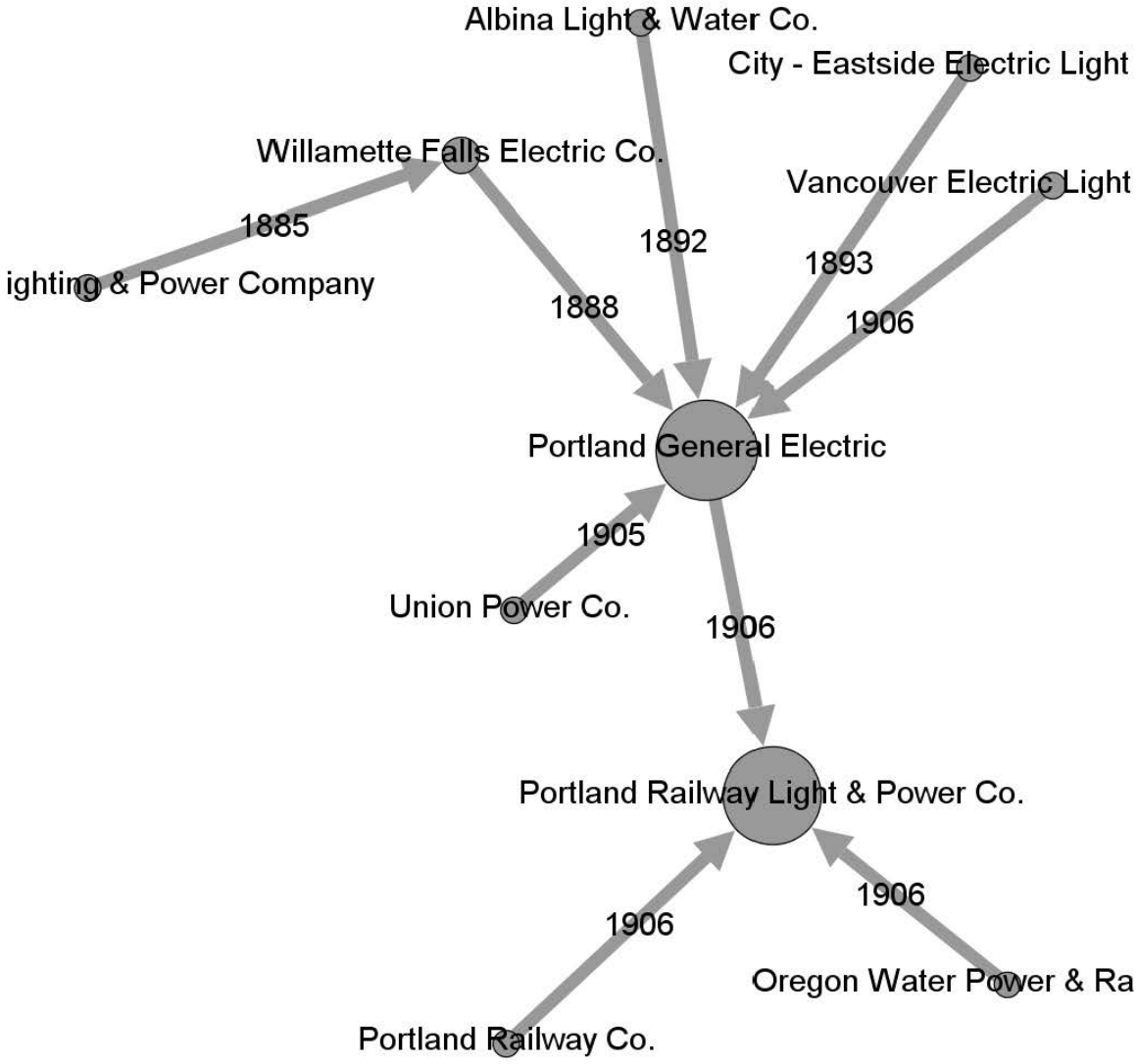

Figure 4. Electric Utility Mergers in Portland, OR: 1884 - 1906

Source: MacColl (1976)

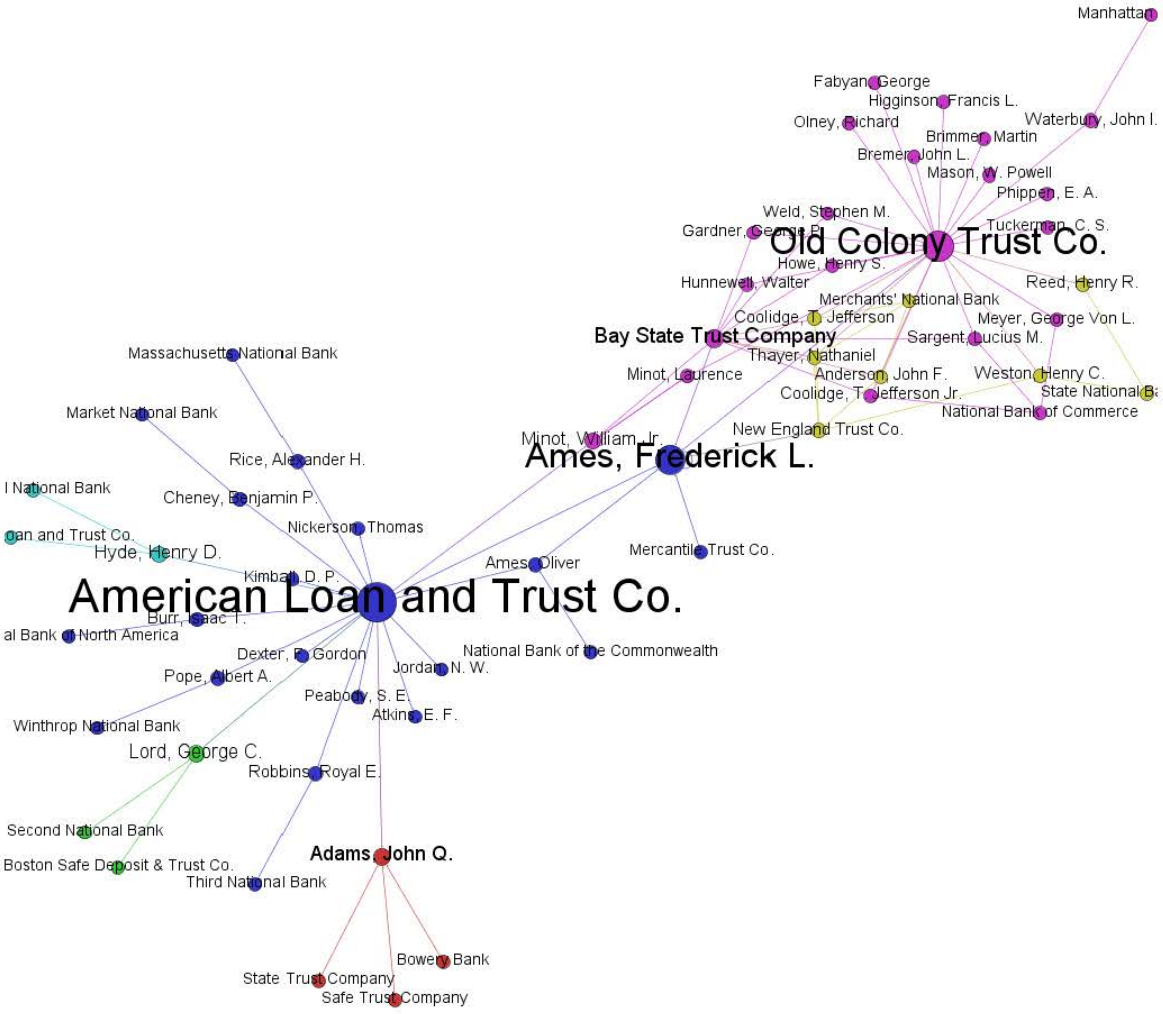

Figure 5. Frederick Ames and Boston finance c. 1891.

Network constructed as union of two sets: the ego networks Old Colony Trust Co. and American Loan and Trust Co., taken at two degrees of separation. Network constructed from data courtesy of Mark Granovetter. The database of bank - director relations was part of a larger project involving Mark Granovetter and Patrick McGuire as principle investigators during the 1990s. McGuire was Granovetters doctoral student at SUNY - Stony Brook, whose dissertation traces corporate control in electric power markets from inception through its chief market governance institution (1986), the National Electric Light Association (NELA).

East Portland, West Portland (presently the central business district), Albina and St. John's (Hirt, 2012). As Hirt suggests,

> [m]any vested interests contributed to this political merger. Members of the state legislature who spearheaded the consolidation effort included Oregon Railway Navigation attorney Joseph Simon, who was the Oregon State Senate president that year; Attorney P. L. Willis, who was Swigert's partner in the Electric Land Company and the state senator for the district that included St. John [sic] and Albina; P. F. Morey, who was the president of Willamette Falls Electric Company and had just won a seat in the Senate legislature in order to promote city consolidation (2011).

The current, albeit peculiar, layout of the city today serves as a legacy of the power of these early patriarchs to recreate spatial relations in the pursuit of their private ends. Portland's many and charming neighborhoods grew haphazardly from the streetcar lines the utility men extended to further load growth, and engage in real estate speculation (MacColl, 1976). Neighborhoods like Hawthorne and Belmont on the Eastside, Alberta and Albina / Missippippi on North Portland, and "Northwest," are hailed as models for mixed-use real estate development today, while hosting an orgy of conspicuous consumption. Yet, they were not conceived as such by those who built them, with the aid of the public trust, who intended to carve out pecuniary fiefdoms in an electric empire on the Columbia.

Conclusion

This essay has traced the roots of the electric utility to the railroads in the Pacific Northwest. Emphasizing its beginnings in Portland, OR, highlights its common foundation with the navigation and railroad business that grew up in post Civil War period. In the region, hydroelectric power has always defined the provisioning

of electricity, with the modern experience of the Columbia completely mediated by the concrete and steel machines that have tamed it. By tracing its history to its corporate roots, it was shown how the emergence of water power as an electric resource developed from the conflict between warring factions of the business elite. Proprietary claim to the Willamette Falls emerged as a direct result over the struggle for control of the navigation business. Once that geological legacy was recast as property it passed through a chain of control that quickly settled into Villard's hands, who initated the process that would ultimately reproduce the site as an electric resource. Therefore, the dawn of the electric age begins prior to the region's introduction to the spectacle of electric light.

This claim may be sustained because the actual development of electric technologies unfolded in a context in which business enterprise governs the social provisioning process. While some histories suggest its revolutionary inevitability, a more critical view finds that development of new technologies and market governance are two sides of the same coin. Vested interests condition the integration of new social technologies in such a way that allows for ongoing privilege to make claims to the surplus deriving from them. Consequently, it is reasonable to examine the business processes that lead up to the development of a new technology.

This essay has strived to connect developments in the Pacific Northwest to global processes. The relationship between Villard and Edison was chosen as an important entry point, because it underscores the overarching methodological premise in the dissertation: the fundamental unit of analysis when examining cumulative change is the social relationship. Specifically, we are interested in those relationships that

matter most in explaining how the social provisioning process undergoes wholesale, qualitative change in reference to its regional watershed. Villard was related directly, and indirectly, to the Columia River basin, through his ownership and control of the great industries that were constituted by it. As a financier, Villard was instrumental in developing Edison's technologies in New York and New Jersey, which had the effect of establishing a set of technical and social ties between the Pacific Northwest and the Edison Electric Light Company. As an empire builder, Villard set to embed these ties in an international cartel based in Germany, in which he and his fellow financiers would exert control. Because Villard was granted the authority to act in an institutional capacity as a result of his proprietary and social relationships in the Pacific Northwest, he would form one side of many relationships that would condition the cumulative development of the region going forward. Relationships of a business nature would work to recreate the region as an electric empire on the Columbia.

CHAPTER 4

THIS DAM MACHINE KILLS FASCISTS

> Just watch this river and pretty soon
> Ever'body's goin' to be changin' their tune.
> The big Grand Coulee and Bonneville Dam
> Run a thousand factories for Uncle Sam.
>
> Woody Guthrie, *Talking Columbia*

Introduction

By the time the United States was fully engaged in World War II the Columbia River had been transformed into a machine placed in the service of generating electric power. The Bonneville Power Administration (BPA) emerged as the institution responsible for governing this machine. Today, the BPA remains the central institution through which the regional economy is coordinated: any industry in the region that takes electricity, fish, irrigated water, and navigable channels as an input relies directly or indirectly upon the BPA, an institution of the state that manages the complex of federal and non-federal hydroelectric dams within the Columbia River watershed[1]. The very notion of the Pacific Northwest as a coherent region emerges as an artifact of the development of the BPA.

This essay situates the Pacific Northwest, as a coherent region, within the

[1]Today there are thirty-one federally owned and operated dams on the Columbia and its tributaries. Bonneville and Grand Coulee, both constructed during the New Deal, were the flagships projects for the BPA at its inception. While BPA manages the Federal Columbia River Power System (FCRPS), the individual projects are owned by the U.S. Army Corps of Engineers or the Bureau of Reclamation. In addition, there are four non-federal dams on the middle Columbia, that must be coordinated as part of the whole the system.

broader national movement towards public power. The Pacific Northwest emerged as an important aspect of this broader movement, because of the confluence of its potential for hydroelectric resources and the political and economic conjuncture over control of electric power. Consequently, the waterways of the Pacific Northwest occupy a central place within this movement, anchoring cumulative development of the regional economy in direct reference to the watersheds.

I have argued elsewhere (Green 2014a, 2014b) that certain social relationships, given their centrality within the social networks that govern the provisioning process, had the effect of transforming the region into a site of capitalist development. Collective action tied the region to global markets through an intricate web of financial and material relations. Issuing liabilities to German bondholders, for instance, presumably for the construction of a coherent, regional transportation network connected what was otherwise a loose colonial appendage firmly to the world system of capitalism. But, because these ties were so enduring, new going concerns emerged that sought to reproduce their own conditions of existence by nurturing the development of markets. From the market for navigation and railway transportation to the market for electric power, common sets of financiers and businessmen alike created a set of conditions that would bring the Northwest into the broader field of the corporate economy. An important aspect of this integration was through the public utility holding company.

The Power Trust: exercise of corporate power in the public utility field

Two approaches emerged in the 1920s that sought to rationalize and increase the efficiency of the electric utility industry. Super Power embodied the belief that private industry through, voluntary association, could rationalize the industry through

interconnection. Giant Power, on the other hand, was driven by the Progressive belief that a combination of scientific management and strong federal regulation, would not only make the industry more rational, but allow for the extension of the market into rural areas (DeGraaf, 1990). Moreover, Giant Power embodied the idea that electricity should be provisioned at a "postage stamp" rate; the rate for electricity should be cheap and even, irrespective of the pecuniary cost of its provision. Each approach shared the principles of "corporate liberalism," which DeGraaf (1990) describes as "an emerging public policymaking sector... [that] created quasi-public agencies to solve economic problems that traditional political and corporate institutions were either unwilling or unable to approach by themselves." However DeGraaf (1990) rejects the notion that networks of influential persons seeking to rationalize public planning were homogeneous in the extent to which their actions were described by the principles of corporate liberalism.

Initially the private utilities supported Super Power, especially in the wake of World War I when demand for power threatened to exhaust capacity for individual utilities (DeGraaf, 1990; Funigiello, 1973). The project of creating a Super Power entity that would coordinate grid interconnectedness and shared capacity resources[2], while remaining within the purview of private governance was attractive.

[2]Generation and capacity are distinct concepts in the electric utility business. Generation is a flow concept, concerning the rate at which watts of electricity may be provisioned. Capacity concerns the ability for a system to "ramp-up" or "ramp-down" generating reserves, however, this is not directly analogous to a stock concept. Once the energy embodied in the fuel source for a given generator is converted to electricity, flows do not accumulate to stocks of electricity, unless storage technologies are employed. Electricity may only be stored in batteries or capacitors. Electricity may be converted to other forms of potential energy, but the technologies that enable

William S. Murray, industry engineer, embarked upon his Super Power Survey that attempted "to use engineering principles to solve the utility industry's supply problem" (DeGraaf, 1990). Murray enjoyed the support of private industry and the federal government. Super Power's advisory board included members of the managerial class that governed both business enterprise in utilities and railroads, as well as engineers. Most notable was Herbert Hoover, a classic example of the corporate liberal planner. Matthew S. Sloan, president of Brooklyn Edison, also served in an advisory role. Sloan would be instrumental in NELA's propaganda campaign of the 1920s that sought to conceal the rapacity of the private utilities behind the veil of laissez-faire[3].

To develop the institutional capacity to govern physical operation of the myriad local utilities that would comprise Super Power, the advisory board sought to vest the varied interests into a common Super Power Corporation. A subcommittee was established to draft the corporate charter. Matthew Sloan, Edward Buckland, and William Barstow comprised the subcommittee. The subcommittee recommended the Corporation be chartered by the federal government and subject itself to regulation, so that it may engage in interstate commerce with regard to the transmission of electricity. Members of the subcommittee recognized that unless it was subject to federal regulation the Super Power Corporation would become the target of the

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such storage are not generally incorporated into modern electrical systems, nor were they in use during the 1920s. Because of the one-sidedness of the capacity problem described here, individual utilities must rely upon idle reserves to serve peak load. Thus, efforts to further integrate utilities into regional "super power" systems were directed at minimizing the extent to which any given utility had to carry idle plant and equipment.

[3]The propaganda campaign will be taken up in the following section.

growing public power campaign.

Once the advisory board presented the Super Power proposal to a broader coalition of utility executives support for the plan waned. Utility executives began to perceive Super Power as a concept that ran against the interests of their respective going concerns, especially when the matter of federal regulation was fiercely defended by Barstow. As DeGraaf (1990, pg. 9) notes "Barstow maintained that federal regulation of the system was essential because state regulation intended to have an adverse effect on rate schedules. For the Super Power Corporation to be a financial success, the prices charged for power needed to be competitive with existing utility rate schedules." At the outset executives that had initially supported the proposal were under the assumption that Super Power would not be a source of competition.

Further on the question of federal regulation was a proposal for the Federal Water Power Act of 1920 to be amended so that its regulatory purview extended beyond hydroelectric power to conventional thermal plants and transmission lines. Such a suggestion resulted in wholesale rejection of the plan by Sidney Mitchell, president of Electric Bond and Share, who remarked, "there has been too much irritating, restrictive, unwise, nagging regulation and direction of the details of things in an un-businesslike way from the Departments in Washington for many years. There is nothing I know of, unless it is bubonic plague or leprosy that business abhors and dislikes more" (DeGraaf, 1990, pg. 10). The proposal for the establishment of a Super Power Corporation was abandoned, but the recognition that the industry required rationalization remained.

Giant power

Morris Cook and Gifford Pinchot advanced an alternative mechanism of market governance for the state of Pennsylvania. Giant Power would blend the principles of scientific management and conservation with the recognized interdependence of the machine process. Giant Power reflected the insights captured by Veblen in *Engineers and the Price System*:

> In effect, the progressive advance of this industrial system towards an all-inclusive mechanical balance of interlocking processes appears to be approaching a critical pass, beyond which it will no longer be practicable to leave its control in the hands of businessmen working at cross purposes for private gain, or to entrust its continued administration to others than suitably trained technological experts, production engineers without a commercial interest. What these men may then do with it all is not so plain; the best they can do may not be good enough; the negative proposition is becoming sufficiently plain, that this mechanical state of the industrial arts will not long tolerate the continued control of production by the vested interests under the current businesslike rule of incapacity by advisement (Veblen, 1921, quoted in Chase, 1933)

Murray and Cook were classmates at Lehigh University. They shared values regarding the rationalization of electric power production and distribution. Ideologically, the two diverged. On the evaluation of Ontario's public power program the two disagreed. Ontario enjoyed lower rates than its New York neighbors, but its plant and equipment were similar. When Murray published a report in 1922 falsely claiming that rates in Ontario were just as high as in the U.S., Cooke "began to doubt the 'soundness' of Murray's attitudes toward interconnection"(DeGraaf, 1990, pg. 17). Publicly Cooke criticized the Murray report, suggesting that it had been influenced by NELA; privately, Cooke puzzled that Murray's report was "the result of the variety of speech which seems to come out whenever the electric industry meets

the public. I never before heard you fall into this vernacular. I suppose this is where I got my shock" (DeGraaf, 1990, pg. 18). Cooke's suspicions would be confirmed after the FTC found in 1934 that NELA had commissioned the report as part of its larger, thoroughgoing propaganda campaign to dissipate the movement for public power (Gruening, 1964, pp. 173 - 174).

Giant Power conceived of electricity as an emancipatory technology (Dick, 1973). Through rational electrification of a broad range of economic processes, the spatial link between the factory and the community could be broken. Giant Power also embodied a social promise, at least perceived by some of its supporters, of liberation from the yoke of industrial capital. One critic claimed that electrification presented society with a solemn choice: place the technology in the service of mankind, "[o]r, ... surrender to the control of the greater machine, permit electricity to make permanent what the steam-engine began, be happy in the roar of industry and lose all our sense of freedom, justice and beauty" (Hart, quoted in Dick, 1973).

Joseph Hart, as Dick emphasizes (1973, pg. 10), viewed Giant Power as essential to overcoming the alienating effects of the labor process under capitalism. Indeed, the machine process introduced a contradiction: while it increases the surplus of the provisioning process, the "frequency, duration, intensity, grade, and sequence [of its constituent processes] are not, in the main, matters for the free discretion of the individuals who participate" (Veblen, 1904) For Hart, and other Giant Power visionaries, at least electricity offered a mechanism to break the direct connection between the prime mover of the machine process, the steam engine, and allow for some amelioration to the general feeling of alienation within it. Perhaps electricity, if controlled

in the public interest, might grant the worker the means to escape the alienating experience as "mere appendage" to the machine (Marx, 1983 [1867], pg. 645)

The FTC Study

While captains of industry were busy figuring the means to govern the market for electricity, a popular movement had emerged in opposition to the private encapsulation of the new, social technology. On February 9, 1925, Congress passed a resolution directing the Federal Trade Commission to investigate the market structure of the electric power industry and determine whether it was controlled by a "Power Trust" (Funigiello, 1973). Sen. George W. Norris of Nebraska led a coalition of Progressives who managed to subscribe sufficient support for the resolution. In calling for legislation to investigate what he perceived to be a corruption of the principle of market competition, Norris proclaimed on the floor of the Senate:

> I have been dumbfounded and amazed ... at the wonderful way in which these subsidiary corporations reach out in every section of the country, sometimes controlled by stock ownership, sometimes controlled by interlocking directorates .... and the country will be dumbfounded and amazed when it learns that practically everything in the electric world, from something that perhaps costs no more than 25 cents to something that may cost millions of dollars, is controlled either directly or indirectly by some part of this gigantic trust. (66 Cong. Rec. 1074, 1925)

In 1927 the FTC published its report titled *Electric Power Industry, Control of Power Companies* (FTC, 1927). The specific language of the resolution authorized a study of the "extent [to which] the General Electric Company, the stockholders or other security holders thereof, either directly or indirectly through subsidiary companies, stock ownership, or through other means and instrumentalities, monopolize

or control of production, generation, or transmission electric energy or power...." In other words, the FTC was to determine whether a network of corporate control within the industry existed and whether it was centered on General Electric.

Much to the dismay of the anti-monopolists who had advanced the legislation, the FTC concluded that there was insufficient evidence to substantiate the claim that General Electric exercised effective control over the industry. Immediately, Senate critics called for a congressional inquiry independent of the political forces that had seemingly compromised the objectivity of the FTC. Funigiello (1973, pg. 7) notes that suspicion of the FTC's impartiality was justified in part by the fact that confidential records of the holding companies were not examined. Rather, the commission drew its conclusions primarily from questionnaires mailed to the executives of the parent companies, which the local subsidiaries operated. A second FTC investigation was authorized whose final report would reveal systematic abuses of the public trust on the part of the public utility holding companies. However, some of the findings of the first report merit comment.

While it was not found that General Electric, as a single going concern, had managed to control the entire electric utility industry, it did provide evidence that significant interconnectedness existed within the industry and that a central core could clearly be identified. Figure 6 shows the interconnections that existed between key stockholders and the large power groups that controlled the industry as a whole. There are 50 nodes and 72 edges in total. The nodes may be decomposed into two sets - a set of stockholders and a set of holding companies. Stockholders are depicted as squares and holding companies as circles. The pattern of relations within the network

as a whole yields distinct subgroups in which nodes are assigned membership. In this case the subgroups are distinguished by color. Blue nodes delineate the subgroup associated with General Electric and Electric Bond and Share (EBS) control of the industry. Nodes in red suggest control by the American Superpower Corporation. The remaining nodes in black do not suggest an obvious coherent control group, with the Barstow, General Gas & Electric (GGE), and Middle West Utilities (MWU) relations as notable exception. As president of GGE, Barstow owned 47.5% of common stock, and was a member of the "Insull group" during the formative years of the industry (Granovetter and McGuire, 1998; McGuire, Granovetter, and Schwartz, 1993). Thus it is reasonable to suggest that a subgroup centered on Barstow may exist in this network.

It is interesting to note that after abandoning the proposal for the federal charter and regulation of the Super Power Corporation to administer a regional grid in the U.S. Northeast, the same interests went on to incorporate the American Superpower Corporation (ASC) represented by red in Figure 6. Mitchell, president of EBS, served as a founding director of the ASC. Murray, the engineer behind the concept of Super Power, also served on the board of ASC. Other board interlocks include EBS stock ownership (10%) of ASC, which held minority interests in a number of utilities not directly associated with the EBS and General Electric. A director of ASC, Frank Hulswit, held 15.2% of the outstanding stock in American Light & Traction (ALT) and 9.3% in United Light & Power, both of which were holding companies.

The data marshalled here on the degree of interconnectedness between individual holding companies, operating companies and boards of directorates suggests

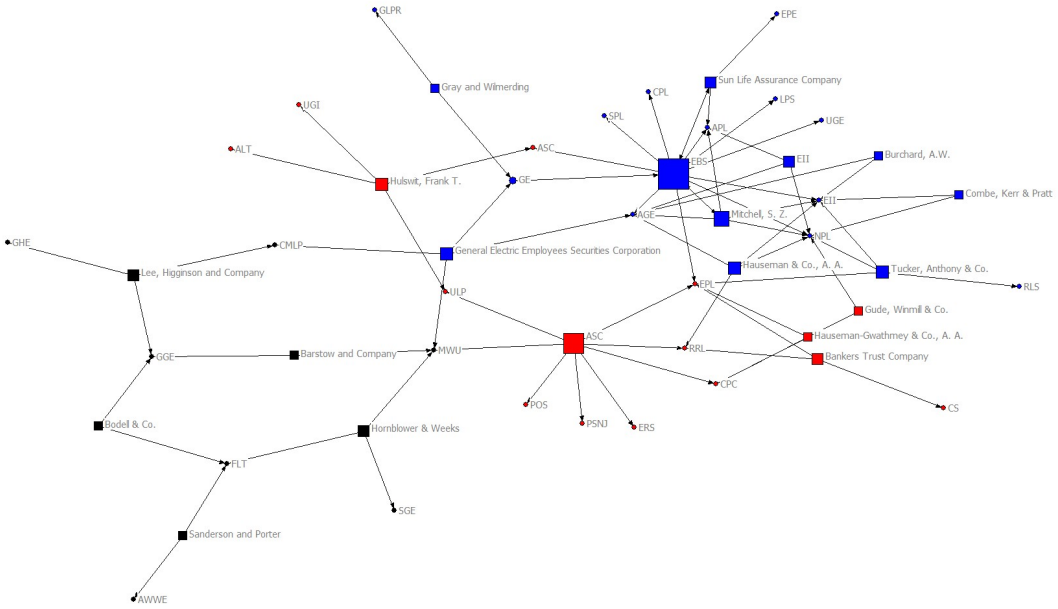

Figure 6. Interconnections between holders of at least 1 percent stock in at least two holding company power groups, or any one power group and General Electric. Source: Table 16, S. Doc 213 (FTC, 1297)

that the business enterprise operating within the electric utility industry was part of a larger community of interest. The industry was governed holistically. The point and purpose of the concepts of Superpower or Giant Power was the recognition that for the system to be rational and for the machine process to work efficiently, more interconnectedness not less would have to be established. However, the men that controlled these corporations and directed its market governance institutions preferred to manage these affairs privately (Funigiello, 1973).

Progressives such as Norris failed to understand that this industry demanded a high degree of concatenation, and so required cooperation to manage it[4]. West-

[4]The degree of interconnectedness among enterprises operating in the electric util-

ern senators, described as "anti-monopolists," wished to break them up into smaller concerns. From a technical standpoint decentralization was feasible, as demonstrated by the highly successful isolated plants that dominated the market for electricity before their forced removal by the central station owners that came to control its trade associations. However, evaluated against the standard of pecuniary efficiency, going concerns engaged in the provisioning of electricity would be unable to administer going concern prices should the market become as competitive as its reformers wished. John Kenneth Galbraith in *The New Industrial State* identifies the problem succinctly:

> [s]ize is the general servant of technology, not the special servant of profits. The small firm cannot be restored to break the power of the larger ones. It would require, rather, the rejection of the technology which since earliest consciousness we are taught to applaud. It would require that we have simple products made with simple equipment from readily available materials with unspecialized labor. Then the period of production would be short; the market would reliably provide the labor, equipment and materials required for production; there would be no other possibility or need for managing the market for the finished product.... (1967, pg. 49)

For the present purpose Galbraith's comment on the nature of business enterprise in the modern age may be taken in reference to the system of business as a whole. That the business enterprise tends to be large reflects the need to replace the market with an institution capable of planning on a large-scale across a varied scope. In the electrical industry, in particular, it is feasible to provision electricity efficiently with individual plants distributed in a less centralized manner; however, size would still be the "general servant" of the technology embodied in the whole system.

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ity business is suggestive of oligopolistic cooperation. (Munkirs & Sturgeon, 1985)

The interconnectedness of this holding company structure was the outcome of a deliberate process that sought to institute and rationalize market governance. In particular, the holding company mechanism of governance reflects the peculiar institutional history of the American legal system. Bonbright and Means (1932) argue that the holding company may be sufficiently regarded as "American," precisely because of the ways in which Americans have tried to control the excesses of corporate abuse. Rather than embracing both the machine and pecuniary logic of large combines as market governance institutions, such as the case in the European tradition, legislation like the Sherman Antitrust Act, anachronistically, appeals instead to the ideology of liberalism and its economic expression in laissez-faire. That is to say, by making concerns smaller and forcing competition, the market was expected to yield a set of prices that were "fair", thereby restoring its ability to allocate the social product.

Public power

Because of the abuses of the public utility holding companies a national movement emerged that sought to wrest control of the industry from these private entities and place it in public hands[5]. Formation of municipal utilities occurred in cities throughout the United States at the dawn of the industry itself. However, despite

[5]While it may be said the state constitutes, *sui generis*, a situation apart from each person embedded in society, it does not proceed on its own purpose. Dewey resists such reification by arguing "the public has no hands except those of private individual human beings," suggesting instead the problem lies in the methods by which the valuation structure situates the relationship between private and public on the question of provisioning (Dewey, 1927, pp. 81-82).

early gains municipally owned concerns were unable to build sufficient momentum to dislodge the power of private control. While the number of municipal systems grew as a percentage of the total industry from 22.5% in 1902 to 52.6% in 1932, its share of output remained miniscule, never breaching 5% (Dick, 1973, pg. 65). Despite its limited share of the market, private utilities nevertheless waged war on municipal systems because of the threat to its ideological structure they posed. Dick (1973) writes, "one might conclude that the private utilities were guilty of overkill in a propaganda campaign designed to discredit public ownership in the 1920's given the slight proportion of the energy market in public hands. Yet, the important fact was that public ownership was sufficiently established that it could not be dismissed as mere theory."

Several examples of successful municipal systems were found in prominent cities like Los Angeles, Cleveland, and Seattle and Tacoma in the Pacific Northwest (Dick, 1973). These latter cities on the Puget Sound would pose a special threat in the ensuing debate over public power. Tacoma, in particular, was cited as having lower rates for electricity than any other place in the United States (Dick, 1973). The municipal system, Seattle City Light, operated adjacent to Puget Sound Power & Light, a private utility, offering a means to compare rates for equivalent service. In Seattle the two enterprises competed for market share on the basis of rates. Seattle City Light would set rates sufficient to reproduce itself, albeit, much lower than Puget Sound Power & Light in the absence of its municipal competition. The latter concern would be forced to follow. However, rates outside of Seattle, but still within Puget Sound Power & Light service area, were significantly higher. As Dick (1973) points

out "a five room house in 1924 could be [provisioned] with an average of 518 kWh per month. The private company charged $8.98 for service in Seattle. In Bellingham, it charged $17.80 for the same service, in Puyallup, $18.55, and $32.50 in Aberdeen." The Seattle experience fueled the campaign for public power.

As a collective body the private utilities did not ignore the threat of successful municipal ownership. NELA, the industry's trade association, had organized a sophisticated campaign that sought to counter and dissipate the movement for public power. In 1927 its Public Policy Committee received a field report which stated:

> The Seattle situation is of national importance. Seattle has the second-largest municipal plant in the country. Its rates are continually cited as lower than those charged by privately owned plants. ... At a time when active proposals are being made – to extend the activities of Government in business in other localities, the claim of successful results of such a policy in Seattle is dangerous and requires refutation. (NELA, quoted in Dick, 1973 ,pg. 67).

What Ernest Gruening (1964) claims as "the most highly organized peace-time effort to shape public opinion in the United States," began at Samuel Insull's suggestion in 1919[6]. On the question of ownership over electric utilities, Insull instructed the executives under his command to "[g]et busy and do something," suggesting the industry proactively develop a propaganda program (Gruening, 1964, pg. 18). Shortly thereafter the Illinois Committee on Public Utility Information was organized and began a campaign to inundate every facet of public life with views favorable to ongoing control of the industry by the private utilities (Gruening, 1964, pg. 19). By

[6]Gruening's invective draws from the findings of the FTC, whose investigators concluded that measured by quantity, extent, and cost, this is probably the greatest peacetime propaganda campaign ever conducted of private interests in this country. (Dick, pg. 45)

1921 the Committee, headed by an Insull man, had distributed five million pieces of literature targeted for specific audiences ranging from newspaper editors, business leaders, lawyers, teachers, members of the clergy, librarians, students of all ages, and trusted stewards of government at all levels (Gruening, 1964, pg. 19).

The propaganda campaign became instituted into NELA as a core function of market governance (Dick, 1973; Funigiello, 1973; Gruening, 1964). The threat of public ownership undermined the complex network of liability structures that provided the basis of capitalization for the industry as a whole. As Dick (1973, pg. 46) puts it, "the power and light industry was already a multi-billion dollar business in the Twenties and the Electric Age was just dawning. There was figuratively gold in those franchises and more to be spun from the webs of the holding companies." Control over the market for electricity, and hence control over the futurity of the complex of asset values deriving from its private ownership, hinged upon reproducing the public faith in the sanctity of private ownership.

The stakes extended beyond the going concern. Rather, whether a movement toward public power could be quelled affected all interests vested in public service corporations. Goodwill emerges as a communal situation that derives from a harmony of interests on whichever end of the transaction one lies in regards to the provisioning of electricity. One industry executive remarked at a NELA address:

> The key issue in America today is whether the American people desire to preserve the institution of individual rights in property or substitute therefor [sic] community ownership supervised by a socialist oligarchy. This country can not [sic] exist half socialist and half free any more [sic] than It could have existed half slave and half free. (Henry Swift Ives, quoted in Dick, pg. 46)

Whether or not most executives understood the nature of class as well as Ives

is unclear. However, the actions of NELA in its sustained campaign reveal a consensus among its leadership that "control of public opinion was ... essential in the battle to assure the triumph of private enterprise" (Dick, pg. 47). Specifically, the utility executives sought to guide the public mind in adopting an ideology that viewed the interests of the utility as identical with those of the public at large. President of Portland Electric Power Company (PEPCO), Franklin T. Griffith, declared to NELA on the matter, "[a]n attack on the principles for which we [the utilities] stand is an attack upon our government itself" (Gruening, 1964, pg. 26).

Taken in the context of the propaganda scheme as a whole, we may interpret Griffith to mean the concepts of "General Will" or "public good" when he refers to government. For the layperson to whom the persuasion efforts were directed, government and the General Will were likely conceptually identical. Thus, Griffith's deceit served the end of creating the harmony of interests the utilities sought to achieve. Yet, from the standpoint of the utility executive, and from the experience of capitalist development in general, an attack on the principles upon which the utility stands are also an attack on government itself, the latter instituted largely to protect the interests of the propertied classes. Indeed, the propaganda campaign was held to be in the best interest of the public by utility managers; accordingly, the public paid the bill[7]

The experience of the farmer fueled further the public power movement. Dick

[7]The second FTC investigation revealed that NELA's extensive propaganda campaign was expensed to the rate-base of the underlying operating companies that comprised its system (Gruening, 1964).

(1973, page 78) notes that "when the private power companies provided rural service, the farmer was required to pay the cost of the extensions. The companies then incorporated the additions into their rate base. [Senator] Bone: 'thereafter the poor farmer had to pay interest and dividends on his gift which became a part of the capital structure of the company and this ran into an enormous sum in the state.'"

In 1930 a number of anti-power politicians were elected to office. By 1930 the "Power Trust" had become a serious issue in politics. As Dick (1973, pg. 2) notes, "[e]lection victories of Edward Costigan in Colorodo, George Norris in Nebraska, Gifford Pinchot in Pennsylvania, Philip LaFollette in Wisconsin, and Franklin Roosevelt in New York reflected in part an awakening on the power issue." The power issue found support in the Northwest (Dick, 1973). Washington and Oregon each passed measures designed to promote the development of public power, although Washington's version of the law would prove to be more conducive to checking the power of private utilities through the remainder of the 20th century.

Public Power in the Northwest

The PNW occupied a central space in the fight for public power. Tacoma and Seattle boasted successful municipal utilities, providing much of the impetus for NELA's propaganda campaign. However, aside from these Puget Sound cities, the region was provisioned, if at all, by the holding company system described as the Power Trust (see Figure 7 for a map of the fields of control for the major power groups). Local operating companies such as, PEPCO (formerly Portland General Electric), Northwestern, and Washington Water Power Co., were used by absentee owners to extract rates in excess of cost recovery and a "reasonable" mark-up. The

practice of inflating the rate base by issuing liabilities, either between other utilities, parent companies, or to banks embedded in the holding company network, for purposes unrelated to the actual provisioning of electricity left the consumer feeling pinched. Allegations of stock watering and "overcapitalization" drew the ire of local politicians, like Charles M. Thomas in Oregon (MacColl, 1979).

Figure 7. Division of market for electricity in the PNW by power group in the holding company system.
Source: Federal Trade Commission (1927)

As the state's sole public utility commissioner[8] Thomas led the public power

[8]Oregon's public utility commission is peculiar in this regard. Thomas was ap-

fight in Oregon. In 1933 Commissioner Thomas addressed the people of Portland on the power issue, focusing on the ways in which communities were controlled and exploited by remote holding companies and financial institutions. Thomas described the chain of ownership that linked the Portland area's utilities (coincidentally its most important enterprises) with large, eastern corporations such as AT&T, Central Public Service Company, and Electric Bond & Share, resulting in a financial tribute to New York. While the picture was more complicated and nuanced than he expressed, Thomas did identify the root of the problem: the Northwest was dominated by corporations whose interest in provisioning electricity to the region was ancillary to the primary aim of generating capital gains (MacColl, 1979). Figure 8 captures the frustration by a lack of local control over utilities.

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pointed by Governor Julius Meier, who had run on a public power platform. Meier faced political opposition in 1923 from the Ku Klux Klan when attempting to run for local office in Portland, who opposed him on the basis of anti-Semitism. Johansen and Gates (1967) suggest that the KKK in Oregon had been organized by the private utility companies to distract the public from economic issues. One observers held that Klan leadership in Oregon was "closely allied with certain electric light and power corporations, and it is common gossip among politicians that it was organized , or encouraged, as a counter-irritant against reform movements which might impair the corporate interests" (Johansen and Gate, 1967, pg. 497). Another editorialized, "[t]he Klan in Oregon represents the capitalization of religious prejudices and racial animosity by public service corporations as the means of sidetracking the public mind from economic issues. With the people foolishly fighting over religion and fanning the fires of fanaticism, they have forgotten all about agitation against 8 cent street car fares, high telephone and other service rates and reduced wage scales " (Putman, cited in Johansen and Gates, 1967, pg. 497)

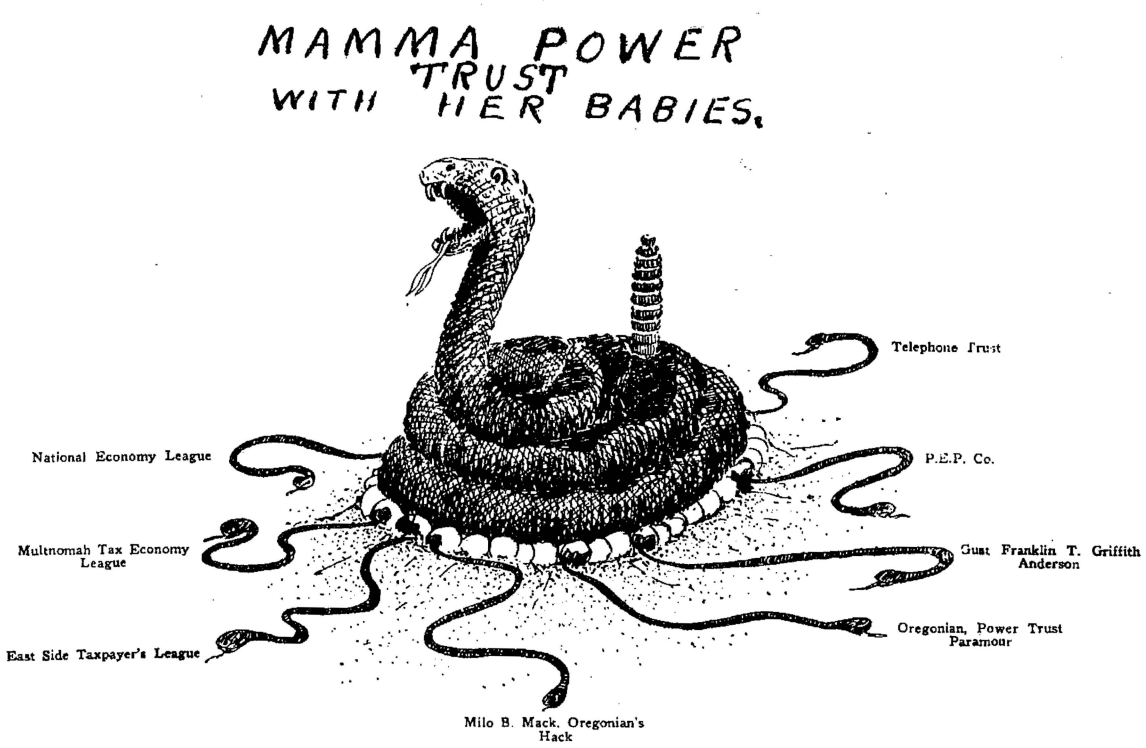

Figure 8. Depiction of the Power Trust as it affected life in Portland, Or. MacColl (1979). Reproduced with permission.

Bonneville Power Administration and Regionalism

In the 1930s there was a feeling in the PNW that corporations, such as the public utilities, stood in the way of the full development of the region as an autonomous space. The region was colonial appendage to the core of eastern capital (Nash, 1990; Robbins, 1994). Progressives envisioned a regional development program, centered on harnessing the power of the Columbia River that would move them closer to the core, while retaining its distinct regional identity.

Looking backward the regional identity of the PNW is tied most closely to the

Columbia River. But, this conception does not obtain by natural law. As Eve Vogel (2011) argues, "the seeming naturalness of the ideas of region and river, together with the variability of the broader cultural conception of the Pacific Northwest region, hides the political construction and embedded content of *this* particular, and particularly influential, regional notion. [emphasis in original]" The regional conception that frames the working rules for the provisioning process today extends beyond the Columbia River basin, a conception that embodies the literal reach of the Bonneville Power Administration's transmission grid.

Vogel's work is especially useful for grounding this analysis as a contribution to theorizing about the social provisioning process. Building on "a large and growing geographic literature that argues compellingly that all places, boundaries, territories, and even geographic scales are socially constructed and politically contested," Vogel (2011) challenges the idyllic notion of the Pacific Northwest as trusted steward of the watershed as a natural resource. In this case, organizing a set of social technologies so that the Columbia River becomes a resource, establishing a region in which the BPA is central in its governance nexus, and asserting control of this resource implies the articulation of the social product deriving from this process is discretionary and partial.

Efforts to define the Pacific Northwest began in the 1930s. New Deal policies in the West were conditioned, in part, by the visions of regionalist planners (Dick, 1973; Dorman, 2003, 2012; Vogel, 2011). Regionalists sought relief from the ill effects of uneven development: while development was concentrated in the cities, the rural areas suffered from price instability for farm products as well as a net population outflow

(Vogel, 2011). The contrast between town and country was evaluated against a broad set of criteria that envisioned what the good life entailed. While more prosperous, cities were overcrowded and mired in squalor. The countryside offered refuge from the filth and despair of the metropole, albeit for a lack of economic opportunity. Conceiving of the whole region as the site of economic development suggested a more balanced means of achieving prosperity, allowing for "dispersed industry, strong cultural ties, thriving rural areas, and healthy environments. New technologies of long-distance electric transmission and automobiles could disperse the benefits of industry into the healthful countryside" (Vogel, 2011).

In 1933 Charles W. Eliot, head of Public Work Administration's National Planning Board (PWA), vested Marshall Dana with the authority to organize a regional planning board in the Pacific Northwest (Vogel, 2011). The Pacific Northwest Regional Planning Commission (PNWRPC) emerged as the institution responsible for defining the "river-region bond" that would ultimately provide the point of departure for the rationalization of the Columbia River and the establishment of the BPA as its chief governance institution (Vogel, 2011). Between 1933 and 1935, however, the process of defining the Pacific Northwest as a coherent region was politically contested: at least six different conceptions emerged each envisioning provisioning in different ways.

At first the Pacific Northwest was defined by the four state (Oregon, Washington, Idaho, and Montana) planning district established by the PWA (Vogel, 2007, 2011). Another conception would propose to drop the state of Montana, focusing instead on Oregon, Washington, and Idaho. The three state alternative originat-

ing from Washington DC was contested in the PNWRPC based in Portland. Vogel (2011) suggests that separation of Montana from its neighbors to the west threatened to drive a wedge between vested interests in the region and discretion over the future of its resources. The upper basin of the Columbia River lies, in part, within the political boundaries of western Montana. Additionally, two privately owned electric utilities, Montana Power Company and Washington Water Power Company, wished for Montana to remain part of the Pacific Northwest so that decisions over the question of a shared power grid remained within their reach. The federal government favored a regional conception defined by the Columbia River basin itself, because its constitutional jurisdiction over navigable waters had already been established (Vogel, 2011). To identify the Pacific Northwest with the Columbia River basin would prove politically infeasible, as much of the Washington political and economic elite centers upon the cities of Seattle and Tacoma, which lie outside the basin. Furthermore, a significant part of the upper basin extends into Canada, suggesting the need for international cooperation for regional planning efforts.

Other visions of the Pacific Northwest would involve consideration of certain market boundaries. Most notable was an attempt to define the Pacific Northwest by its fisheries. Vogel (2011) writes, "[t]he best opportunity to build a Pacific Northwest region from existing interjurisdictional cooperation and shared ecologies might have been a fisheries region centered on southern British Columbia's Fraser River and the binational Puget Sound, potentially stretching from Alaska to California." Again, questions of control over governance would thwart the fisheries centered regional conception. This time, however, international coordination was less of a concern than

federal intrusion over state authority of fisheries.

The notion of a trade region emerged centered upon the cities of Portland, Seattle, Tacoma, Spokane, and Vancouver, BC. Business leaders in Portland lobbied most intensely for the trade region conception, just as they did in the nineteenth century when men of finance, navigation, and railroads sought to control the course of development. The trade region concept was unable to galvanize widespread support, because it was inconsistent with the ideals of the planners who sought to envision a regionalist course of development in the first place. Conceiving of a regional economy in which the major urban centers would continue to be most central would reinforce the sharp contrast between metropolis and hinterland that had already been identified as a social problem (Vogel, 2011).

The threat of losing control to national planners brought forth a new attempt to settle the question of regional unity (Vogel, 2011). When the newly established Water Resources Committee (WRC) began its nationwide inventory of watershed resources, the Northwest was to be surveyed on the presumption that it was constituted by the Oregon, Washington, Idaho definition. PNWRPC planners feared that such a survey would cement the exclusion of Montana, urging them to resolve in 1935 that "the area drained by the Columbia River, and its tributaries extending to all four of the Pacific Northwest states, comprises a social and economic unit that ought not be divided or torn apart." Out of this unity would emerge a socially constructed, river-region unity. That unity would form the basis for the region's claim to the resources deriving from stewardship of the rivers, and create the space in which the BPA would exert its influence and power over the river going forward.

While the BPA was established in 1937, funds were appropriated in 1934 for the construction of its namesake dam at the Cascades. The Bonneville Dam was conceived as a multiple purpose dam, with navigation and power production as its primary objectives. Two factors contribute to the primacy of navigation in its construction. First, the legitimacy for the Federal Government to appropriate funds for the project was established by the Federal Water Power Act of 1920, which rested upon the interpretation that the Commerce Clause granted Congress the authority to promote the development of navigable rivers. Second, private interests in the region have long been vested in the development of navigation improvements. Enterprises in the Inland Empire sought development of the Columbia and Snake so that cities like Lewiston, Idaho could find markets for their output (Petersen, 1995). Efforts to improve navigation on the Columbia River may be traced back to the days of the Oregon Steam Navigation Company (Dana, 1915). Hence, it may be argued that the BPA forms part of an institutional continuum reaching back to the early navigation interests in the region. More generally, the BPA emerges from a social fabric in which the Columbia River is central.

Funigiello (1973, pg. 174) notes that "Bonneville Dam was the first of the federal projects designed to improve navigation and to develop hydroelectric power on the Columbia River." The Bonneville Dam project was part of the Roosevelt Administration's New Deal, which emphasized conservation and development of natural resources as a means of economic development for the West. In 1932 Roosevelt, while stumping through Stumptown[9], gave a landmark speech on the subject of public

[9]Stumptown is one of Portland's many nicknames.

power, known today within the BPA as the "yardstick speech." Power produced by the dams on the Columbia River would provide a "yardstick" against which private electric rates would be anchored. Such yardstick rates were conceived of as going concern prices: the rate for power administered to the market would be sufficient to reproduce the going concern, in this case the BPA, but not to provide for payments to absentee owners. The rates would provide for cost recovery, to include debt service, but no more (Funigiello, 1973, pg.174). Bolstering the public power movements in the Pacific Northwest, Roosevelt declared:

> where a community - a city or county or district - is not satisfied with the service rendered or the rates charged by the private utility, it has the undeniable basic right, as one of its functions of Government, one of its functions of home rule, to set up, after a fair referendum of its voters has been had, its own governmentally owned and operated service....The very fact that a community can, by vote of the electorate, create a yardstick of its own, will, in most cases, guarantee good service and low rates to its population. (Roosevelt, quoted in McColl, 1979, pg. 438)

The Pacific Northwest would be an instrumental part of Roosevelt's New Deal. As a coherent region the Northwest would be the single most important hydroelectric resource on the North American continent (Dick, 1973, pg. 117). If developed, the Columbia River with all its tributaries made up 40% of the nation's hydroelectric potential. Looking to the future, Roosevelt invoked the "specter of the private utility past," which stirred the public passion against such abuses as NELA's propaganda campaign, the tendency to over-capitalize the operating companies, and the financial fragility embodied in pyramid holding company structures (Dick, 1973, pp.117-118).

Toward a new provisioning process: BPA and Qualitative Change.

With the construction of Bonneville and Grand Coulee Dams, the BPA was established to institutionalize regional coordination of the river as a whole so that these projects might fulfill the hopes of its regionalist planners. Bonneville provided navigation and power benefits to the lower Columbia River, while Grand Coulee would electrify and "make the desert bloom" in the Inland Empire.

The BPA would ultimately reorganize the social provisioning process so that the quantity relations, as expressed by its circular production schema, would reflect a greater reliance on electricity produced by the Organic Machine (White, 1996), and less reliance on a world market for its primary commodity exports. The larger scheme in establishing the BPA was to preside over a development strategy whereby the region would develop a greater degree of independence, and engage in high value-added production for which electricity would be a primary input.

After the funds for the Bonneville dam had been approved Washington Sen. Clarence Dill of Spokane articulated the response within the region:

> With cheap electricity on the farms, in the homes, in the stores, in the factories, and on the highways and the railroads, we shall build the greatest electrical empire here in the Northwest the world has ever known. (Dill, quoted in Dick, 1973, pg.142)

In 1934 Roosevelt returned to the northwest to "bestow his blessings on the two dams," inaugurating the emergence of a new system of social provisioning centered upon an electrified machine process (Dick, 1973, pg.142). Roosevelt's intention was to develop the Northwest as a region that could support a much larger population. The dams would reestablish the frontier of the West. Cheap, federal power would institute a new social frontier, in which the promise of, what Aziz Rana (2010)refers

to as, “settler freedom” would be renewed.

The development of the Columbia River for hydroelectric power promised more than a yardstick for the price of electricity. As Congressman Charles Henry Martin remarked on the approval of the Bonneville project to the Portland Realty Board, “this power which the government will develop at Bonneville Dam is not intended to force down the rates of existing power companies. This power is intended for the great chemical and metallurgical reduction plants whose first consideration is cheap power and an inexhaustible supply” (Dick, 1973, pg.190) Whatever the dreams of the regionalists for an electric utopia on the Columbia, the river would be placed in service for the production of light metals in the following decade, as the Organic Machine is used to fuel the war machine.

In the early days of the BPA, aluminum manufacturers in the Pacific Northwest would be the largest single purchasers of its output. The production of aluminum became systemically important to the regional economy with the advent of World War II (Miller, 1957). The decision to produce airplanes and ships in the Northwest had the effect of reorienting the provisioning process: a production complex emerged within the region centered on the hydroelectric output of Bonneville and Grand Coulee dams. The Bonneville Power Administration sold the output of this electricity to Alcoa and Henry Kaiser (the shipbuilder). Alcoa, in turn, sold its output to Boeing, which sold its output to the federal government to wage war on Germany and Japan. It was demand from the federal government for ships and planes that created the industries that presided over postwar economic expansion in the region, and constitutes the point of departure for subsequent diversification of production. This diversification

of production succeeded in breaking the yoke of colonial dependence on the east (Nash, 1990).

Prior to 1941 the production of aluminum did not enter into the regional economy in an important way. Since air superiority was a critical element of Allied strategy to win the war, aluminum soared in importance between 1940 and 1945 (Nash 1990, see Table 3). Production of aluminum is an electricity intensive process, providing an economic reason for its plant and equipment to be located in the Northwest, so that it may benefit from the abundance of cheap hydroelectric power from Bonneville and Grand Coulee.

Table 3. Aluminum Production 1940 to 1947.

Year	U.S. (1,000 tons)	PNW (1,000) tons	Regional Share
1940	206.5	5	2%
1941	309.1	67	22%
1942	521.1	148	28%
1943	920.2	252	27%
1944	776.4	281	36%
1945	495.1	203	41%
1946	409.6	148	36%
1947	571.8	265	46%

Source: Miller (1957)

With this surge in demand for aluminum New Deal planners did not want to simply deliver the economic gains to Alcoa. On the question of how best to proceed in increasing the production of aluminum, Harold Ickes said, "I do not believe that

we should invest all this money for national defense purposes and end up either by treating the Pacific Northwest as a colony or by making a Christmas present of all our expensive facilities to the Aluminum Company" (Nash, 1990, pg. 95). It was the prerogative of Ickes to build aluminum production plants in the Northwest so that not only would the federal government retain more control over the production of aluminum for the purposes of war mobilization, but also to leave the Northwest with a lasting resource that it could then claim as its own. Ickes appeared to understand the basic intuition behind structural independence between industries:

> [i]t should be pointed out... That, although it is both desirable and necessary that aluminum reduction plants be located in the Northwest near available resources of public power, this location would place a heavy burden upon the nation unless fabricating plants were also located in that region. At the present time, alumina produced from bauxite is shipped from Mobile and East St. Louis to the Northwest, it is then reduced to pig aluminum; the pig aluminum is then transported to fabricating plants in the East; the fabricated metals are sent back in huge quantities to the Pacific coast - and even to the Northwest itself-for airplane manufacture. The shuttle system is obviously expensive. More important, it adds a terrific burden to our critically overladen transportation system. It seems to me to be essential that proper action be taken to locate sufficient of these plants in Northwest... thereby avoiding these long cross hauls (Nash, 1990, pg. 95)

On the question of siting a large sheet rolling mill in Spokane Washington, Ronald Miller (1957), claims that "during the aluminum crisis of World War II, government agencies selected a general West Coast site for one large sheet mill to supply the Seattle Boeing plants and several other large aircraft factories in the Los Angeles area. The choice of a location in Eastern Washington (over Southern California which was closer to the larger sheet consumers) was based on 'strategic defense considerations' and 'freer labor availability of the Spokane area'."

Miller (1957) seeks an explanation for why the plant was sited in Spokane, rather than Southern California, based upon a criteria of cost minimization. However, examining the motives of New Deal planners, such as Harold Ickes, reveals that cost minimization was only part of the story: establishing a complement of light metals manufacturers, among other industries, in the Pacific Northwest, to draw upon the surplus power of Bonneville and Grand Coulee, was ultimately about making good on the promise to develop the region as an industrial center. Whereas easterners viewed the West as a vast source of natural resources to be exploited, Ickes understood that it would require federal intervention to encourage more "balanced economic development" to provide the region the means to escape this value drain (Nash, 1990, pg. 146).

Ickes envisioned a post-scarcity economy enabled by conservation. The meaning of conservation varies between the New Dealer and the modern environmentalist; conservation, for Ickes, Pinchot, or Cooke, meant rational employment of the joint stock of knowledge applied to the problem of social provisioning. For Ickes, conservation implied maximizing production, using the best methods, while minimizing the waste involved with harvesting so-called natural resources for sale as primary commodities. For a river like the Columbia to run free ran afoul of the principal of conservation, a somewhat absurd conclusion to the modern ecologist facing the problem of salmon conservation. Nevertheless, the practical matter facing the nation and the region during the period in which Harold Ickes managed the Department of Interior, was providing resources for those that needed them. Conservation, then, emerges as the policy expression of the theoretical notion of "fertility" employed in

the surplus approach.

The vision of conservation in the Northwest would find an opponent in the War Production Board (WPB). Nash (1990, pg.148) notes:

> the perception of the West as a purveyor of raw materials to the East did not fade quickly, particularly in the East. There representatives of established industries assumed that the colonial relationship would continue. Self-interest impelled and protected the status quo. And their power was considerable. Executives from large corporations dominated many wartime federal agencies, especially the War Production Board, which became a chief antagonist of the Ickes program.

Ickes and Paul Raver, the second Administrator of the BPA, believed that the WPB was shortsighted. With Boulder Dam, Grand Coulee, and the first powerhouse at Bonneville the WPB was not convinced that additional generators would be necessary to power the Western shipyards. Ickes and Raver were thinking to the future of the region, however. They wanted additional generating capacity at Bonneville to ensure a ready supply of power to fuel the post-war regional development they envisioned (Nash, 1990, pg. 148). However, increased demand for power to fuel the war effort forced the WPB to yield.

Conclusion

In part, the New Dealers succeeded. The Columbia's watershed has been rationalized. Thirty-one federal dams on the Columbia and its tributaries comprise a system with a nameplate capacity of 22,061 MW - roughly equivalent to twenty-two nuclear plants. While the system typically does not achieve this level of peak output, its potential exists. Yet, this Federal Columbia River Power System (FCRPS) creates more than electric resources. The FCRPS also provides water for irrigation in the arid

region east of the Cascades. Its multiple purpose dams allow for navigation through the myriad canal and locks at Bonneville, The Dalles, John Day, and the lower Snake River projects. The massive storage projects in the upper basin (Libby and Hungry Horse), provide for flood control, so that devastations such as that witnessed in the 1948 flood at Vanport are the stuff of history[10].

The New Dealers got their dams and remade the Pacific Northwest (Nash, 1990). Metallurgical industries emerged in the region as a result of the power from these dams and the will of their planners. As Miller (1957) puts it, "the aluminum expansion in the Pacific Northwest during World War II was not merely the growth of an existing industrial situation but rather a fundamental change in the economic complex of the region." The electric needs of the war, as Nash (1990, pg. 150) argues, "had created a foundation for more extended and diversified economic growth." But, White (1994) contends, that in spite of all the new possibilities, the Organic Machine

[10]A flood washed away the city of Vanport in 1948. Vanport, now part of Portland, was built to house the tens of thousands of workers that engaged in the shipbuilding industry during the war (Nash, 1990). After the war the city remained. Flood waters overtook the levees at Vanport and inundated the city. Vanport was a primarily black community, that no longer exists. Presently, a racetrack, golf course, and wetlands occupy its former site. Displaced persons from Vanport settled in other parts of North Portland after the flood. Ironically, a new kind of flood is washing them away once again. White, middle-class "hipsters" currently fuel a gentrification process, as they flee the boredom of corporate, suburban America. In Portland's old, working-class neighborhoods a quaint mix of post-industrial grit, streetcar mixed-use development, and relatively inexpensive housing stock have attracted waves of settlers from the region and beyond, all of whom see themselves as seeking refuge from the horrors of mainstream society. The outcome has been an explosion in rents, causing an exodus of non-white residents to more affordable parts of the city. More research on this process is warranted.

was narrowly employed in the service of generating electricity for the aluminum companies in the decades that followed. The market foreclosed on the agrarian promise of irrigated small-holdings in the Columbia Basin: falling prices led to increased pressure to relax the restrictions on acreage blocks, so that agribusiness could realize scale economies (White, 1996, pp. 70-71).

Creating a resource from a river opens a range of questions regarding qualitative change in the provisioning process. In truth, taming the mighty Columbia created new possibilities for the region to assert itself as an independent community, with a development path of its own. Integrating the waters of the Columbia into the machine process allowed for the production of a new set of surplus goods that, for better or worse, fueled a postwar economic expansion in the region. The production of cheap electricity, to this day, insulates the ratepayers of the region from some of the price gouging that has plagued other communities in America, notably its Pacific neighbors to the South.

And yet the presence of all those dams, ceaselessly rationalizing the violence of the watershed, renders unviable the possibility of an earlier provisioning process. The non-capitalist, economic system of the first peoples of the region was centered upon the ceremonial reproduction of the salmon run. While qualitatively distinct, the provisioning process embedded in the social systems of the tribes of the Columbia River basin was viable, as we understand viability to be the criterion for an economic system to reproduce itself. This system was regarded as primitive, undeveloped, and backward, yet it yielded a surplus and provisioned its participants accordingly. The key difference lies in the orientation of its social relations of production: in the native

system, natives were central. In the current system, they are not. To build the present system required the forced removal of natives from their ancestral land, inundation of their ancestral fishing sites, and the destruction of habit for the salmon. This dam machine killed fascists. But, it killed a way of life, too.

CHAPTER 5

CONCLUSION

The essays within this dissertation constitute a contribution to the heterodox surplus approach (Lee and Jo, 2011), which seeks to identify the mechanisms by which societies reproduce the social and economic relationships that form the basis of their provisioning processes. Once the surplus is no longer taken as given, agency emerges from the space in which it is lost to abstraction when one considers problems of reproduction and viability in the aggregate alone. The question then concerns how the provisioning process changes in relation to the actions of individuals who exercise discretion over the scale and scope of the surplus. Traditionally, this issue has been addressed quantitatively so that agency becomes linked to effective demand, in which case the surplus is determined by those in control of the business enterprise. Instead, the dissertation has explored the qualitative aspects of the structure-agency problem as it concerns social provisioning, by interrogating the mechanisms that transformed the Pacific Northwest into a capitalist economy.

Because the method of inquiry in this dissertation has sought to avoid reductionism, essentialism, reification, and functional teleology, the emergence of capitalism is not taken as inevitable. To understand how one viable system is displaced by another requires a framework in which provisioning is viewed as subject to ongoing social construction. Put another way, given the articulations of social relations that provide coherence to a given system of provisioning, some persons emerge as central

with respect to the community who possess the power to act in an institutional capacity. Central actors, in this regard, are capable of initiating a set of processes that move the provisioning process away from a period of stable reproduction, toward a state in which a new set of relations are selected on the basis of their fitness with the new situation. In some cases, the possibility of systemic failure exists suggesting a period of maximal dislocation, to use J. Fagg Foster's language (1981). It has been shown here that such institutional change required the use of force and fraud to effect wholesale change toward a system of capitalist provisioning.

The essays herein have sought to construct a narrative concerning the ways in which some persons possessed the power to change an economic system in reference to the Columbia River basin. This narrative has been traced from the emergence of the railroads in the region to finance capital in the East, with the understanding that the economic process unfolds, historically, as a relational problem. Each development constitutes a growth in the cumulative development of the whole system, so that from the vantage point of history one may look back and see a network of relations grow. Beginning with railroads we may trace these relationships from the Columbia River to the electric utility industry, networks of finance, supranational corporate processes, and the popular resistance. Railroad development construction was chosen as the entry point due to the durable nature of the plant and equipment, as well as the ways in which actors embedded in the social networks that developed around railroad finance sought to validate its liability structures. In doing so, this particular time and place, which otherwise seems to be set apart from world history, is drawn into a broader narrative about capitalist development in general. The capitalist transformation of

the Pacific Northwest serves as a single moment in a larger process that is global in nature.

The first essay demonstrates that qualitative change in the structure of the economic system, in the final analysis, originates with the actions of persons embedded in social networks. Henry Villard was chosen as an historical figure of interest precisely because he stands at the central juncture of many processes that conferred upon him the institutional capacity to act with transformational efficacy. In this way Villard serves as a concrete example of the abstract notion of the absentee owner, who in the age of the credit economy is vested with the right to direct the levers of society in the course of development. Villard becomes Schumpeter's "ephor of capitalism."

The first essay also demonstrates that unseating the non-capitalist economy, which had been viable in the region, required force and fraud. The building of the railroads in the West embodied the violence of imperialism, concealed by an ideology that placed white settlers at the end of history. The heroes of the story, undertakers like Henry Villard and Ben Holliday, moved within a social space created by fraud. To establish the viability conditions for the new economy, both in material and pecuniary aspect, men like Villard peddled untruths that the West was an un-peopled place; an Eden awaiting the light of Christendom. The Willamette Eden was a social construction designed to create a euphoric wave of immigration to Oregon country, directing some of the migration that had embodied the doctrine of Manifest Destiny to the region served by the Portland metropole.

The second essay establishes that the electric utility, as a going concern, emerges directly from the finance-railroad nexus. In particular, tracing further the

relationship between the Columbia River, Henry Villard and the railroads in the region, it is shown that development of the Pacific Northwest, as a concrete space, and the electric utility, as a new situation, were interlinked processes. Whereas in essay one the method of analysis proceeds in fine detail, attempting to disaggregate the provisioning process to identify individual social relations and subject them to analysis, essay two proceeds at a higher level of abstraction so that the co-development of the region and the utility may be placed in a global context.

The third essay examines the relationship between market governance in the electric utility industry and the institutionalization of the capitalist machine process in the Pacific Northwest. In particular, it is shown that a central aspect of governance involved the shaping of public opinion over the legitimacy of private control and ownership over electric technology. In response to the perceived rapacity of the private utility empires, a movement for public power emerged, resulting in the development of the Columbia River for hydroelectric power, as well as navigation, and irrigation. Such development takes place against the backdrop of "regionalism," where the Columbia River was to be an Organic Machine to be held in pursuit of the public purpose. However, with the need to supply the national going plant in the aluminum industry with electricity for the war effort, regionalist dreams for the Organic Machine would not be fulfilled. Instead, dams like Bonneville and Grand Coulee would support the development of a regional aluminum complex that was aimed at defeating fascists during WWII.

Today the region remains tied to an identity that is intimately wrapped up in salmon, the Columbia River, and the dams that have tamed it. The bond be-

tween river, region, and salmon is taken as natural. But, as Vogel argues (2011), such identity results from a process of social construction, wherein the Bonneville Power Administration sought to legitimate itself as *the* central institution around the regional economy that would be governed going forward.

This dissertation has sought to illuminate the process of cumulative development whereby the Columbia River basin has become central to the viability of the capitalist machine process, while undermining the viability of the system in which its original inhabitants and their institutions were central. In doing so, we see that once the region become firmly attached to the U.S. East and Europe, as a result of railroad finance, persons in control of corporate institutions had always sought to construct a provisioning process in which they were central. The true legacy of the process of constructing a unified regional identity around the hydroelectric complex is one of violence, dispossession and fraud.

Many unexplored areas have emerged in the process of developing this dissertation. An interesting and fruitful avenue of research may focus on the Native Question, to include a comparison of the gift economies of the indigenous occupants of the region with the colonial settlers. Christopher Gregory (1982) provides a model for this project using the surplus approach. Future research should also focus on opposition to capitalist development of the region, including indigenous people, laborers, and farmers within the region. Finally, in the 20th century, an examination of the effect of electrification in the region on household production and time-use would constitute an interesting project.

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VITA

Mitchell Ray Green was born in Rock Springs, Wyoming on December 5th, 1981. At the age of five his father, a union pipefitter, relocated the family to Portland, Oregon in order to secure a sounder future for his children. Mitchell attended Western Washington University for one year prior to enlisting in the Army in July of 2001. He served six years in the Army, including a deployment to Afghanistan in 2004. Upon expiration of his term of service, Mitchell resumed his studies at Portland State University where he earned a BS in economics. Subsequently, he earned his MA in economics at the University of Missouri - Kansas City.

Mitchell has taught courses in economics at the University of Missouri - Kansas City, and Franklin and Marshall College. He has presented papers, organized panels, or served as discussant for the annual meetings of the Association for Evolutionary Economics, the Association for Institutional Thought, and the International Post-Keynesian Conference. He has also been invited to offer seminars at Portland State University, McGill University, University of Massachusetts - Boston, University of Denver, Hobart and William Smith Colleges, and Franklin and Marshall College. He currently serves on the board of directors for the Association for Institutional Thought.

At present Mitchell lives in Portland, Oregon with his spouse Morgan Green and two labrador retrievers.