ABSTRACT

Sympathetic critics of world-system analysis contend that its systemic level of abstraction results in one-sided generalizations of systemic change. Unequal exchange theory and commodity chain analysis similarly reduce distinct and historical forms of labor and their interrelationships to common functional and ahistorical essences. This paper applies an incorporated comparisons method to give historical content to an understanding of unequal exchange and global inequality through a study of the Japan–US silk network's formation and change during the mid 1880–1890s. Analysis of unequal exchange processes requires, in this case, an examination of the mutual integration and transformation of distinct labor and value forms—peasant sericulture, filature wage-labor, and industrial silk factory wage-labor—and the infundibular market forces they structured. These relations were decisively conditioned by new landlordism and debt-peonage, class-patriarchy, state mediations, migration, and by peasant and worker struggles against deteriorating conditions. Indeed, the transitional nature of the silk network's formation, which concluded the Tokugawa system and decisively contributed to Japan's emergence as a nation-state of the capitalist world-economy, was signified by the very last millenarian and quasi-modern peasant uprising in 1884 among indebted sericulturists, the very first recorded factory strikes in 1885–86, by women raw silk reelers in Kōfu, and by strikes among unionizing workers in patriarchal and mechanized silk factories in Paterson, New Jersey, 1885–86 (Boles 1996, 1998). The "local" conditions of each conflict were molded by the interdependence of those conditions that constituted a formative part of the world-system and its development. In the face of struggles and intensifying world-market competition, Japanese and US manufacturers took opposite spatial strategies of regional expansion to overcome the structural constraints of existing labor forms and relations. Analysis of the silk network permits the interconnections among seemingly disparate events and forms of collective protest within historical networks to be understood, revealing the world-historical dimensions of local developments and, conversely, the local faces of global inequality.

Critiques of World-Systems Analysis and Alternatives: Unequal Exchange and Three Forms of Class Struggle in the Japan–US Silk Network, 1880–1890

Elson E. Boles

INTRODUCTION: CRITIQUES OF WORLD-SYSTEMS ANALYSIS

World-Systems progenitor Immanuel Wallerstein is among the acclaimed social scientists of the 20th century, having initially developed an enormously simplifying yet complex analysis of capitalism as a historical social system as expounded in a multi-volume set of sophisticated historical works and in collections of essays that abound with insights (Wallerstein 1974, 1979, 1984, 1989, 1991, 1996, 1998, 1999, 2000). In this great leap forward in the study of the development of underdevelopment, Wallerstein applied Braudel's conception of a world-economy, developed from a rich historical study of the Mediterranean, to the formation in the long sixteenth century of an axial division of labor politically structured by an interstate system centered on Europe. Integrating analyses of long-run large-scale cycles, structures, and trends of capitalism as a historical system, Wallerstein rewrote modern history from a structural perspective and turned upside down the received wisdom in sociology, political science, and economics, both on the left and right, which views states as independent units of analysis, each traversing its own path toward modernity and civilization. Since then, Wallerstein has continued to lead the world-systems school to impressive achievements, not least of which is locating the failures of these modernization and Enlightenment assumptions in the very institutions and structures

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JOURNAL OF WORLD-SYSTEMS RESEARCH, VIII, II, SPRING 2002, 150–212
Special Issue on Global Inequality – Part II
http://jwsr.ucr.edu
ISSN 1076–156X

of knowledge—the geoculture—of the modern world-system. Meanwhile, the world-systems literature became increasingly diverse and enriched, as discussed in overviews by William Martin (1994), Peter Grimes (1996), and Thomas Hall (1996), for example. The literature includes new avenues of research, comparative world-systems analysis, case studies, and a number of critiques old and new.

Synopses of world-systems analyses, however, overlook some of the more sophisticated critiques of world-systems analysis, including those by scholars who, besides Frank and Gills (1996), are sympathetic to or have been involved in the world-systems project. Among these scholars are several whose works seek to unify anthropological, social, and world historical perspectives (see McMichael 1990, 1991, 2000; Mintz 1977, 1978, 1985, 1991; Roseberry 1989, 1991; Tomich 1990, 1991, 1997; Wolf 1982). They have consistently expressed dissatisfaction with the world-systemic level of generalization that has come to characterize major works of the world-systems perspective. While there is common agreement that modern capitalism is a historically specific "system," these critics find world-systems works that begin and end at the grandest level of generalization of social systems possible to be problematic and constraining from several angles. I will refer primarily to Tomich's criticisms because his are the most trenchant. I shall review and extend the thrust of this critique and alternative approaches to unequal exchange theory and commodity chain analysis. The body of this paper offers a study of the Japan–US silk network as an example of an alternative approach, but one that does not aspire to the same lofty goals as world-systems analysis.

The world-systems perspective has effectively become synonymous with analyses of social systems at the structural level of abstraction. Wallerstein made it clear from the outset that he "was looking to describe the world-system at a certain level of abstraction, that of the evolution of the structures of the whole system" (1974: 8). It is at this level that the "'governing' logics which 'determine' the largest part of sequential reality" can be found.[1] And perhaps it is only at this level that the very conception and existence of world-systems can be made. But in conflating the "world-system level" of analysis (Hall 2000: 239) with the

1. World-systems analysis "argues that the optimal method is to pursue analysis within systemic frameworks, long enough in time and large enough in space to contain governing 'logics' that 'determine' the largest part of sequential reality… This implies then that the task is singular. There is neither historian nor social scientist, but only a historical social scientist who analyzes the general laws of particular social systems and particular sequences through which these systems have gone" (Wallerstein 1991: 244).

analysis of world-systems, the perspective has come to argue that there is no "truly meaningful social change" within the life-history of a system. And so there are no meaningful distinctions among social phenomena beyond the systemic-structural generalizations, categories, or "fields of inquiry." The point of detailed analysis of local conditions thus becomes one of finding analytical commonalities among diverse phenomena and emphasizing these analytical similarities over their differences. In this way, a variety of historically specific circumstances and forms can be categorized as essentially the same and explained by their function in the structure of world inequality, such as in describing East Europe and New Spain in the long sixteenth century as "periphery."

For the above mentioned critics, therein lies a big part of the problem: on its own the systemic level of generality is only as accurate as it is general. It is useful and insightful; but alone it cannot capture the history of systemic change. The largest part of sequential reality is not explained, but presumed, and diverse social phenomena are simplified and reduced to functional essences. World-systems analysis is not alone in this regard. As, Tomich argues, both this perspective and the "mode of production" approach represented by Laclau and Brenner begin with,

> …a priori models through which the respective historical narratives are reconstructed. Each reconstruction creates a privileged realm of systemic necessity that is at once the source and arena of the 'laws of motion' of the system, while relations and processes [differences and distinctions] outside this realm are treated as contingent and secondary. Thus, theory and the history of capitalist development and class formation are collapsed into each other. The privileged concept becomes identical with the 'real history' of the system. The complexities of capitalist development are thereby reduced to a single dimension, which comes to define its essences as a historical system. (Tomich 1997: 295).

World-generalization today knows no boundaries, though it is fixated on them. This is why new debates and splits have occurred within the world-system school, including comparative world-systems (Chase-Dunn and Hall 1997) and an ancient world system (without hyphen) (Frank 1998). But if Frank's assertions of a five thousand year old Eurasian division of labor is based on trade data and other binding criteria that seem disproportionate to the claims of systemic unity and the relatedness of developments, there can be no question that his and other works are based on facts of globe-spanning processes. This suggests, at the very least, that various world-systems may not be adequately explained in terms of their internal "laws of motion." At some point, a soft boundary is no boundary. And if this is so, then the door has been opened to rethinking and unthinking the timespace boundaries of causality and the very criteria of bindedness (see Stremlin 2001). The idea of states as independent units of analysis has been fully

discredited, and so perhaps now we can consider the possibility that the project of naturalizing systemic causal boundaries and governing logics is itself problematic. Perhaps it is time to reconstruct world historical processes in more open-ended and historically concrete ways that do not apriori exclude the possibility of connections nor assume connections with the idea of systemic boundaries, but embrace historical contingency and complex causality networks—a perspective that favors a "building up" rather than a "filling in," of categories and totalities. This claim deserves more explanation.

In world-systems analysis, the most general level of abstraction of world-systems—the encompassing categories that express systemic generalizations—has become conflated with total history, despite initial qualifications.[2] To be sure, Wallerstein theoretically conceptualizes the relation of parts and their positions within the whole in Hegelian terms to underscore the limits of agency.[3] But Wallerstein tends to shrug off the kind of criticism made by Tomich and others by effectively misinterpreting it. Against those who think his work isn't concrete enough, he notes that there are others who complain that his work is too concrete and detailed. If we should not confuse "totality" and "completeness," neither should we confuse "detail" and "concreteness." In Wallerstein's major works structural analysis is treated as directly expressing the largest part of historical reality,[4] or at least the largest part of it that is said to be "meaningful." There is then, a two-fold problem. One, structural generalization in fact does not explain the largest part of sequential reality, but represents a generalization about history. The categories of world-systems analysis that many world-system analysts adopt, which are even more characteristic of the unhyphenated "world systems" school, are one-sided expressions of history that do not capture the complexity of diverse processes and events of history. In this approach, truth is said to be in the historical "models." Two, in this reductionist method, which conflates "theory" and "generalization," structural categories qua large-scale, long-run generalizations of historical processes are not built up on the basis of analysis of the historical specificity and diversity of forms, but are derived from logical commonalities among forms that are reduced to common functional essences and in which their interconnections in an axial division of labor are presumed.

2. Wallerstein quotes T. J. G. Locher, "One should not confuse totality with completeness. The whole is more than the sum of the parts, but it is surely also less" (1974: 8).

3. "To put it in Hegelian terms…at every point in the analysis, one asks not what is the formal structure but what is the consequence for both the whole and the parts of maintaining or changing a certain structure at that particular point in time, given the totality of particular positions of that moment in time" (Wallerstein 1979: 54).

4. World-systems analysis "argues that the optimal method is to pursue analysis within systemic frameworks, long enough in time and large enough in space to contain governing 'logics' that 'determine' the largest part of sequential reality" (Wallerstein 1991: 244).

In opposition to this method, McMichael (1990, 2000) put forth the "incorporated comparisons" approach. In this approach, totality is not conflated with structural generalizations of an empirical whole, rather, totality is theoretically conceptualized as the unity of many distinct relations and forms and thus generalizations are constructed from the differences among processes that are interconnected. Generalizations gain concreteness when based upon the complexity of differences, and conversely, specificities are more concrete when their general dimensions are revealed. In this view, neither differences nor generalizations are privileged realms of understanding, but are formative dimensions of complex social processes. The reductionist method of world-systems analysis and how it differs from the incorporated comparison approach may be illustrated by contrasting the opposite readings of Marx by these two perspectives. To emphasize the systemic unity of various labor forms Wallerstein stresses Marx's observation that exploitation of the industrial proletariat and the French and Irish peasants "differs only in form." He argues that "We all know that for Marx to call something a difference in form means to indicate that this difference is secondary and minor and does not detract from the *essential* similarity of the two phenomena" (Wallerstein 1991:153–154, original italics). It is important to note that Wallerstein's intention is not really to focus on the analytical (logical) commonalities among labor forms, but to indicate their historical interrelation as elements of a capitalist division of labor. He stresses how these forms of production are variations of exploitation within the same world-economy. In his view, they play certain functional roles in the global structure of inequality in which they are defined by and subjected to common pressures and dynamics of capitalist production and the world market. Therefore, they are not separate "modes of production." Wallerstein observes that Marx made the same point and refers us to his oft-cited passage: "Without slavery there would be no cotton, without cotton there would be no modern industry. It is industry which has given value to the colonies, it is the colonies which have created world trade, and world trade is the necessary condition for large-scale machine industry." He also cites this passage: "The character of the process of production from which [commodities] originate is immaterial. They function as commodities in the market, and as commodities they enter into the circuit of industrial capital as well as into the circulation of the surplus-value incorporated in it [industrial capital]" (Wallerstein 1991: 155).

However, if Wallerstein's point is not to focus on analytical commonalities among labor forms (as opposed to the specificity of the forms and interconnec-

tions) in order to construct structural categories, this is in fact the reductionist method of historical theorizing utilized. As McMichael (1990) argues, the "logic" of class relations and contradictions specific to various forms of labor is reduced to the logic of the form's functional role in the world-system. Different forms of class relationships that define different forms of labor-capital relationships are reduced to analytical similarities among them across time and space. Slavery, peonage, sharecropping, tenant farming, commodity producing peasantry etc.—are all subordinated to the logical common denominator among them, to a structural-functional essence. In this case, the logical common denominator is their generally similar function in the division of labor as defined by relatively less remuneration of the global "surplus" and their relatively similar degrees of coercion. Classes are thereby defined functionally and they are simultaneously reified as relationships between people and a quantity of "surplus" (a quantity of remuneration). There is no theory of peasant production, or slavery, or wage-labor, etc, and the interrelation among these various labor/class relations—within and between core and periphery—is presumed, not examined in its evolving historical specificity. Consequently, the actual development of the world-system, as the interconnections and development among forms, is unknown. Tomich thus contends that,

> In this perspective, what classes have in common takes precedence over what differentiates them…The specific development of distinct forms of social labor and class relations is eliminated as subject matter, as are the historical relationships among these forms…The fundamental categories of class (as well as those of core, semiperiphery, periphery, etc.) are taken as given rather than theoretically reconstructed from the elements that constitute them in specific historical circumstances…Specific forms of class relations and particular local histories are reduced to their [common] positions within a predetermined whole. The result is a historical system without a history, a choreography of events within a static and immutable framework. It is as if the capitalist world economy had existed virtually full-blown from the sixteenth century onward (1997: 296–97).[5]

It is no surprise that Tomich, McMichael, Wolf, Roseberry, and Mintz's interpretations of Marx's approach are the opposite of Wallerstein's and also different

[5] Wallerstein responds to this kind of criticism in a way that effectively confirms the Tomich's critique: "It is not that systems are static. Far from it. They have built-in contradictions, and as a result of trying to deal with them, systems manifest secular trends. And over some longer run, the systems consequently move far from equilibrium, and when they do, they can no longer survive as such…The crucial question is to distinguish between the normal, ongoing life of a system and its two moments of transformation: at its beginning and at its end" (Wallerstein 1998: 12).

from the "mode of production" school as represented by Laclau and Brenner. This alternative reading emphasizes the specificities and differences among labor forms as formative elements of an evolving "rich totality" that cannot be reduced to structural commonalities among those elements nor determined apriori as "non-capitalist."[6] Drawing alternatively on Marx's Hegelian conceptualization, the "concrete is concrete because it is the synthesis of many relations, thus a unity of the diverse" (Marx 1986: 37, 38). To be sure, they do not contend that world-systemic patterns, such as core, semiperiphery, or periphery, do not exist. Rather, they point out that both views fail to examine the actual specificities of forms and their interrelationships that constitute the history of world-historical processes and patterns. Thus, whereas Wallerstein emphasizes structural commonalities among forms because they are integrated in a division of labor, the world-historical perspective seeks to examine the distinctions and local specificities of various labor-capital forms and the actual interrelations among these forms (and related historical processes) in the division of labor in order to capture the specificity of core-periphery processes in particular periods, and thus give historical content to the core-periphery categories. Thus, in terms of reconstructing social structures, this method of incorporated comparison "does not presume a structure, but views structure as formed through specific historical relations" and the concrete study of those relations (McMichael 2000: 670). For example, Wolf (1982) and Roseberry (1991) address the transformation of kinship forms of production and ways of life in particular regions of North America in relationship to the expansion of industrial capital and the wage-form as part of the expansion and historical content of capitalism's uneven development.[7] Similarly, McMicheal (1991, 2000), Mintz (1977, 1978, 1985, 1991), Tomich (1990, 1991, 1997), offer analyses of slavery's rise and demise in the Americas in works theoretically framed by the

[6] In Tomich's contrasting Hegelian terms, "Differences in the demand for specific goods and the material conditions of their production, differences in the social conditions of labor (levels of production costs, productivity, etc.), and the capacity of states and enterprises to organize circuits of production and exchange at once profoundly shape the fate of individual production zones and the scope and complexity of the division of labor" (Tomich 1997: 307).

[7] Roseberry (1991) continues to use the language of "capitalist" and "non-capitalist" when discussing "modes" of production. However, his arguments are virtually identical to Tomich's in his call for historical specificity, making "the point that we are dealing with determinate *and* contingent historical processes" and asserting that "We must, in short, analyze regional processes of class formation" (1991: 168).

hierarchical and contradictory interrelationship between slavery and wage labor. Wage-labor neither defines capitalism, as with the mode of production school, nor is just a relatively costly form of production, as with the world-systems perspective. Rather, the industrial wage-labor regime played an historically important role in transforming the world-division of labor.[8] Modern slavery is not a non-capitalist mode of production. To explain slavery's rise and demise, Tomich proposes to examine the slave-labor character of capitalism and the capitalist character of slavery within the world-economy.

The conceptualization and study of unequal exchange and commodity chains have been similarly bogged by structural generalization. The concept of unequal exchange remains crucial to understanding global inequality, especially if we mean processes other than just "trade." Theories of unequal exchange, from Prebisch (1950), Emmanuel (1972), to Braun (197) and Amin (1977) never recovered from the numerous problems raised by critics (Amin 1977, Mandel 1975, Dore and Weeks 1979, Palloix 1969, Weeks 1981). And this despite attempts numerous efforts to rework the theory (see Amin 1980, Bettleheim 1972, Frank 1978, Köhler 1998, 1999, Mandel 1975, Raffer 1987). Many studies begin with historical overviews of capitalism according to the hierarchial nature of the world-economy in different epochs. Ross (1995), for example, has suggested that the dynamics of unequal exchange have changed again with the decline of core

8. For McMichael, Tomich, and Wolf, the industrial wage labor form of production, with its unique creation of surplus-value and relative productivity, decisively altered the nature of the world-economy in relationship to other distinct forms. McMichael writes that "While wage-labor is never the majority form of labor in the global economy, it is nonetheless the core of any historical theory of capitalism…Through the circuit of world money, managed by national banking systems, non-wage forms of labor embodied the valorizing dynamics of wage-labor, *and yet retained their different forms* [and logics]. In this way, wage-labor imposed its value requirements on non-wage forms of labor via the market rule of the gold standard. Under this regime, other forms of labor and national currencies expressed their value, respectively, through the wage form and gold" (2000: 670, 678, italics added). Tomich draws on Polanyi's "account [which] prompts consideration of how the consolidation of a 'market society' and the capital-wage labor relation in Britain imposed new conditions and rhythms on production and exchange in the world economy as a whole. The wage labor regime and industrial production resulted in the demand for new products, the expansion of markets, and an increased velocity of circulation. Free trade, the gold standard, and the 'self-regulating market' (in conjunction with the reorganization of the interstate system and the rise of British hegemony) reorganized and reintegrated production and exchange on a world scale" (1997:305).

"monopoly [industrial] capitalism" attending semiperipheral industrialization during the era of US hegemony. But theoretical studies soon leap into abstract models of trade that seem more intent on sustaining the theoretical possibility of unequal exchange. More akin to the nomothetic works of classical economics, efforts to find the right mathematical formula of unequal exchange are plagued by unrealistic and ahistorical assumptions, such as equal profit rates in core and periphery, perfect international movement of constant capital, or equal productivity rates.

Köhler's recent (1999) contribution to the debate is useful, but also symptomatic of what I think is the key road block in analyses of unequal exchange and commodity chains: the abandonment of the concept of value and analysis of historical class relations. Because the historical distinction among labor forms is not part of world-systems analysis, there can be no theoretical analysis of value relationships within or among historically specific wage and non-wage class/labor relations. The concepts of "surplus", "surplus product", "value", "surplus value", "profit," are used interchangeably in world-systems analysis precisely because differences in form are made secondary and minor (e.g. Wallerstein 1979: 283–293). This perspective thus cannot theoretically grasp the self-expansion of capital through the value form as a defining characteristic of industrial wage-labor, nor the value relationships specific to the class relationships of other production forms. Therefore, it cannot theorize how value is transferred among different forms consequent to their interrelationships in historical commodity networks resulting in unequal exchange. Without a concept of value, local and interstate exploitation is an enigma. Mintz (1978) and Tomich (1990) have developed the concept of value by comparing the dynamics of slavery and wage-labor based on their theoretical-historical interrelationship. Unlike labor-power in the wage regime, slave labor did not take the commodity form and thus did not relate to all other elements of the production process as an exchange-value, i.e. a commodity (Tomich 1990). The specificity of value relations in slave production theoretically reveals the structural limitations of the slave form and its demise as a historical process conditioned by industrial wage-labor. Modern slavery was established to make profits by meeting the needs of the industrial capital/wage-labor relationship as Marx noted (above). But the value relationships specific to the slave form prevented plantations from "keeping up" with the expansionary and rationalizing dynamic of the world economy under the industrial wage-labor regime. But the value theory of slavery in this work is part of a sophisticated and concrete world-historical analysis of irreducible contingent political-economic developments, and so its limitations are recognized. Theory can only go so far. Thick empirical description of specificities and contingencies is also necessary to understand historical change.

Unequal exchange theory in fact has never been about the study of historical developments or value relationships. And on its own terms, it has long been mired in a conception of the core-periphery relationships as "trade" relationships among "economies." Trade—the movement of commodities across state boundaries—is a political process of price formation and market exploitation and it is certainly an important one. Thus as Wallerstein argues, "once we get a difference in the strength of state machineries, we get the operation of 'unequal exchange'" (Wallerstein, 1979: 18).[9] However, unequal exchange should not be conceptually be reduced to state mediations of market relationships. Exchange is only one moment in the cycle of production and circulation. The old critique of world-systems analysis as "circulationist" is fitting here. Omitting analysis of the other moments prevents understanding of the process. The assumption that unequal exchange derives from biased trade and exchange terms resulting from state mediations begs the question, for it fails to examine the forms, and forms of integration, of distinct value/class relationships with different value relationships, productivities, and market structures of valorization. Lacking a concept of value, unequal exchange theory and world-systems analysis are unable to theoretically comprehend interstate exploitation in axial commodity chains. Instead, this perspective offers (albeit astute) generalizations of empirical processes.

Recent studies of "global commodity chains" (GCCs), including Chase Dunn (1989), Gereffi and Korzeniewicz (1993), and Wallerstein, Özveren, Pelizzon (2000) explore the historical networks of the world division of labor and specify the changing content and spatial location of integrated production processes. The thrust of production-network analysis thus far is oriented toward long-run, large-scale quantitative measurement and descriptions of activities. Explaining how inequality results from the division of labor is not the immediate task. To be sure, when correlated with GNP per capita, the study of production chains does confirm "an unequal distribution of wealth among their nodes" (Korzeniewicz and Martin 1994:70). But surprisingly scant empirical or theoretical attention is given to the historical relations of production and the juxtaposition of those relations in commodity chains. In this regard, it is ironic that a conception of unequal exchange (or value) plays no role in current commodity chain analysis, since, as Martin notes, the category was developed precisely to overcome the

9. "This chain of the transfer of surplus value frequently (often? almost always?) traverses national boundaries, and when it does, state operations intervene to tilt the sharing among bourgeoisie towards those bourgeois located in core states. This is unequal exchange, a mechanism in the overall process of the appropriation of surplus value" (1979: 293).

definitional restrictions of unequal exchange theory, being built as it is on a conception of trade rather than the division of labor. Perhaps explaining unequal exchange has become insurmountable from this perspective given the empiricist and generalizing thrust of commodity chain analysis, which Martin advocates.[10] How disparities arise through the relations among value forms with distinct capital-labor relations, and how prices diverge from values in interstate markets as consequent to the very integration of different forms of production of axial commodity chains, still remains a theoretical mystery in world-systems literature.

Both unequal exchange and commodity chain analysis have neglected the study of the historical forms of labor and their interrelations in the division of labor. The body of this paper makes use of the incorporated comparisons method to reconstruct agencies and changes in the social relations, labor forms, and struggles of the Japan–US silk network to highlight local and interstate inequality. It seeks to explain social change through the study of specific relations in part of the 19th century world division of labor. A concrete understanding of unequal exchange may be achieved by analyzing how historical forms of class relations, labor, and value are *interrelated* and shape market forces in historical production networks. The categories of "unequal exchange," "commodity chains," and "class relations/forms of production," do not have to be treated as independent "fields of inquiry"—as though they directly express empirically discrete historical phenomena. Rather, the meaning of these conceptions, as well as that of "core" and "semiperiphery" may be relationally defined as dimensions of social processes constructed through the study of the Japan–US silk network. In this respect, this paper is not about unequal exchange or commodity chains or class relations per se, but about formative aspects of systemic inequality of modern society. The point is not to develop a field of research or a grand theory of unequal exchange or global inequality but to understand concretely how classes and interstate inequalities formed and changed both locally and globally in a single process of mutual formation and transformation.

THE JAPAN–US SILK NETWORK AT A GLANCE: THE ARGUMENT

The mutual formation of distinct production forms, with their particular labor/capital value relationships and their specific interrelationships forming axial commodity chains is fundamental to the process of interstate value trans-

10. "Any understanding of core-peripheral relationships via commodity chains research requires the development of a large set of commodity chains over a significant period of time" (Martin 1994: 159).

fers or unequal exchange. As an alternative to the dilemmas of world-systems models, unequal exchange theory, and production chain analysis, this paper adopts an incorporated comparison approach to examine the agencies and structures of the Japan–US silk network. In this section, the conceptual framework and main arguments are introduced.

The formation of the Japan–US silk network marked the end of historical society—the Tokugawa system—and contributed to the formation of Japan as a modern state of the capitalist world-economy. The formation of the Japan–US silk network during 1854–1886 was a key part of Japan's incorporation. The transitional nature of the process is clearly demonstrated by the rapidly changing labor-capital relationships and forms of collective protest in the network, including Japan's very last millenarian peasant uprising in 1884 among indebted sericulturists; its very first known factory strikes in 1885–86, by women raw silk reelers in Kōfu; and by strikes among unionizing workers in patriarchal and highly mechanized silk factories in Paterson, New Jersey, 1885–86 (Boles 1996, 1998). The "local" conditions of each conflict were molded by the interdependence of their circumstances—the division of labor—of the Japan–US silk network.

In view of their interdependence, the forms of production and protest in the Japan–US silk network are not treated as though each has a self-contained logic or pattern. Each locale was a point of convergence into which entered the conditions of the other relations. By purchasing raw silk and sustaining raw silk production in Japan, the factory relations of mechanized silk production in the US entered into the historical environment of peasant sericulture and rebellion, as well as raw silk reeling, patriarchal relations, and mill strikes by women workers in Japan. Conversely, the social relations and conditions of sericulture and raw silk reeling in Japan, through raw silk exports, entered into the conditions of factory production and gendered class conflicts in Paterson, New Jersey.

If these capital-labor forms were interdependent, they were nevertheless unequal. Silk production relations in Japan became subordinated to industrial manufacture relations in the US, expanding and changing to fulfill US factory and consumer demand for raw silk. At the most general level of abstraction, unequal exchange was the combined result of the very juxtaposition of distinct labor-capital and material relations. As suppliers to the highly mechanized and productive US silk manufacturing industry, Asian producers of raw silk were far less productive per person and far more numerous in absolute terms. As a result, they faced greater market competition with each other as producers-sellers of cocoons or labor-power in mills. The relatively few engaged in industrial manufacture intensified market competition as oligopolistic buyers of raw silk and as oligopolistic sellers of finished goods. The conjoining of historically specific industrial wage and non-wage forms within the Japan–US silk network thus

created and sustained infundibular markets—relatively competitive at one end and oligopolistic at the other.

The "hourglass" shape of the production chain resulted in different market pressures that effectively altered the prices of value magnitudes. Market pressures in competitive sectors lowered prices of certain goods below their value. Thus, at the point of interstate exchange, the low price of raw silk was not simply a manifestation of intense class exploitation between landlords and peasants who produced cocoons or within the Japanese mills between owners and workers. Rather, the integration of specific forms of production and class relations through markets created the uneven pressures on the prices of commodities (including currencies) in those markets which resulted in the "de-valorization" (price-lowering) of the exchange-value of raw silk. The buyer of raw silk gained a greater magnitude of value than was represented in the given quantity of money.

The expansion and profits of mechanized silk production in the US were thus based not only on greater productivity and labor exploitation within the production process of US silk factories, but this simultaneously conditioned (lowered) price of raw silk below its value, and thus provided value subsidies to US producers.

I am not suggesting that unequal exchange can be explained solely within an analysis of the Japan–US silk network. The purchasing power of the US dollar was not the result only of the relations of production and productivity of US silk factories. Theoretically, it reflected a preponderance of certain kinds of production relations in the US, their integration with other forms of production in other areas, and consequent price-reducing and price-inflating market and political forces.

Generalizations of unequal exchange relations "remain an empty phrase if one does not know the elements on which they are based" (Marx 1986: 37). The relations and interrelations of production that resulted in ever-lower priced raw silk were the result also of contingent local relations, processes, and agencies that were specific to the labor-capital relations of 19th century silk production in Japan and the US. Technological limitations and technological advances in production, a rising landlord class and rising working class, and intensifying class-patriarchal relations of exploitation in both the US and Japan, decisively conditioned value magnitudes and prices of labor both within and among the production nodes. Patriarchy "devalued" the labor of women workers and allowed the price of raw silk to be lower than it otherwise would be. US manufacturers could and did seek to reduce their costs by thwarting the growing (patriarchal) union control of production and rising labor costs.

The price-lowering patriarchal relations of factory production that conditioned unequal exchange cannot be presumed, for they were not automatic. They were created and changed as women workers were incorporated into production activities in new ways, and resisted worsening conditions in a continuing cycle of social and production contradictions. When Japanese entrepreneurs faced ever-intense competition to meet ever-increasing US demand, they also of course sought to reduce costs and change production relations to their advantage, which worsened conditions and led to the Kōfu strikes. These developments hastened efforts to remake class-patriarchal relations of production, which transformed the unequal exchange relationships and the characteristics of the Japan–US silk network.

One striking outcome was the opposite spatial strategies of local expansion that US and Japanese entrepreneurs took to cope with labor unrest and competition. Entrepreneurs in Paterson decentralized silk manufacturing operations to annex facilities in smaller towns, where they hired semi-skilled women and child laborers to operate new semi-automated and mass-production machinery. Filature owners in Japan gained greater control over female workers and circumvented the day-labor form of production by concentrating work in large-scale filatures in "silk cities" and by hiring young unskilled women from indebted peasant households to live in adjacent factory dormitories. Technology did not improve significantly, but costs were dramatically reduced and output was increased both per person and absolutely as new producers established facilities and existing producers enlarged factory size.

In rural areas of Japan the triumph of local landlords/creditors over indebted peasants was more devastating and extensive. At no other period before or since did so much rural land come into the control and private ownership of the rural wealthy than during the 1880s. The Chichibu rebellion of 1884 among small-plot holding sericulturists facing unprecedented land forfeitures, was the last armed peasant uprising that was inspired largely by millenarian figures and deities, but also by compatible notions of equality and freedom of the concurrent Liberty and People's Rights Movement, Japan's first nationwide struggle for Western representative government and civil liberties. Both movements were crushed by government military forces. In the following era of government oligarchy landlordism became rampant. Peasant resistance to the untrammeled expansion of rural banking and landownership, and to perhaps the lowest cost sericulture industry on the planet had been cleared away.

Studies of these local struggles and developments by others have not considered their interrelations within the Japan–US silk network. Analysis of the network's unequal division of labor permits the connections among seemingly disparate events and forms of collective protest to be understood. The method

of incorporated comparison within a commodity network may therefore reveal the world-historical dimensions of local events and, conversely, the local faces of global capitalist expansion and unequal exchange (Tomich 1990).

GLOBAL PROCESS: THE JAPAN–US SILK NETWORK'S FORMATION

The explosive pace of mechanized silk production in the US after 1865 was matched by an explosive growth of raw silk production for export from China and Japan. This culminated in the formation of the Japan–US silk network between 1882–87. Prior to that time, most US raw silk imports had come from China, of which ten percent was shipped directly to the US and another fifty-three percent indirectly through London. About thirty percent of total US raw silk imports came from Japan.[11] However, imports of Japanese raws rapidly increased thereafter and by 1882 the US imported more raws from Japanese than China. By 1887, US imports of raws from Japan surpassed imports from all other countries combined, averaging over fifty percent of total imports between 1887–1895. The percentage of imported Chinese raws by comparison fell to an average of about twenty-three percent during the same years.[12]

Japan also began to export more of its raws to the US than to all other countries. In 1884, the year of the Chichibu rebellion, merchants began to regularly ship most of Japan's raw silk to the US rather than to France. These trends became a structure. Between 1886–90, more of Japan's raw silk was shipped on average to the US than to all other countries combined.[13] The Japan–US silk network thus formed, and at the same time, so did a China-France silk network form.[14] As a result, in contrast to the wild swings of raw silk prices in the British,

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11. About 8.4 percent of US raw silk imports came from France, and 0.1 percent from Italy. Sugiyama, S., (1988) pp. 85, 104.

12. Ishii, Kanji (1972) p. 41.

13. Sugiyama (1988) p. 80.

14. By the mid-1870s "more than half the total silk exports from China was earmarked for direct shipping to France" (Sugiyama, S. 1988 p. 94) During the 1876–80 period merchants directly shipped the majority of China's raw silk to France rather than Britain. This turn around was partially initiated by the French government and private banks which, at the instigation of the Lyons Chamber of Commerce, established a steamship line between Shanghai and Marseilles (Eng, 1986:29). French banks also created a new credit system to facilitate the silk imports and Lyonnaise merchants formed a buyers association to purchase silk in mass quantities. As to France's imports, during the same 1876–80 period about 14 percent of the country's raw silk imports were re-exports from

French, and US markets during the 1860–1880 period, a new and more settled regularity of price changes emerged.[15]

The world silk industry came to be dominated by these two networks but as the result of a number of world-historical events. A prebine blight during the 1840s ruined the European silk sericulture. France's silk industry began to recover when Britain "opened" China and shipped large quantities of inexpensive raw silk to London and on to Lyons, among other places. However, the French industry was transformed. Silk manufacturers took drastic cost-cutting measures to circumvent organized and Luddite-like urban workers by increasing mechanization, expanding putting-out networks, and moving entire factories to rural areas to take advantage of rural desperation and patriarchal norms with the use of cheap female labor.[16] The number of textile jobs in Lyons, for example collapsed. In 1861 about eighty thousand textile workers labored in the city but by 1891 the number had fallen to about thirty six thousand.[17] As the number of rural women workers increased, the continental silk industry became provincialized and feminized.[18]

The rise of Britain's trade in China brought recovery to the French silk industry. Ironically this and the growing strength of British trade and finance in general also sounded the death-knell for the British silk industry (and Italian sericulture by virtue of competition with the growing imports of cheaper raws

Britain, while 70 percent was shipped directly from China. Imports of raw silk directly from Japan to France comprised only 14 percent during the same period, and via Britain re-exports, about the same (Sugiyama, S. 1988, pp. 85, 88, 94, 104). By 1880, "Lyon supplanted London as the central market for the distribution of Asiatic silk" (Eng, 1986:29).

15. See Sugiyama's (1988) tables on raw silk prices in the London, French, and US markets, pp. 92, 96, 105.

16. As Sione explains silk manufactures "introduced the power looms as a way to break the strikes of militant workers, who had been counting on their skills to protect their bargaining power, and control access to jobs. Reactions to mechanization, however, increased entrepreneurs' resolve to fire skilled, expensive, and militant weavers and replace them with workers [women in particular] willing to accept employment at lower wages. The expulsion of urban and skilled, but also rural silk workers took place throughout Europe." Sione (1994) p. 563.

17. Sione (1994) p. 564.

18. See Strumingher's work on nineteenth century French peasant women who, like their Japanese counterparts later in the century, left the rural home industry and moved to urban areas, especially Lyons, to work in the filatures where their work and techniques were closely supervised. Strumingher, Laura (1978) "Les canutes de Lyon (1835–1848)" *Mouvement Sociale* 105 (October-December), pp. 59–85.

from China by British shippers). British Parliament passed the Cobden Treaty to further promote free trade in 1860 which abolished protective tariffs on silk imports from the continent. Many British producers, unable to compete with the continental silk manufacturers despite rapid gains made in the mechanization of silk production, moved their operations wholesale during the 1865–75 period to the US where they would flourish within a protected market of high-income consumers.[19] The decline of Italy, and an overabundance of silk workers on the continent (also partly caused by growing mechanization), supplied English silk industrialists in the US with skilled silk laborers.

They immigrated across the Atlantic in search of better opportunities at the time that British silk capitalists and their equipment arrived in Paterson, New Jersey. New jobs were created and new life was given to the city's machine-shop industry. Wages were high as labor was scarce. To stretch productivity (surplus value), British industrialists invested in new labor-saving machinery. Previously a leading center of industrial machine shops including the Colt Arms company and various producers of cotton textile machinery and locomotives, the skilled machinists in Paterson began making key innovations in silk machines. The three-tiered spinning frames invented by the Danforth Locomotive and Machine Company, for example, "were to revolutionize the thrown-silk business; a 'fact recognized...by veteran English silk manufacturers in this country' by 1876."[20] That year observers began referring to Paterson not as the "New Manchester" of America but, with even greater confidence, as the new "Lyons of America."[21]

In the two axial silk networks that formed, Japan and China began specializing in the low-technology and labor-intensive production of raw silk which supplied the relatively advanced technology and capital intensive silk manufacturers

19. "The collapse of the British silk industry created spare capacity. As mills closed down, quantities of surplus machinery were sold and shipped to the United States." (Margrave 1985:19) On English migrants he writes, "Old established centers of excellence in silk manufacture in Britain, such as Coventry and Macclesfield, entered a period of rapid decline. ...Increasingly during the period 1860–80, workers, entrepreneurs, and their families moved directly from Macclesfield to Paterson." "The eventual high concentration of English-born immigrants who owned silk businesses in [Paterson] was perhaps the most pronounced example of systematic entrepreneurial involvement in any later nineteenth-century American manufacturing industry by members of this ethnic group." Margrave (1985) pp. 19, 12, 27.

20. Margrave (1985) p.21

21. Brockett, L. P. (1876) p. 109.

in US and Europe. With the rising demand from the US for raw silk, Japan's entrepreneurs and peasant sericulturists began to gear production for the export market.

Although Japan had been forced by the US to engage in trade with Western countries on unfavorable terms, Japanese oligarchs not only permitted the entry of Japan's raw silk producers into the world-economy, they encouraged it. Both Tokugawa and Meiji leaders realized that raw silk exports provided the state with foreign gold currency needed to stabilize the Japanese yen, to purchase foreign technology, especially military technology, and in turn to enhance Japanese military and industrial power (Ishii and Sakiguchi 1982). The combination of mechanization and high labor costs led US silk manufacturers to rely on Japanese raws.[22] Medium quality silk was of a regular and predictable strength compared to lower quality raw silk. It broke less frequently and thus reduced the

[22] "It happens that conditions of manufacture [require that raw silk] be of uniform strength and thickness. The cost of labor is so great here that we cannot afford to stop a machine in order to pick out flaws and irregularities in the threads. Consequently, the American manufacturer must have raw silk which works satisfactorily on his high speed machinery with a minimum amount of manual labor and waste. It was impossible for him to take low grade silks, re-reel and clean them as was done in Europe at that time. Indeed, the high price of labor, and the speed of the machines in the U.S. made low grade [raw] silks more expensive than the higher grades, which could be worked with less labor and at higher speed. Mason, F. R. (1910) p.13.

Li says that the French still used hand looms while Americans were using power looms that required more uniform raw silk. "Unlike the French, who still used hand-looms for high-quality silks, the American weaving industry in centers such as Paterson, New Jersey used power looms, which required standardized raw materials ... 'Chinese silk is either excellent or rather poor in quality ...Japanese silk is of a more uniform quality'" Li, (1981), pp. 84–85.

Eng also agrees: "There is some plausibility to the argument that the quality requirements in France and the United States differed and that the Japanese, by promoting scientific innovations that made possible the massive exports of high-quality silk most suitable to the highly mechanized American market, were able to dominate that market. In France, where silk weaving continued to be carried out to a large extent on hand looms and where labor (cheap relative to American labor) was available for sorting, cleaning, and rereeling, less expensive silks from China and the Levant were preferred. As late as 1900, power looms amounted to only one-third of France's 90,000 looms." Eng, R. Y. (1986) p. 166.For an extended discussion, see Boles (1998), Ph.D. Dissertation, *Rebels, Gamblers, and Silk: Agencies and Structures of the Japan–US Silk Network, 1860–1890*.

time that workers would spend picking out irregularities or leaving machines idle to repair breaks. In contrast, European manufacturers could afford *not* to invest in mechanized production, in part, because labor had become cheaper than in the US.

The rise and expansion of the mass-production US silk industry, as exemplified in Paterson, also hinged on developments in global transportation which reduced the transport costs and time of shipping large quantities of raw silk. The completion of the Transcontinental Railway in 1869 was quite timely and was itself a world-historical development that used some 10,000 semi-coerced workers from China (Wolf 1982: 377) and international finance capital. The new route shortened transport time between San Francisco and New York from twenty-two days by sea to six days by rail and was cheaper than other routes.[23] Within a year of the railroad's completion, San Francisco became the main *entrepôt* for Japanese silk imports, and quantities flowing through the city by the bay surpassed those via New York by 1871.[24]

STATES AND UNEQUAL EXCHANGE

Prior to examining the network's division of labor and struggles, it would be helpful to address in general terms why the more profitable activities of the Japan–US silk network were established in the US and not the reverse. This question is related to why the inequalities of historical capitalism occur not only at the level of classes within states, but also rather glaringly at the interstate level among states (or territories). This section therefore outlines basic structural factors behind interstate inequality as a theoretical view of the interstate characteristics of the Japan–US silk network's division of labor and how the functioning of this network sustained and exacerbated both interstate and intrastate inequalities.

Key structural aspect of states that account for inequality at the level of states include the truncation of labor markets and national currencies. Restrictions on immigration and citizenship and monopoly control of a currency are defining

[23] Eng (1986) p. 164.

[24] "In 1871 imports of raw silk into San Francisco reached 449,295 lb. (US $2,013,081), surpassing imports into New York, which amounted to 343,670 lb. (US $1,827,893). Imports from Japan which had hitherto come via Britain, were also gradually diverted directly to the United States through this new route. During the period 1875 to 1885, on average, 77 per cent of imports of raw silk to the States came through San Francisco." Sugiyama S., (1988) p. 106.

features of modern states (city-states and nation-states). Given the limited labor supply in a country that results from restricted labor markets, it may be observed that when a country experiences a sustained rise in global demand for goods produced by enterprises operating largely within that country, the effect will be increased domestic demand for labor to meet growing demand and production. Labor shortages will tend to drive up domestic wages regardless of the success or failure of labor organization. At the same time, purchasing power of the national currency will increase because consumers within and outside that country seek that currency to purchase the goods sold by the enterprises of that country.

To the extent that the state's currency is strengthened, the individuals and enterprises of that country will find that the cost of goods, including materials and finished items produced in other countries, are now relatively cheaper. Consumers in the country experiencing this growth may obtain some finished goods produced abroad for less, while enterprises of that country may enhance their world-market position by lowering the cost of their products in line with the lower costs of production related to the now less expensive materials purchased abroad. On an aggregate scale, the standard of living of the residents of this developing country have relatively improved while the reverse is true of the other countries. The prices of the materials and finished goods sold by the unlucky country to the developing country (whose goods are in greater world demand) have relatively fallen, as has the relative purchasing power of the state's currency. If this process is sustained over the middle run, the effect will be to entrench interstate inequalities by altering the world division of labor. Entrepreneurs in the unlucky country will find new opportunities to supply the materials and goods that the consumers and enterprises of the developing country want. The activities that these unlucky countries engage in will thus change to meet the needs of the "developing" country (and thereby close the door to engaging in other activities).

Fundamental to this the axial characteristics of the division of labor are the different rates of productivity in the different countries and the associated differences in "entry costs." If the so-called Industrial Revolution was a stage in the development of core areas and the underdevelopment of peripheral areas, it nevertheless dramatically altered the world division of labor (Arrighi 1995, McMichael 2000; Tomich 1997, Amin 1977, Hobsbawm 1987, Wolf 1982). Emmanuel was on target in emphasizing zonal differences in productivity consequent to industrialization in Western Europe. The concentration of the industrial capital-wage labor (and the attending military power it afforded to the various conquistadors of Europe), meant that areas incorporated and reorganized to supply the large supplies needed for mass manufacture would have to make use of existing less costly but also less productive forms of labor: wage-labor, non-wage labor, and

new non-wage forms, such as New World slavery, indentured workers, peasants, and so on.

If this was a competitive era insofar as many British and West European workshops competed for shares of world markets, it was also a new era of oligopoly capitalism insofar as the industrial core firms were relatively few in number, and maintained a very high ratio of output per firm by comparison to the much larger number of enterprises and workers producing the raw materials processed by the industrial firms. Price reducing competition among peripheral producers qua suppliers to core producers is relatively much greater because (a) the number of producers is greater (because entry costs are lower) and (b) core producers are fewer because they can afford to invest in the (more costly) productive activities that enable them to process the large quantity of materials from the peripheral and semiperipheral producers.

On the whole, the axial world division of labor and the constitutive axial periphery-core and semiperiphery-core markets were infundibular or perhaps more accurately, "hourglass" shaped. Although the narrowest bottlenecks were probably to be found in high finance, which thus appears to be the "real home of capital" in Braudel's words, oligopolies in trade (Venice, UP) and later in industry (UK, US, Japan and Germany) were the foundations of the financial rebirths of historical capitalism (see Arrighi 1995). World demand for core goods and services gave rise to core inflation and the relative strengthening of the global purchasing power of core currencies. The relatively greater income of entrepreneurs combined with their increased demand for, and ability to pay for, relatively scarce skilled labor (the white collar workers and engineers of industry and finance) generated higher wages and in turn additional core inflation As core incomes rose and the middle strata expanded, growing domestic consumer demand for the provision of goods and services further increased demand for domestic labor and the national currency.

This cyclical process inflated the price of all labor in the core beyond the socially necessary labor time for the goods and services provided, which was falling as productivity increased. In turn, the strengthening of the core states' national currencies provided the average resident with increased and increasing world purchasing power over the average semiperipheral and peripheral residents' purchasing power, or rather, over their labor and the products of their labor.[25] This kind of process continues today, as manifest in worsening terms of

[25] Here the idea of overpriced value (price and value discrepancy) is applied at the interstate level. Marx applied the idea of overpriced value at the level of competing firms in the same industry. For Marx, the magnitude of a commodity's value, as a quantity

trade between core and periphery and growing wealth disparities (see Köhler 1998, 1999), and as the agencies of strong core states, such as the International Monetary Fund and World Bank impose currency devaluations on peripheral countries. Thus, although some production activities in core states are identical to those in semiperipheral and peripheral states, remuneration is generally far greater in the core due to the combination of greater productivity and currency evaluation as aspects of the division of labor. And as long as the wealthy of the core do not transfer their assets out of the national currency, it will remain relatively strong over the long run, national labor will remain relatively costly, and national living standards of the middle class relatively high.

In sum, the creation of interstate axial production processes engendered infundibular markets with bi-polar price-reducing pressures on peripheral commodities/services and price-increasing pressures on core commodities/services. At one end of the hourglass-shaped axial production network, competition among peripheral producers drives down the prices of goods below their value or the socially necessary time. Simultaneously, prices of the peripheral suppliers are further driven down in the "middle bottleneck" by the oligopolistic purchasing power of core enterprises because the many peripheral and semiperipheral sellers are "locked in" as sellers to these fewer core buyers (which is technically possible because of the superior industrial productivity and purchasing power of the core enterprises). Moving from the "middle bottleneck" out to the wide end that represents the world-market, core producers then enjoy reduced competition with each other, by comparison to their many peripheral suppliers, as sellers to the entire world-market for their goods. Thus, the expansion of industry (the capital-wage labor form) hinged not only on the ability to create surplus value (or superior surplus value) through industrial productivity, but was furthered by unequal exchange: the receipt of value from the purchase of cheap goods. We may now see this process in the development of the Japan–US silk network.

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of socially necessary labor time (the average labor time expended to produce a good), can and will usually differ from the magnitude of value expressed in money (price). A more mechanized and productive firm, for example, is able to temporarily lower socially necessary time below the average for that industry and therefore increase surplus value and profits through an unequal exchange of that good (produced with less average labor power) at the established market price. Unequal exchange in this case occurs without a loss to the buyer (Marx 1977).

AN INFUNDIBULAR DIVISION OF LABOR

By 1884 the Japan–US silk network's division of labor had formed largely in response to the needs of US capital for larger and larger quantities of cheap raw silk. As of the mid-1880s, Japan's engagement in the silk industry of the world economy centered on raw silk production. Toward the US flowed semi-finished silk products required for the subsequent production processes toward the final product that was sold in the US consumer market. Merchants shipped the raw silk from Yokohama to San Francisco, and to New York brokers, who in turn shipped it to factory towns, Paterson, New Jersey above all others. In the Paterson mills workers used the most complex technology and machinery to throw, wind, warp, and weave fabrics, while dyers applied their secret chemistry skills to color the pale fibers. In the opposite direction flowed forms of money which sustained the continuation and expansion of the raw silk production in Japan, above all.

Sericulture and silk production in Asia prior to the advent of Western imperialism was a highly developed industry, but with the start of Asia's incorporation into the world-economy, sericulturists and raw silk reelers throughout Asia faced each other in newly formed world markets which brought them into unprecedented competition and subjugated their activities to the needs of industrial silk manufacture in the core. For the first time in history, silk production in the West and the Far East became interdependent parts of a single division of labor. Production activities in the division of labor were linked by market (and intrafirm) exchanges, the dynamics of which were fundamental to the processes of unequal exchange.

Markets create inequality because they are fundamentally structured by distinct forms of production which compose a division of labor. There were as many markets as there were types of silk goods, from egg cards and mulberry leaves, to basins, cocoons, and raw silk. These markets were at once local and global in nature. In Japan, the egg cards and mulberry leaves produced to make cocoons, for example, were overwhelmingly produced and sold within local and regional markets conditioned by prefectural government regulations and taxes, and employer cartels. The relatively intense competition in the sericulture and raw silk markets, as compared to the mechanized weaving, spinning, throwing sectors in the US, was conditioned by the nature of sericulture as a relation between man and nature and as a social relation among people. It was very labor intensive, could not be mechanized, and was affordable for peasants to engage in to earn some cash. Hundreds of thousands of peasants, perhaps millions, in Japan and China engaged in sericulture and silk reeling, and the numbers grew

each year with expansion of Western silk manufacture.[26] One measurement of the "striking expansion of sericulture" in Japan was the increase in the area put under mulberry cultivation.[27] Another measure was the growth of US raw silk inputs which nearly tripled during the 1876–1890 period, as global prices for raw silk dropped.[28]

Competition and demand created new market "niches" and classifications of raw silk according to varying local qualities to which corresponded new hierarchies of remuneration to producers in different regions. New mills arose in "new" areas, some older even ancient silk areas declined, and others found

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[26.] Hemmi explains that during the 1870–90: "The point to be stressed is that sharp competition dominated the reeling process from the silk producing region to the export ports and competition among exporters was also keen." Hemmi, Kenzō, "Primary Product Exports and Economic Development: The Case of Silk," Hemmi (1970) p. 315.

Tussing similarly states that "The availability of this previously un-utilized labor time, plus the rapid increase in population, was sufficient to assure a virtually 'unlimited supply of labor' over the whole [Meiji] period, even the highly skilled indigenous occupations. The unit price of labor in real terms, whether measured explicitly in wage rates or implicitly in the incomes of family enterprise, remained low. ...In this context, the output of products like raw silk and silk textiles could respond readily to the pull of outside demand..." Tussing, Arlon, (1970) pp. 218-9.

[27.] "The striking expansion of sericulture is evident in the rapid increase in the mulberry area and the spectacular expansion of cocoon production. According to the official statistics of the Ministry of Agriculture and Forestry, the index of mulberry area, with 1881–1890 = 100, increased to 176 in 1891–1900, 234 in 1901–1910, 307 in 1911–1920, and 371 in 1921-1930. The corresponding changes in the index of cocoon production were: 172, 263, 470, and 714." Hemmi (1970) pp. 317.

[28.] Both overall US imports of raw silk, and that from Japan specifically, increased while prices decreased. Average total imports to the US increased from 1,874 thousand lb. during the 1876–80 period to 3,507 lb. during 1881-85, to 5,193 during 1886–90. In 1880 there were 31,337 US silk workers and in 1890, 49,382. Computed from Sugiyama S. (1988) pp. 100, 104.

Sugiyama claims that the drop in raw silk prices of Japanese raws throughout this period was due largely to their declining quality. However, had Japanese raws deteriorated in quality, they would have lost their middle ranking between Italian and Chinese raws, which they did not. The declining prices in general are better explained by growing supply (and also, as we shall note below, by intensified exploitation of female workers). Moreover, that raw silk prices around the world tended to decline and fluctuate in close synchronicity after 1880 is a strong indicator of the regularity or "structured-ness" of the Japan–US and China-France networks. See Sugiyama's tables on raw silk prices in the London, French, and US markets, Sugiyama S. (1988) pp. 92, 96, 105.

special niches (see Appendix I). Small peasant household producers tended to market lower quality raw silk or to specialize in cocoon production for use by the medium and large mills. The relative decline of raw silk output among small peasant households was a reciprocal relation to their increasingly specialized role as cocoon producers for the new highly productive mills.

The large filatures, most of which were established by wealthy silk merchants, arose in the "new" silk districts like Kōfu, Suwa, and Amami in central Japan, in which owners hired between fifty and 100 women who produced most of the country's higher and more regular-quality raw silk. The large semi-mechanized filatures also gained a relative measure of oligopolistic power over the myriad of small peasant suppliers of cocoons. Within the national and international market, they provided the keenest competition for small and medium-size raw silk producers, including the peasant household in mountainous areas of Japan like Chichibu that eked out a living from season raw silk production (see Appendix I). The larger producers not only produced greater quantities of higher quality silk more months of the year, but as a result they formed close connections to, or even partnerships with, wholesalers which enabled them to create local oligopolistic bottlenecks that provided a degree of price control. In addition, the larger mills could better survive market fluctuations and the harsh state development policies which small peasants could not and consequently fell into bankruptcy and land forfeiture. Out of desperation, they often sold their silk goods at even lower prices.

All silk producers of raw silk throughout Asia confronted one another indirectly in world silk markets. Global competition ran "back" to input suppliers as entrepreneurs coped with competition in the selling (or "output") market by finding the lowest priced cocoons in the buying (or input") market. And since the number of peasant cocoon producers was growing rapidly, the tenuous circumstances of the small peasant proprietor worsened competition. It was particularly fierce among peasants in mountainous areas like Chichibu who, since the Tokugawa era, were dependent on cash earnings to repay seasonal loans, purchase foodstuffs, rice above all, and pay taxes. Hence, global market competition was felt most acutely at the "bottom" of the commodity chain. It was there that the prices of labor, or the products of labor, were initially lowered well below their socially necessary values.

The contrasting competitive/oligopolistic characteristics of the market structures that linked the specialized, complementary, and mutually sustaining activities of the axial network corresponded to the number of participants in a sector and to the forms of production and productivity of that sector. Mechanized raw silk production in the US was capital-intensive and expensive. A relatively few people on the planet had the skills, wealth, and/or access to capi-

tal, the industrial infrastructure (e.g. machinists, transport, etc.), and consumers with sufficient incomes, to profitably engage in manufactured silk production. But if one could, then one could take advantage of the very cheap material inputs produced by hundreds of thousands of poor people in other countries. The scarcity and profitability of the US sector rested in part on expensive high-speed mass-production machinery. Mass production was among the very conditions of mechanized production that globally limited the number of producers and hierarchically structured the world markets of the Japan–US silk network. It became possible for a very limited number of producers to very quickly manufacture the large quantities of raw silk that had taken far more workers and enterprises in Asia a far longer time to produce. In fact, there were only several tens of thousands of US silk workers and far fewer firms. In 1880 the *entire* US silk industry was composed of only about 31,337 workers and about 382 establishments, averaging about 82 workers each. As the quantity of Japanese raw silk shipped to the US grew, the number of workers in each US factory grew; the average size increased by nearly thirty percent with about 105 workers per factory.[29] By 1900, Paterson's silk industry had grown to include only 175 weaving firms and 20,000 workers—about 114 workers per factory.[30] The average number of workers per factory in the US silk industry increased to about 135.

The average number of workers in company reeling mills in Japan, by comparison, was about sixty-seven in 1900,[31] and of course, there were hundreds of thousands of home reeling operations among peasant and farmer households. The growth in the number of US factories and their productivity drove demand for raw silk to new levels. US raw silk inputs increased 2.7 times during the 1876–1890 period, the labor force increased only 1.5 times. The quantity of raw silk processed by the average US worker increased from a ratio of 59.8 to 1 in 1880 to 105.15 to 1 in 1890. Indeed, US workers manufactured almost twice as much raw silk per capita in 1890 as they did 14 years earlier while the price of US silk goods more than doubled even though raw silk prices declined.[32] In effect, the narrow end of the infundibular silk network became relatively narrower during the 1880s as the US manufacturing sector shrank in size relative to the raw silk industry's expansion. And it had to be this way. Barring any dramatic increases in productivity in the sericulture sector, growing productivity of the mechanized

29. Sugiyama, S. (1988) p. 100, 104.
30. Scranton, (1985) p. 3-4.
31. Calculated from Sugiyama, S. (1988) pp. 100, 126.
32. Sugiyama S. (1988) pp. 100, 103, 104.

sector required absolute increases in the number of producers, which in fact occurred as noted. The effects of the infundibular structure of production were the creation and shaping of infundibular markets. The markets came was the moment of exchange which expressed the unequal division of labor and specific local circumstances and relationships.

The mutual interdependence of the network's various forms of production resulted in an unequal distribution of wealth and life chances. Lower remuneration to peasant silk producers was manifest, in part, in their relatively lower and worsening standards of living, caused in part by the very dissolution of the peasantry through fantastic increases in debt, bankruptcies, foreclosures, and landlordism (see below). But it was also manifest in the wages of factory workers. Japanese reelers earned about 7.5 cents per day, less than filature reelers in Italy and China, and they worked the most, about 12–15 hours a day.[33] Japanese reelers were also among the lowest paid wage-workers in Japan, largely because they were women, as we shall discus below in the section on the Kōfu strikes.[34] By comparison, throwsters in Paterson, who were in the low-wage bracket among wage-workers in the city, received about 67 to 78 cents a day in 1885.[35] Comparisons based on a relative price index would show that US workers received greater compensation for their labor than Japanese peasants and mill workers.

The question may be asked, "Why couldn't Japanese entrepreneurs engage in the lucrative mechanized sector of global silk industry." The simple answer is that they could not afford the high entry costs—but a full explanation would require nothing less than discussing the histories of modern capitalism, the Tokguawa system, and their intersection from the 1850s. Suffice it here to note the structural result and constraints. With state subsidies, Japanese investors might import some of the spinning and throwing equipment available in the US. However, they could not have afforded the complementary industries and infrastructure required to operate and maintain the advanced silk weaving factories or afforded the training of Japanese machinists to do so. In fact, at the time, Japanese entrepreneurs could barely afford to import the less technically advanced silk reeling equipment from Europe or less costly cotton weaving

33. Sugiyama S. (1988) p. 128, Table 4-16; see also Ishii's calculations, Sugiyama S. (1988) p. 247.
34. "Japanese wage rates in the Meiji era were a pittance either by Western or by contemporary standards; and the wage rates for female silk-reeling operatives were among the lowest in Japan." Tussing, A.,(1970) pp. 215-16.
35. Scranton (1985) p. 41.

machinery.[36] (And over the middle run, no sooner did Japanese entrepreneurs become engaged in mechanized cotton and silk reeling than did those industries become less profitable and low tech, with Japan stuck in semiperipheral activities of the world-economy—until after World War II when the Cold War altered Japan's strategic importance to the US.) The Japanese population of this era did not have the income to purchase silks produced using the costly and advanced machinery, unlike the income of the budding US middle class. Perhaps Japanese entrepreneurs could have bought the high-tech spinning machinery and made profits as an export (to core)-oriented industry. However, access to the US market was restricted by the very high protectionist tariffs in the US and in Europe on silk goods except, of course, raw silk, which Japan already produced in large quantities. Japanese entrepreneurs simply did not have access to the consumers of finished silks abroad to make investments in mechanized silk machinery profitable. In short, given the exiting global disparities of wealth and power, Japanese producers had little choice but to engage in other sectors of the world division of labor, if they were to do so at all. When we speak of relatively different "entry costs" then, we really refer to the entirety of historical developments and structures behind global inequality as manifest in a particular circumstance of structural constraints on groups.

MARKET PRICES AND VALUES SHAPED BY PRODUCTION RELATIONS

The US bottleneck was a two-sided market relationship among buyers/users of raw silk and the producer/sellers of raw silk. On the one hand, mechanized raw silk production in the US presupposed the availability of cheap raw

36. In addition to several examples of bankruptcies among the private and state run firms which imported silk reeling equipment from Europe, there were attempts to import a cotton spinning mill, as Smith explains: "There was but a single privately owned spinning mill built [assembled] in Japan before 1880, and the difficulties experienced suggest why. The founder of the mill, a Tokyo merchant, ordered machinery for it from the United States in 1864. The machinery arrived in Japan in 1867, but the difficulties in assembling the machinery, learning to operate it, and training a labor force delayed the beginning of production until 1872. Even after production began, there were continuing technical difficulties that, *together with competition from imported yarn*, kept profits low. In 1878, the best year before 1880, the mill showed only a 5-percent profit, or about half of the current interest rate on loans. When one considers that the capital invested in this mill yielded nothing from 1867 to 1872, and that investment in machinery entailed far greater risks than other types of investment, it is no wonder others were less venturesome than this Tokyo merchant" Smith, T. C. (1955) p.39.

silk—raw silk at a price low enough to make mechanized production profitable at a given level of productivity, price of entry, and price at sale. However, once established, the very productivity and oligopolistic nature of mechanized US sector(s) additionally contributed to the price-reducing market pressures on raw silk producers in Japan. As suppliers of a semi-finished good in a division of labor, the various producer/sellers of raw silk were effectively "locked into" selling their product through merchant mediators to the limited number of US producers, as opposed to selling to a larger number of buyers. That is, prices are not determined only by the number of sellers in a market. Price theory involves both supply and demand curves. Leaving aside the historical mediation of states and cartels, the relative number of buyers in a market (relative to the number of sellers) fundamentally affects market price. Price-reducing pressures on raw silk in the Japan–US network became greater by virtue not only of the relatively large number of producer/sellers of raw silk, but also the relatively fewer number of purchasers (cum manufacturers) of raw silk.

The great productivity and the high entry costs of mechanized silk production, which limited the numbers of entrants, gave US producers oligopolistic or "bottleneck" price-reducing power in the input market for raw silk. Furthermore, as relatively oligopolistic producers of raw silk, US silk manufacturers were also relatively oligopolistic sellers to numerous consumer-buyers. They benefited from competition among buyers that moved prices on finished goods upward. In fact, some large Paterson firms maintained their own sales staff during this period.[37] Moreover, unlike international raw silk merchants, US silk manufacturers gained oligopolistic end-sale power over prices from the tariff protections imposed on imported finished silk goods. This condition, which lasted until the industry became saturated with producers during the early twentieth century, suggests that rather than a "bottleneck" the division of labor and markets of the network may be more accurately envisioned as an "hourglass." And the hourglass structure was evolving. Competition intensified as production grew across the network, in particular, at the wide end. In a vicious cycle, growing productivity in the US sector begat growing competitiveness in the Asian raw silk markets as the number of raw silk producers increased to meet rising US demand. Thus, increased productivity and absolute production growth among US producers, which was based in part from previous profit earnings made from low priced raw silk, put additional downward pressures on raw silk through markets thus structured by the interstate division of labor.

37. McLewin, Philip, J. (1985) p. 138.

The superior remuneration to producers in the mechanized segments of the network in the US derived not only from greater productivity (surplus value creation), but greater productivity enabled relatively few enterprises in that sector to purchase and process large quantities of raw silk produced by a large number of producers. The ratio of few purchasers, which derived from the integration of specific forms of production and class relationships, translated into oligopolistic price-reducing market power for buyers, while the relatively large number of raw silk producers translated into additional price-reducing competition.

In this way, markets were structured by the forms of the division of labor. The articulation of the forms that structured the markets created unequal exchange—the domination of class relationships in the industrial production relationships over less productive forms. Market pressures consequent to the specificities of the axial division of labor lowered the prices of raw silks (labor) below their value and also overpriced US labor above its value, both as obtaining through currencies. In other words, at the point of interstate exchange, the low price of raw silk reflected a "de-valorization" of the exchange-value of embodied labor. Despite the existence of merchant and production cartels, the value of Japanese raw silk was not fully valorized in Japan. The buyer of raw silk gained a greater magnitude of value than was represented in the quantity of money given in exchange. The expansion and profits of mechanized silk production in the US was thus based not only on greater productivity and labor exploitation within US silk factories (the appropriation of greater and greater surplus value), but this also enabled the expropriation of value subsidies from inputs as manifest in the low price of raw silk, which was fully valorized, along side surplus value, at the point of sale in the consumer market.

UNEQUAL EXCHANGE AND GENDER

I. Paterson's Gendered Centralization and Decentralization

The evolution of Paterson's silk industry from a silk thread manufacturing center prior to the US Civil War to a decentralized and highly productive regional weaving and dyeing industry following the war, involved the dynamic interplay of patriarchy, class, ethnicity, ideology, and geography that was part of the historical process of unequal exchange in the Japan–US silk network.[38]

[38] Scrantion notes for example that, "[T]he potential for labor unity was obstructed by antagonisms along lines of ethnicity, sex, skill, and ideology ...[For example,] The appeal of the Knights of Labor for a universal silk-trade union withered when ethnic and skill issues surfaced. 'English speaking' ribbon weavers let it be known that they would 'never join any body that includes the German, French and Italian weavers' and that 'weavers in general' were 'averse to being joined to several thousands of inferior workers.'" Scranton (1985) p. 63.

In 1860 Paterson was home to six silk companies devoted to sewing silk manufacture. With the transplantation of the British industry to the US, 1865–1880, and the influx of European workers, broad-silk weaving quickly became the dominant sector of silk production in the city. Factory owners purchased thrown silk, hired workers to prepare the warps and operate power-looms, and sold the woven broad cloth to finishing firms, wholesalers, or directly to retailers. The large integrated factories that arose focused on broad-silk weaving and dropped internal dyeing almost entirely.

From the early 1880s large firms also began to build throwing and plain-silk weaving annexes in northeastern Pennsylvania cities, including Allentown, Boonton, Harrisburg, Hawley, and Honesdale to take advantage of unorganized female and child workers.[39] The drive to mechanize operations in Paterson and relocate simpler and labor intensive procedures outside the city was a process of decentralization and was based on the gendered class relations within and outside Paterson.

By 1892, more men were employed in the city than women, reversing the earlier pattern of female predominance. During the last ten years of the century, male employment in Paterson rose overall by about seventy percent, while female employment rose only forty percent.[40] The core sector of skilled-male workers thus became concentrated in Paterson while in surrounding towns of Northern Pennsylvania semi-skilled female workers labored in the numerous scattered annex operations. Patriarchal centralization-decentralization was a global process, not just local, as it was premised on the inflow of cheap medium quality raw silk from Japan and the radical transformation of the Japanese silk industry that made the raw silk less and less expensive.

[39] "Catholina Lambert, a Yorkshire immigrant, pioneered the shift of throwing operations to northeastern Pennsylvania after building a throwing mill in Hawley in 1880." Scranton, (1985) p. 5. "In 1912, Paterson had lost seven mills and Pennsylvania had gained fifty-three" and as "1913 began, there were a total of 293 silk mills in Paterson and 473 in Pennsylvania." *American Silk Journal* 32, February, 1913:79, cited in Golin, (1985) p. 93.

[40] The percentage of men employed in Paterson rose from 47.5 percent in 1890 to 55.3 in 1901. Scranton, (1985) p. 56.

Among the key reasons owners would relocate outside Paterson included labor disputes led by increasingly organized workers, attendant rises in wages, and attempts to keep women out of jobs that men held. There were numerous reversals and counter-reversals in the employment of women in the different processes of silk production. From Paterson's early days, firms had employed women locally for certain work. Hand warping during the 1860s, for example, was known as "women's work" in factories and home-shops. However, when factories invested in new power-driven warping machines during the 1880s, they hired men to operate them. But as the wages of organized male workers increased, "within a few years...manufactures again employed some female warpers to avoid dealing with unionized men."[41]

Male workers vigorously resisted the encroachment of women workers, and the gender dimensions of class conflict became an essential characteristic of many Paterson labor conflicts. Scranton touches on the essential patriarchal-corporatist features of male workers' resistance in Paterson and how, ironically, it led in some cases to demands by men for equal pay:

> Though women workers were often valiant strikers [and strike-breakers] ... they were voteless, excluded from political debate, and generally ignored by union organizers. When manufacturers tried to take advantage of a labor market divided by gender by opening skilled jobs to women at half the rates paid men, male workers acted to prevent this incursion. On one occasion they made the simple and crippling demand that women's pay be the same as theirs. Far more frequent were strikes to exclude women entirely or, if that did not succeed, harassment and intimidation were used to force them to quit.[42]

One critical area of silk production where women did not make inroads was dyeing. In 1860, the first silk dye works established in Paterson employed six hundred workers, four-fifths of whom were women and girls.[43] But over the next thirty years, the silk industry nearly became an "all-male" bastion of skilled laborers. Several factors came into play to make Paterson dyers among the most powerful workers in the silk industry. For one, their scarcity as highly skilled workers (human capital) had depended in part on excluding women from joining their ranks. Another advantage was locational: dyeing had become concentrated in Paterson due to the unique water of the Passaic river running through the city. Dyeing operations thus could not easily be moved outside Paterson as other sectors could and were.

41. *American Silk Journal* 4 (1885) cited in Scranton (1985), plate 14.
42. *American Silk Journal* 4 (1885) cited in Scranton (1985), p.64
43. Ibid., p. 3.

Adding to their market power, Paterson dyers in 1886 broke with the city's theretofore pattern of non-union protest and joined one of the most feared national unions in the country, the Knights of Labor. When they went on strike in 1887, silk production in Paterson literally came to a halt (and if such disruptions continued for a sustained period of time, they would have affected sericulture and reeling in Japan.) Some twelve thousand workers throughout the city were temporarily dismissed. Some owners probably dismissed their workers not to prevent excess inventory, but to engender resentment by other workers against the dyers.

The relocation to annex facilities was partly stimulated by, and an effort to compensate for, the higher wages paid to male dyers and the costs of work stoppages throughout the region. If the dismantling and decentralization of large factories in the city contributed to undermining the power of organized and scarce male workers—who over time came to work in smaller firms or household-run facilities—it was also fundamental to the gendered character of the regional decentralization of the silk industry. Paterson owners sought to overcome higher wages and control of production which essentially meant overcoming male worker power and the "new tradition" of protest in Paterson.

Frequently worker's demands for wage increases were acts of "catching up" because they occurred after wage reductions that were caused by instabilities characteristic of the silk industry. The instability of raw silk supplies and prices, elasticity of demand, and rapidly changing styles, which stemmed from the social relations of production in the less productive sectors in Japan, caused US industry production levels, revenues, and remuneration to fall dramatically in some years. Wages among local throwsters, for example, dropped about ten percent on average during 1884. When business picked up in March the following year, winders and doublers at Louis Franke and Company struck for an advance of seventy-five cents per week, raising their wages from $4.75 to $5.50 per week, about five percent higher than 1884 rates. Their success, according to the *American Silk Journal*, set off a general demand for higher wages in nearly every throwing establishment in the city, with the result that in most instances wages were raised to $5 among some 1,500 non-union spinning mill workers. This prompted owners, in the short run, to cut wages and close shop for days. In the summer of 1885, following the March strikes, business slumped and owners cut wages. Then in early 1886 the industry was busy again and factory hands worked overtime. Workers called for rate increases to offset the earlier reductions. Several large firms agreed to the demands, but some refused and strikes involving 230 broad silk weavers commenced, and workers won wage increases once again.[44]

44. *American Silk Journal* 4 (1885) cited in Scranton (1985), pp. 41, 55.

In the typical pattern of industrial expansion and innovation,[45] the combination of growing US consumer demand for silk products and the growing power of Paterson's workers led factory owners to invest in labor-saving and skill-reducing mass-production machinery, which in turn created new gendered class contradictions and antagonisms. The owners' efforts to take advantage of the more productive equipment were met with resistance. For example, to maximize the advantages of new weaving machinery, workers were called on to operate two looms at once. As McLewin explains, from the early 1880s to the great strikes of 1913, "The number of looms assigned to each weaver was the most important issue in the struggle for control of the labor process."[46] In 1883, for instance, weavers struck at two companies that increased loom assignments. No doubt, many of the forms of sexual harassment and discrimination among Paterson's textile industry were patterns brought from Europe. Unionized male workers in cotton factories of Manchester, for example, created 'female morality' issues to retain higher skilled jobs for themselves and exclude women workers, who, being paid lower wages, set unwanted precedents and engendered conflicts.[47] In Paterson, in late 1890, female ribbon weavers at Levy Brothers struck against having to produce "as many yards as a male weaver at about half the male weavers pay." The union women won their battle for equal pay, but did so by defeating non-union women, and themselves engaged in sexual harassment in the struggle. According to the *American Silk Journal*, a "female 'scab' was nearly disrobed, piecemeal, on the street, and chased, *en déshabillé* across Arch Street Bridge by a howling mob" of women ribbon weavers.

As a few women made inroads in the weaving sector, they also had to battle owners. The replacement of men with women workers naturally gave rise to new class-patriarchal types of conflict. In one case, Joseph Bamford, partner of a large weaving firm, assaulted a young employee when he dismissed her for being

45. Braverman, Harry, *Labor and Monopoly Capital: The Degradation of Work in the Twentieth Century* (1974, New York: Monthly Review Press) is the classic analysis of deskilling. See also, Kasson, John F. (1976) *Civilizing the machine: technology and republican values in America, 1776-1900* (New York : Grossman Publishers).

46. McLewin (1985), p. 137.

47. "In late 1886, 170 male hands ...struck at a Thomas and Joseph Heaton mill ...[objecting] to the presence of three women recently hired as spinners ...on the grounds of morality and decency. The question of scanty clothes in the hot, humid atmosphere of mule spinning rooms and also the bodily postures required by the work figured prominently in the debate that followed." Lambertz (1985), p. 43.

absent from work. He was tried and convicted in court, which prompted other women workers to speak out about his abuse. It was reported that "assaults were committed on other occasions, but that the girls were afraid to make complaints before the courts."[48] Apparently workers responded with greater violence to this incident than ever before: Bamford's mill and home mysteriously burned down in December.

As with dyers, organized men in other areas of silk production also resisted the hiring of non-union workers, particularly if they were women. In September, 1886 eighty union ribbon workers walked out of the Pioneer Silk Manufacturing Company when the owner hired a nonunion weaver. The owner, Thomas Ryle, fired all eighty union workers and replaced them with female-trainee strike breakers. At the end of each day, the union men jeered the women all the way to their homes. "Some evidently quit, and the firm escalated its challenge by shipping a number of looms to its annex at Allentown, Pennsylvania" where non-union women and children workers could be hired without incident.[49] That was after female-decentralization and male-centralization of production in the region began.

Because large integrated firms could not avoid the strikes, worker stoppages or the high wages of skilled male workers, they increasingly subcontracted some work to smaller specialty firms and concentrated on low-skilled high-technology activities which they could move out of the city where they could hire women and children at very low wages. The large companies in Paterson were eventually displaced by the smaller, more competitive, male-predominant firms and household enterprises. As Scranton explains, "Silk manufacturing in Paterson thus gradually evolved away from the integrated factory toward a Philadelphia-style system of interlocked and versatile specialists arrayed around central weaving shops of widely varying sizes."[50]

48. *American Silk Journal* 9 (1890), p. 295; 10, (1891), p. 91. Cited in Scranton (1985), p. 62

49. *American Silk Journal* 4 (1885) cited in Scranton (1985), p. 59

50. Scranton (1985), p. 45. By 1916, "Though many Paterson firms had moved all or part of their operations to Pennsylvania, silk remained the city's predominant industry, with almost 26,000 of the city's 41,816 wage earners being employed in silk manufacturing or dyeing. The largest sector of the Paterson silk industry was broad silk, which employed close to 15,000 of the city's silk workers. Well over half of these employees were weavers, since throwing was concentrated in out-of-town plants. Broad-silk mills varied widely in size. A large number employed fewer than twenty persons and resembled a cottage industry, with operations often carried out in the owner's home. Over 150 mills

The Pelgram and Meyer Company in 1880 pioneered the decentralization strategy when it relocated silk-throwing operations to a separate plant at Boonton. The yarn from the new plant was shipped to Paterson where skilled workers finished the product. This proved to be quite profitable and so the firm rapidly expanded over the next several years. By 1882 the company employed 1,200 workers who operated 310 power looms and 22,000 throwing spindles at both sites.[51] It was reported in the *American Silk Journal* that 1885 profits from Pelgram and Meyer's Boonton annex "footed up a round $100,000 ... which is attributed mainly to the lower wages paid in the town where it is located."[52] From the 1880s many other Paterson proprietors began moving their twisting, lacing, and high-speed plain-silk weaving equipment to annexes where they hired women and, for example, children of local miners. Women and children workers protested less, were easier to control and supervise, and of course worked for lower wages.

Theoretically, this sudden lowering of the price of labor, even in the absence of increased productivity (surplus value), is a prime example of how firms lowered the price of labor below socially necessary labor time and value, as discussed earlier. Historically, as in Japan, competition in one area spread to others even though production may not have been as productive. This in turn transformed the social relations and conditions of production, forming a new terrain upon which class struggles ensued.

Decentralization pitted workers in the productive annexes against those in Paterson who performed the same tasks, through regional market mechanisms. As the price of throwing, for example, declined in the annexes, pressure was put on Paterson firms to match the lower price or lose business. In 1885, Paterson rates for throwing organzine (hard-twisted *weft*) and tram (soft-twisted warp) "were $1.00 and $.55 a pound, respectively, though cost estimates were about a third less for the major [proprietors] who had built annexes and used 'cheap' labor. By 1890 competition brought the rates down to $.75 and $.45."[53] The lower prices in turn put pressure on owners to lower wages of Paterson's workers. Consequently, a regular if not predicable pattern of class conflict came to characterize the silk industry in Paterson throughout the late and early twentieth

employed from 20-100 workers and about 25 mills employed 100-400 workers. The only really large broad-silk mill [remaining] was owned by Henry Doherty, who employed six hundred workers at his main plant." Goldberg, (1985) p. 107.

51. O'Donnel, Patricia (1985) p. 101.

52. *American Silk Journal* 5 (1885), p. 30 cited in Scranton (1985), p. 39.

53. Scranton (1985), p. 46

century. When Rayon, an activity monopolized by the US for some time, was invented the Japan–US silk network was eventually destroyed.

II. Class-Patriarchal Relations of the Japanese Reeling Industry

The rise of Paterson's silk industry required the radical transformation of silk production in Japan. However, the strategy of Japanese entrepreneurs to increase production and profits proceeded through an opposite spatial strategy of patriarchal labor control. Whereas Paterson owners had to circumvent existing male labor control and establish female and child relations of production, Japanese mill owners did not. The raw silk reeling workforce in Japan already was composed of women almost entirely. Instead, Japanese owners had to overcome the existing forms of raw silk production—the day-labor form, which itself was recreated anew as a result of the expansion of exports. To overcome this form, mill owners eventually *centralized* raw silk production. Thus, the expansion and increasingly low price of Japanese raw silk and conditions of unequal exchange was a process not only of market forces and state policies, but also of local contingent patriarchal-class relations.[54] Indeed, it is our thesis that the network could not have functioned, and would not have expanded as rapidly as it did, in the absence of the remaking of the patriarchal dimensions of silk production throughout its various sectors.[55]

54. Mies' comments that "the concept of 'patriarchy' was re-discovered by the new feminist movement as a struggle concept, because the movement needed a term by which the totality of oppressive and exploitative relations which affect women, could be expressed as well as their systematic character. Moreover, the term 'patriarchy' denotes the historical and societal dimension of women's exploitation and oppression, and is thus less open to biologistic interpretations, in contrast, for example to the concept of 'male dominance.'" Mies (1986), p. 38.

Sayer's critique is also germane: "To acknowledge the patriarchal dimension of a given set of production relations, conceived as those relations necessary to a mode of production of material goods, is not to explain patriarchy itself. I reject the view—advocated by some Marxist feminists—that patriarchal relations can be explained with reference to their economic functionality, on both theoretical and empirical grounds. The burden of modern feminist argument is rather to suggest an independent (if very material) basis for age and gender relations which is the particular concern of feminist theory …" Sayer, Derek (1987) p. 81.

55. As Karen Sacks argues, "The point of all this is that one should not expect to find any generic worker or essential worker, or for that matter, working-class consciousness; that not only is class experienced in historically specific ways, but it is also experienced in racially specific, gender-specific, and kinship specific ways. The big issue is how

Patriarchy enabled Japanese owners to reduce the price of labor-power dramatically, even below subsistence. Not all analysts recognize this. Sugiyama, for example, underestimates the significance of low wages in Japan by arguing that "Since wages for female workers constituted only 4-5 per cent of total costs, the importance of low wage labour should not be allowed to overshadow the role of low cocoon prices."[56] However, low prices of raw silk stemmed largely from the low labor costs of producers, whether that was manifested in the products of wage-workers or cash-crop peasant producers. Precisely because of intense patriarchal exploitation, the wage bill for Japanese mill owners could be kept down to only four or five percent of costs. Wage levels could be kept so low because mill workers were really "semi-wage workers" by comparison to Paterson wage-laborers: the reproduction of their labor-power did not depend upon their wage income. Workers did not buy the necessities they needed with their wages, and probably could not have afforded to. Their subsistence necessities were largely provided by goods produced by non-waged household members. The mill workers' income contributed to household subsistence and status, but the household was not dependent upon it. This form of patriarchy worked against the interests of mill owners, and it was eventually overcome by them as extending rural landlordism and debt to money lenders drove peasants to increasingly rely on the wages of women workers to maintain their landholding status.

The mill owners' reliance on female peasants from nearby towns presented advantages and disadvantages which conditioned the very development of raw silk production in Japan, and in turn, the entire Japan–US silk network. When the new factory filatures were established during the 1870s Meiji mill owners took advantage of existing patriarchal norms, including the customary division of labor in which silk reeling was "women's work" and in which women's labor was socially valued below men's, as manifest in the price of women's labor. That is, existing patriarchal norms enabled owners, whether male or female, to pay women workers less than if they had hired men. In fact, Japan's first factory work

to go about finding the unities and commonalities of class and class consciousness while being attentive to specificity", Sacks, Karen B., (1989) "Toward a Unified Theory of Class, Race, and Gender" *American Ethnologist*, p. 542-3. Maria Mies makes a similar argument, Mies (1986), pp. 38-9, see also Acker, Joan (1988) "Class, Gender, and the Relations of Production," *Signs* 13: 473-97. Also see how Ann Stoler constructs her historical analysis in "Carnal Knowledge and Imperial Power: Gender, Race, and Morality in Colonial Asia," *Gender and the Crossroads of Knowledge: Feminist Anthropology in the Postmodern Era* (University of California Press, 1991).

force was composed mostly of women, not men. It was in this period that the modern day-laborer (*hiyatoi rōdōsha*) reeler (who produced raw silk for Western factories and consumers) first came into being in Japan. Overall, in the new filatures of the 1870s and 1880s female work became more regimented, intense, and dangerous. More women worked longer hours and more days of the year and became more concentrated within the cramped and stultifying walls of the increasingly larger and more impersonal mills. And as the number of women commuting from villages to mills increased, so did the number of rapes and robberies inflicted upon them by men. Thus men took advantage of women workers not only as workers, but as women too.[57]

Life outside mills was less conducive to collective resistance than for US male workers in Paterson, New Jersey, and this is another reason for their low wages. Women reelers in Kōfu during the 1870s and 1880s—prior to the creation of "dormitory workers"—were mostly commuting day-laborers who rushed home to their own villages after reeling to gain subsistence and perform household work. Social life outside the mill was distinct from their employment. In contrast, in Paterson workers enjoyed "fraternal paternalism" which established social ties among workers and employers during their leisure time. For instance, in November 1884 Alfred Crew, a British entrepreneur from Macclesfield, provided various forms of complimentary entertainment to his employees. "Such festivities," observes Scranton, "along with Christmas treats, summer excursions and baseball contests among mill teams, were regular features of Paterson factory life, even in years of turmoil."[58] Really, these newly invented customs of cooperation constituted a complex relation of fraternal patriarchy designed to lower

56. Sugiyama S. (1988) p. 124.

57. "Factory girls may have been familiar with blows and brutality before they reached the mill. Yet when a supervisor chastised one of them, the humiliation of public shame inflicted by a stranger must have added greatly to the very real bodily pain of the beating. Although rape and other forms of physical assault were not unknown in village life, in the mills women and girls were especially vulnerable to sexual attack or seduction. Away from supportive families and familiar surroundings, often lonely, disciplined harshly, caught up in the dehumanizing routine of racing machinery, youngsters were hungry for any sign of affection or gesture of kindness." Tsurumi, (1990), pp. 165-6. See also the classic work on this subject, Hosoi Wakizō (1954), *Jokō aishi* (The pitiful history of female factory workers) (Tokyo: Iwanami).

58. Scranton (1985), p. 37. See also ibid., p. 60, and his article, "Varieties of Paternalism: Industrial Structures and the Social Relations of Production in American Textiles," *American Quarterly* 36 (1984); 235-57.

worker costs by heading off worker dissent. Mill owners in Japan also invented instrumental paternalist customs. They were not as lavish, for profits in the more competitive sector did not permit it. Rather, they were blunt, including, for example, loans to workers. However, such paternalist actions could backfire and stir up dissent among workers. In fact, the first recorded factory strikes in Japan, in Kōfu in 1885—just months after the Chichibu rebellion—were triggered by just such a paternalist custom gone awry, as we shall see in the next section.

Nonetheless, as day-laborers, Japanese reelers during the mid-1880s had a few structural-market advantages on their side. The day-labor form of employment set limits on the rate of exploitation by filature owners because the available labor supply was limited to those who could commute to the mills. The mobility and *relative* scarcity of skilled reelers provided reelers with certain bargaining power, such as the ability to receive their wages at the end of each day rather than monthly. Owners complained to local officials that workers who were unhappy simply quit after getting paid and gained employment at another mill the next day. Owners clearly knew that they competed among themselves to obtain workers, and that workers played one employer off another by switching from one to another who provided higher wages and better working conditions. It was because owners now competed in a world-market to sell raw silk that the pressure to reduce costs, and gain control over the market for labor, was greater than it had ever been within the Tokugawa social system.

Initially mill owners responded to the local market power of day laborers by forming local associations or cartels. They aimed to end the free mobility of the day-laborer by binding workers to a single firm and made agreements to control wage rates, speed up the work pace, and stretch out working hours. It is significant that some of these local associations were established under the auspices of the government Silk Manufacturing Industry Alliance (*Sanshi Sangō Kumiai*).[59] This national organization was established in 1884 by the Meiji government to help manufacturers and merchants recover from the effects of the Matsukata deflation and to improve the quality of raw silk exports. Merchants and producers established local branches to coordinate with the central headquarters to regulate sorting and raw silk production quality. However, top businessmen of the Nagano and Yokohama branches strongly opposed government attempts to regulate the industry. The real significance of the Alliance and branch organs was

[59] Yoneda (1956) p. 79. On the alliances formed during the early 20th century, see Ishii, K. (1972) pp. 277-90.

primarily in the appropriation of its authority by manufacturers to organize their local employer cartels.

It was when Kōfu manufacturers formed such a cartel and tried to implement a city-wide labor contract system, that workers began a series of strikes in 1886. The employers succeeded. However, world competition was intensifying and the contract system was limited in its effect. It simply could not resolve the underlying problem of worker scarcity which was rooted in the commuting day-labor form of production. More drastic measures were required to expand the labor force and gain greater price-reducing and patriarchal control of silk reelers.

Such drastic measures were initially taken, and ushered in the second phase of the Meiji reeling industry's expansion, when silk capitalists circumvented the day-labor form by establishing the dormitory-system of employment during the 1890s. Housing reelers in company dormitories dramatically expanded the available supply of workers because workers could be recruited from throughout entire regions. The dormitory system spread rapidly and underpinned the expansion of Japan's entire textile industry. Women remarkably continued to comprise the majority of the country's factory working class—sixty-two percent before 1910. This was nearly twice the percentage of women factory workers in the US and France at the turn of the century.[60]

The dormitory system gave vast new power to mill owners by expanding the supply of workers and consequently heightening competition among workers for jobs. The bargaining power that the comparatively scarce day-laborers previously enjoyed was eliminated. The new female migrant worker—the *dekasegi* (lit. "work away from home")—signed a contract with one mill owner and lived twenty-four hours a day under the strict control of his managers. Workers could no longer easily leave a mill where working conditions were harsh to work for another employer. And the terms of the workers' contracts were enforced by police and local employers' cartels whose members agreed not to hire each other's employees.

Mill owners lengthened the worker turnover period from days (or months) to months and years and limited trips outside the dormitories. But women were often too exhausted to do anything but sleep after working six or seven days a week, fourteen hours a day. Further, the dormitory system also created new

[60] According to Gary Saxonhouse, in 1909 62 percent of all factory workers in Japan were women, compared to 32.6 percent in the US (1900) and 31.5 percent for France (1901), 37.4 percent for Italy (1901), 23.9 for Belgium (1900). Saxonhouse, Gary, R. (1976), p. 99.

social spaces for men to make women the targets of sexual conquest. Inside the mill women faced the sexual attacks or advances of supervisors; outside the mill they faced rape by the recruiters who brought the women to the mills from rural areas.[61] For filature owners, reelers became nameless, faceless, expendable instruments of capital accumulation and targets of sexual abuse.

DAY-LABOR: STANDING IN THE WAY OF "PROGRESS"

Yamanashi prefecture had been an area of concentrated commodity production since the middle-era of the Tokugawa society-system. However, as part of the formation of the Japan–US silk network, Yamanashi prefecture became one of several dense "new filature" areas of the Kantō region in central Japan. It differed markedly from the small producer sericulture areas where many peasants reeled poorer quality silk in their homes, such as in Chichibu district in Saitama prefecture.

Silk production was extremely concentrated and specialized in the new filature areas like Kōfu. In 1885 about two-thirds of all goods sold in Yamanashi were silk products—cocoons, raw silk, and kimonos.[62] Most of the silk goods were produced in just four of the prefecture's rural nine districts (*gun*). And among these four rural districts between seventy and ninety percent of peasants and small proprietors engaged in sericulture. And just two of these four rural districts produced ninety-four percent of the entire prefecture's woven silk goods. But there was one extra-exceptional district not among these four: the urban Nishiyamanashi district.

While the former two rural districts plus Nishiyamanashi produced 84 percent of all raw silk in the prefecture, Nishiyamanashi stands out as an exception. Most production from Nishiyamanashi district came from the city of Kōfu. Like the Suwa district in Nagano prefecture, Kōfu was had become a highly specialized silk manufacturing center.[63] In 1879, there were eighty mills in Yamanashi prefecture, the third highest number for any prefecture in Japan.[64] By 1885 the number of mills in the prefecture grew to 188, and, by far, the most productive and largest of these were in Kōfu. (By comparison to peripheralized sericulture districts like Chichibu, the number of mills in Yamanashi prefecture was huge). But even more impressive, by 1883 more than half of the entire prefecture's raw silk output came from the large Kōfu mills.[65] They were not only larger in size, but operated more hours per day, more days per year, and even began to break the pre-established seasonal rhythm of production.[66] Early on the prefectural government in Yamanashi played an important role in facilitating the expansion of raw silk production. Supplied with funds from the central government, during the mid-1870s the prefecture made loans to local entrepreneurs for land reclamation projects to increase mulberry leaf output and also built a large technically advanced filature for entrepreneurs to model their own after.

During the mid-1880s, Kōfu mill owners were frustrated by the short supply of local reelers. The supply probably had peaked during the early 1880s when the Matsukata deflation struck and pushed local poor peasants into tenancy and in turn into the filatures for cash to repay loans and taxes. Indeed, a local journalist observed conditions in Kōfu that were similar to those in Chichibu: "Everyday half the newspaper reporters' announcements are filled with stories of land forfeitures."[67] Yamanashi officials noted what we today call the "dissolution of the peasantry": "In the generally pervasive great depression, the working world has undergone great change. There has been a sudden increase in those trying to eke

61. "[T]he reality of the environment in which women were recruited and worked made them extremely vulnerable to harassment and sexual violence of various kinds. According to Hosoi ...recruiters routinely raped or compromised the young women they were escorting to the mills. *Shokkō jijō*, vol. 1, has numerous references attesting to the fact that male floor supervisors had absolute control over the women working on their shifts, and that during night work they often treated these women as a private harem. In larger companies, the floor supervisors recommended bonuses, reported tardiness, docked workers' pay for various infractions, and ultimately decided how long the shift would be. It was extremely important for women working with these men not to displease them." Sievers (1983) pp. 210-211, fn. 34.

62. Yoneda (1956) p. 70.

63. Ibid., p. 71

64. Ishii (1972) *Nihon sanshigyō shi bunseki*, p. 129.

65. Among all filatures in the prefecture employing between 50-100 workers, 73 percent were concentrated in Nishiyamanashi district (Kōfu). More impressive, about 47 percent of all mills in Kōfu employed at least 50 workers in 1883 by comparison to a mere 7 percent of mills in the other districts. Most impressive of all is the output of the Kōfu mills. In 1885 the number of Kōfu mills (48) accounted for only 25 percent of all mills in the prefecture (188). But these 48 mills produced 60 percent of the prefecture's entire raw silk. The average output of the Kōfu mills amounted to 1,845.3 *kin* (1 *kin* = 600 grams) per factory, while the average output per factory in the other districts totaled only 434.4 *kin*. Yoneda (1956) pp. 72-3.

66. Seventy-one percent of Kōfu mills operated more than 150 days a year whereas about 80 percent of the mills in the rest of the prefecture operated less than 150 days a year (and of these more than half operated less than 100 days a year). Ibid., pp. 72-3

67. "Kōgyō iken" vol. 7, *Meiji zenki saisei keizai shiryō shúsei*, vol. 18, p. 823, cited in Yoneda (1956) p. 78.

out a living as factory women."[68] The local supply of reelers thus increased; but not enough to bring down wages as low as mill owners desired. Government officials were sympathetic. The following exaggerated government report, for instance, tells of the women reelers' power and reflects the frustration of local capitalists:

> From Meiji 13 [1879] the [silk reeling] mechanisms [filatures] increased and the shortage of factory women became an extremely serious problem. The reason: it is not the custom in this prefecture for factory women to live in factory dormitories, so they all commute to work. Rather, it became an indulgent custom of factory girls to work in one reeling mill today, and tomorrow to work in another. Even if a factory woman misbehaves the factory doesn't have the right to censure her; if the factory censures her, she already has plans to go to a different factory the following day, so censuring her has not the slightest effect. As a result, the attitude of factory girls to factory owners is very unfriendly and one can see that the employer is, on the contrary, dominated by the factory women.[69]

A prefectural report of 1881 similarly reported that,

> Due to the recent shortage of factory women one can see there are now severe problems in Kōfu and neighboring villages ... Even though faced with an insufficiency [of reelers], new reeling mechanisms are constantly being established. From the start, the new founders make no preparations to hire women. To cope with the situation they secretly plan to steal factory women [from other shops….So factory women are happy to work in a shop with no rules. If the shop's rules are strict and hated, they will quit tomorrow and go work in another shop.[70]

THE 1885–86 KŌFU STRIKES: MILESTONES TO OVERCOME

The scarcity of reelers had thus forced owners to compete among themselves for workers, and evidently to complain to local authorities about it and to begin offering "paternalist" incentives to encourage workers to stay at their mills. But in the first known factory strike in Japan, in 1885, women workers complained about how such paternalism was implemented unfairly. At one mill they complained that they did not all receive the same loan amount and that the owner gave preferential treatment to unmarried reelers and to those considered

68. *Yamanashi ken kigyō geppō*, vol. 5, no. 2 (September, 30, 1886), p. 2, cited in Yoneda (1956) p. 78.

69. *Seishi shijun kai kiji*, cited in Yoneda (1956) p. 77.

70. "*Nosho musho shirei*" (1881), cited in Yoneda (1956) p. 77.

attractive. Specifically, married reelers and other workers received only one-yen loans while the others received five-yen loans. The women workers' complaints suggested that the owners were sexist and preferred to hire "attractive" and "available" workers. As a result, a number of women refused to work until all workers were treated equally. The owner tried to replace the protesting women, but the replacements lacked the necessary skills, and so the owner conceded to their demands.[71] Unfortunately, little more is known about the strike. Unfortunately, their success and developing gender-class consciousness would be undermined.

After the incident, Kōfu owners took new and unprecedented steps to deal with defiant workers and the overall labor shortage. In February 1886, they and merchants formed the Raw Silk Business Alliance (*Kiito Eigyō Kumiai*) under the auspices of the government-sponsored national Silk-Manufacturing Industry Alliance.[72] Filature owners in Japan generally opposed the regulations on the silk trade that the government sought to implement through the Alliance. But in Kōfu they made use of the Alliance's platform and authority to establish their own Raw Silk Business Alliance as a means to implement a city-wide contract system that would end the reelers' rights to move freely from one mill to another and force them to accept a fixed wage rate.

To the bylaws of the national organization, the Kōfu Alliance added numerous restrictive labor regulations. Tsurumi found that the local Alliance sought to unilaterally set wage rates each year and pay wages on a monthly rather than weekly or daily basis.[73] Further, Yoneda explains that Regulation #3 required factory women to work only at the mill where they previously worked most often. And in anticipation of any reelers who considered defying this restriction, regulation #5–6 stipulated that reelers could be dismissed at the "convenience of the employer." But if employment was terminated "at the convenience of the factory woman" then no silk mill in Kōfu would hire her for six months. And if termination of the worker was a result of her "misconduct," then all the mills would boycott her for an entire year. Regulation #15 gave employers the right to deduct and hold back 1/50 (one-fiftieth) of the reeler's wages as forced savings,

71. Tsurumi (1990) p. 51-2.

72. Ishii, K. (1972) pp. 277-8. Yoneda (1956), p. 79. This is the Alliance's title according to Yoneda. Tsurumi uses the same source but refers to the alliance as the *Seishi Sangyō Kumiai*. (Tsurumi, (1990), p. 52).

73. Tsurumi, (1990) p. 52

another unwelcome incentive to continue at the same mill. Worst of all, Yoneda points out, were regulations for the establishment of a fine and reward system. Regulation #16, for example, stated that up to one month's wages could be withheld for infractions of various fines.[74]

The implementation of the new regulations, backed by the government, took effect in mid-May, 1886. Following their implementation, the Yamanashi Daily News reported that significant changes had taken place, for example, at the Amamiya mill. Wages were reduced by a third, from 32 *sen* per day to 22 *sen* and workers were made to work 15 hours a day, starting at 4:30 A.M. and finishing at 7:30 P.M.

The new controls on workers triggered a series of strikes at five mills between June and August, beginning at the Amamiya mill which employed about 200 workers. According to a prefectural report, about 198 women left the mill and gathered at a local temple on June 12. After four days of negotiations, owners conceded only a one-hour reduction of work time to 14 hours per day, and the abolition of fines for arriving late. Little more is known about the other strikes. However, Kōfu strikers were unable to defeat the mill owners. In effect, this was the first major blow to the reelers' status and power as scarce day-laborers.[75]

The establishment of the contract system, and later the dormitory-system, gave unprecedented control over workers by owners, which seems to explain why so few strikes occurred in the industry after the day-labor form of production declined. Nonetheless, among the few strikes that did occur, those by Kōfu women certainly stand out. Among the twenty known filature strikes between 1885–1900, more than half, thirteen to be precise, occurred in Kōfu. Three occurred in Gifu, one in Gunma, and three in Fukushima, that is, in areas where the dormitory system was less pervasive.[76] The paucity of strikes in Nagano—only three between 1885–1914, is testimony to the area which perfected and relied heavily upon the dormitory system.

In theoretical terms, the transformed and intensified patriarchal relations of raw silk production enabled Japanese mill owners to reduce the price of labor below the socially necessary time of raw silk production. The under-priced value of female labor provided mill owners with additional value which could be realized as profit when valorized upon exchange for money. However, the Japanese mills also faced intense price-reducing market competition in the world market

74. Yoneda (1956) pp. 79-80.
75. Yoneda (1956) pp. 80-1.
76. Ishii, K. (1972) p. 357.

which prevented owners from valorizing most of the surplus value. It was passed on to the next buyer and eventually valorized down the chain in those sectors that held oligopolistic market power. The intense competition among the mills, as noted, was "passed back" to sericulturists, such as those in Chichibu.

THE CHICHIBU REBELLION: MONEYLENDERS, GAMBLERS, AND SERICULTURE

The worsening conditions of the petty sericulturists in areas like Chichibu were shaped by regional and global dynamics. State officials since the late Tokugawa era explicitly acknowledged the strategic importance of raw silk exports because they earned the government Mexican silver dollars which financed the purchase of Western military weaponry, machinery, and technology, including that for the improvement and expansion of raw silk production, such as through the establishment of the famous Tomioka mill (Ishii 1982). However, national development programs to advance Japan's integration into the world-economy also required development policies to cope with the attendant economic instabilities and difficulties. Increased taxation and fiscal retrenchment throughout the Meiji era had caused widespread peasant hardship and discontent. Partisan oligarchic political control also engendered resentment among elites and educated middle strata, even gamblers, who initiated a modern political movement for democratic government and people's rights, known and the Liberty and People's Rights Movement (Boles, 1998, cf. Vlastos 1995, Jansen 2000). To combat the social effects of its modernization program, the Meiji oligarchy imposed new "social development" policies of political oppression during the 1880s against dissidents, including peasants. In the face of worsening economic conditions caused by the modernization program, protests among peasants, activists, and outlaw-gamblers, among others increased markedly, and combined are known as the "incidents of intensified violence."

During the 1870s, unfavorable exchange rates, caused by the international weakness of the Japanese yen, and skyrocketing demand for Japanese silk resulted in unabated inflation. To remedy rising prices and the flagging national currency, the Meiji government's finance minister, Matsukata, initiated the infamous "Matsukata deflation" program in 1881. Prices of sericulture products—cocoons, mulberry leaves, egg cards, etc.—plummeted between 1881–86. Incomes among silk producing peasant households fell by nearly half, such that they had to sell forty-two percent more silk in 1885 than in 1881 to earn the same amount (Smith 1955: 81).

However, tax rates were fixed, and in the preceding boom years hundreds of thousands of peasant households had borrowed cash from local moneylenders in the expectation of continued growth. They were not fully aware of the ramifi-

cations of the new system of private property that the Meiji state had instituted, with the aim, in part, of increasing raw silk exports. Unable to repay their taxes or to repay loans for silk production and / or to pay taxes, creditors and officials as never before began to mercilessly expropriate the land and possessions of petty forfeiters through the new courts with the full aid of the police.

Facing disaster, peasants responded throughout Japan in the mid-1880s by forming "poor people's parties"—the title revealing a novel combination of the nomenclature of the new political parties and customary peasant petition methods. The various poor people's parties initiated petition campaigns and collective requests for debt relief from lenders and authorities. When the powers-that-be refused to make concessions, peasants typically went bankrupt and lost their land and possessions. In 1883 the recorded number of peasants taken to court was 33,845, a figure that shot up to 108,050 in 1885. About 400,000 households lost land in 1884 alone, more than any other year of the Meiji era (Irokawa 1966: 353). As noted earlier, Kōfu prefecture officials believed that the dissolution of the peasantry in their area led peasant women to seek work in the mills. Such local transformations are precisely what conditioned the expansion of Japan's raw silk industry, and in turn, the expansion of the mechanized US sector.

Meanwhile, in the context of rapidly worsening economic conditions and widespread political discontent, a number of small political factions of the Liberty and People's Rights Movement sought to recruit gambler-outlaw clans and groups of indebted peasants to form revolutionary armies to overthrow the Meiji government. At the peak of the economic crisis in 1884, on at least two occasions, peasant sericulturists in cash-crop sericulture districts where gambling flourished rose up with the aid of local *bakuto* (gambler-outlaws) and radical members of the Liberty Party (Jiyūtō) (Boles 1998, forthcoming). The Chichibu rebellion was not only the largest and most violent among these incidents, but it was also the very last millenarian peasant uprising. The revolt began on November 1, 1884 in Chichibu district, Saitama prefecture, when between 3000–6000 well organized peasants began smashing the homes of moneylenders, burning government offices that contained loan records, and battling local militia and eventually government troops. The uprising lasted several days and spread across three prefectures.

The Chichibu rebellion is perhaps the most debated event in the social history of early Meiji Japan. The two most common positions stem from differing interpretations of the participants' status, political affiliations, demands, and actions. While most Chichibu rebels were peasants who targeted local creditors to free from themselves from indebtedness, and who acted in the tradition of millenarian customs of protest, the top leaders claimed or actually had Jiyūtō

membership and apparently planned to march on Tōkyō to overthrow the government.

Thus, on the one hand, the event has thus been characterized as the last and greatest uprising of the Liberty Movement, one with with the characteristics of a "bourgeois and democratic revolution" (Azami 1975; Ebukuro 1950; Inoue 1968; Irokawa 1981, 1984, 1985: 155; Nakazawa 1954, 1991). On the other hand, it is said to be the last and greatest armed millenarian uprising of Japan (Chishima 1983, Inada 1973, 1984, Moriyama 1981, 1984, Scheiner 1974, Yasumaru 1984). The works in English on the incident essentially follow one or the other of these two positions (Bix 1986, Bowen 1980, Hane 1982, Jansen 1995, 2000, Norman 1940; Scheiner 1974, Vlastos 1995).

Both interpretations, however, neglected the role of bakuto (gambler-outlaws) in this and other incidents of that year, and of course none place the worsening conditions of the rebel peasants within the framework of the Japan–US silk network.

The involvement of bakuto was partly the outcome of the "raise-an-army" tactics of several radical Jiyūtō factions who sought to recruit gamblers and indebted peasants into an army that would overthrow the Meiji government (Boles, forthcoming). However, local peasant sericulturists cum petty gamblers had already initiated a debt deferral petition movement in Chichibu before Jiyūtō radicals—members of the *Yūshinsha* political organization in neighboring Gunma prefecture who were active in the area—recruited them into the party in early 1884. Still, the influence of these Jiyūtō radicals on the bakuto sericulturists was consequential, in terms of providing them with encouragement and gumption than in infusing them with modern political ideals of democratic government. However, most bakuto-peasants' notions of justice stemmed from their own millenarian traditions, and they interpreted the Jiyūtō from this perspective. Petty gambler Arai Teikichi, for example, testified that when he was visited by Sakamoto Sōsaku (one of the bakuto who initiated the debt deferral petition struggle) and his bakuto friend, Onda Uichi, they had said:

> On 1 November there will be a gathering which is so important that even people suffering greatly with hardship should come. Uichi said I should gather ten of the Jiyūtō members at Kobayashi Shōnokichi's house and tell them the same thing; that the Jiyūtō will hold a gathering in Ōmiya in Chichibu district ... and if this gathering goes well, the usurers and banks will be crushed and *the world will be made even* (*CJSS III*: 137. italics added).

The Jiyūtō symbolically authorized violence to "make the world even." But to "make the world even," was a millenarian ideal that when put into practice meant smashing creditors' houses and burning loan records stored in government offices. Certainly this was no concept of Liberalism. As Moriyama explains,

> The concept *yonarashi*—in the Chichibu peasants own words, 'make household wealth even' or 'make the world even'—were not ideas invented by politicians or philosophers. This is true of the term *yonaoshi* [world renewal] as well. Both terms developed over a long period of social history and uprisings since the pre-modern era. By the Bakumatsu period they were finally explicitly expressed in this language. Thus, they are nothing other than popular social ideas" (Moriyama, 1984: 72).

Bakuto Teikichi could not have been more clear: in answer to the interrogator's question, "what is the doctrine of the Jiyūtō?" he responded, "It's doctrine is to destroy the usurers and the banks that greedily charge high interest rates and control all the money, and to help the poor people" (CJSS III: 137).

A final noteworthy twist in this mix of millenarianism and Jiyūtō slogans are the references to the conservative Jiyūtō President, Itagaki Taisuke, as a millenarian "Great Rectifier" or a Great *Oyabun* (Outlaw Patron). Itagaki was no supporter of social movements. Within days of the uprising he denounced it and dissolved the Jiyūtō to disassociate himself from Chichibu rebels with Jiyūtō membership.

How could the rebel's image of Itagaki differ so radically from the reality? Perhaps this too is linked to Yūshinsha activists (the Jiyūtō faction from Gunma) who, prior to and after the Gunma incidents, spread the word of Itagaki as great defender of the people. For example, before his arrest for his role in the "second Gunma incident," Yūshinsha activist Murakami Taiji traveled the district telling people that "Itagaki's army would assemble, rout government officials, reform the tyrannical government into a good one, and make the world free so people can live peacefully" (CJSS VI: 86). Likewise, his mentor, Arai Kisaburo, after his acquittal in the Gunma incident, continued organizing in the area. He told at least two hundred peasants in late October 1884 that "according to the orders of President Itagaki, one-hundred thousand Jiyūtō members from all areas will revolt sometime between November first and third, and in all prefectures and wards, police stations and offices will be wrecked, politics will be made free ["jiyū"], and taxes will be reduced to one-one hundredth of what they are now" (Azami 1990: 68).

The combination of bakuto support for peasants, their personal chivalry, the encouragement of Jiyūtō activists, and the perception of the Jiyūtō president as a deity-like leader, provided leaders and peasant rebels alike with sufficient gumption and moral authority to create an unusually well-organized rebel force structured along the lines of a political party and army combined, and to obtain justice and wealth equalization through a quasi-millenarian world renewal rebellion—Japan's very last. Had they not made this breakthrough, the debt deferral struggles probably would have proceeded peacefully and unsuccessfully as they

did elsewhere in Japan during the mid-1880s. But from a world-historical view, it is essential to take into account the rise of the Japan–US silk network. For this takes into account the worsening conditions of peasants with regard to growing global competition that drove down raw silk prices and the government's nationalist export-oriented and military development policies that impinged on peasants by giving new powers to moneylenders cum landlords and to silk merchants (with the aim of increasing silk exports for strong foreign currency to purchase Western military weapons and technology). The Chichibu rebellion was the imbrication of local social relations and customs, the reconstitution of ideas and forms of struggle on new terrain shaped by national mediations and the world-scale processes and forces of the Japan–US silk network in the world-economy.

CONCLUSION: HISTORY AND THEORY

For the first time in world history, specialized silk production activities in America and East Asia became integrated within a globe-spanning division of labor. During the mid-1880s producers in France and the US became the leading woven silk producers among wealthy states through purchases of raw silk from East Asia. During the 1850–1884 period, China became the main foreign supplier of raw silk to France while Japan became the main supplier to the US.

To examine the historical processes of unequal exchange and stratification the unit of observation selected for this study is the Japan–US silk network. An incorporated comparisons method was developed through reconstructing the interrelationships of agencies, labor forms, and interstate structures of the Japan–US silk network to explain the historically specific interrelation of local and interstate processes and inequalities. The categories of "unequal exchange," "commodity chains," and "class relations/forms of production," were not treated as independent "fields of inquiry." Rather, the meaning of these conceptions have been relationally defined as dimensions of distinct world-historical processes of the network examined at local, regional, and interstate levels of abstraction. In this respect, this body of this paper is not strictly about unequal exchange or commodity chains or class relations per se, but about the historical processes and elements of systemic inequality.

More specifically, I have argued that interstate disparities of the Japan–US silk network arose through the interconnections among distinct capital-labor relationships; that uneven prices and remuneration resulting in interstate inequality occurred as a consequence not only of local capital-labor relations of the production, but from the very integration of these relationships because the integration of these different forms fundamentally shaped markets.

The expansion and higher profits of the US silk industry was based in part

on greater productivity and labor exploitation of the mass-production US silk factories. This productive advantage not only translated into lowering wages per unit, de-skilling, and use of lower cost female and child labor, but also into a price-reducing force on the raw silk market by virtue of the monopolistic market power gained as oligopolistic buyers of raw silk. That market power derived directly from the high productivity and high entry costs attending the expense of mechanized machinery investments. Relatively few entrepreneurs could engage in mass production silk manufacture, but those who did could process the raw silk imports of hundreds of thousands, perhaps millions of raw silk producers. Their oligopolistic power contributed to driving raw silk prices below their value and thus in turn provided value subsidies to US producers. Silk producers in Japan in the first place had expanded production and exports to meet the needs of industrial manufacture relations in the US. Asian producers of raw silk were far more in number and far less productive per person compared to the US suppliers, and they were "locked into" the markets supplying these producers. Consequently, they faced intense market competition among themselves that was amplified by the oligopolistic market power of the US silk manufacturing enterprises and wholesale buyers.

Thus, the conjoining of historically specific industrial wage and non-wage forms of production, which composed the Japan–US silk network, created and exacerbated infundibular market structures—with conditions of relative intense competition at one end and oligopoly at the other. The different market pressures that effectively lowered prices of raw silk below their value arose primarily from the very juxtaposition of different forms/class relations of production, that is, from the division of labor itself. The low price of raw silk was not simply a manifestation of intense class exploitation of peasants and female mill workers by landlords and mills owners. Rather, the integration of specific forms of production and class relations through interstate markets decisively structured the uneven market pressures on the prices of commodities in those markets, and in turn on production relations, thus effecting price-reductions of the exchange-value (of socially necessary labor) of raw silk.

In view of their interdependence, the forms of production and protest in the Japan–US silk network should not be treated as each having a self-contained logic, though they did have distinct logics. Distinctiveness within a totality does not exclude the interrelatedness of elements that are formative of a totality. On the contrary, as elements of a totality they must be both distinct and interrelated. It was through the regular unequal exchange of US cash and Japanese raw silk within this interstate division of labor that local-regional relations and circumstances of raw silk production became mutually conditioned and transformed. The cash income from raw silk exports, declining with the tendential fall in raw

silk prices, sustained sericulture and raw silk relations of production in Japan within increasingly intense parameters of instrumental rationality and profit maximization, just as the raw silk sustained and subsidized silk factory relations in the US. Thus, the social relations and conditions of sericulture and raw silk reeling in Japan, through raw silk exports, entered into the conditions of factory production and class conflicts in Paterson, New Jersey, just as factory relations of mechanized silk production in the US entered into the historical environment of peasant sericulture and rebellion and raw silk reeling, patriarchal relations, and mill strikes by women workers in Japan. The "local" conditions of each conflict were thus molded by world-historical processes encompassing the interdependence of their circumstances in the interstate silk network, and it was a formative part of the capitalist world-economy.

If I have stressed the importance of market mediations shaped by the juxtaposition of labor forms as elemental to unequal exchange, I have also emphasized that unequal exchange was thus also sustained on the basis of contingent social conditions of production, class-patriarchal relations in particular. Intensifying class-patriarchal exploitation in both the US and Japan decisively conditioned value magnitudes and prices of labor within and among the interdependent production activities. Patriarchal relations of production, contradictorily embedded within wider social and state-sanctioned patriarchal relations, restricted wage-work activities and opportunities for women, under-priced the value of their labor, and lowered the price of raw silk, while subjecting women workers to various forms and degrees of sexual abuse and humiliation.

Price-lowering patriarchal relations of production that conditioned unequal exchange were not automatic, but historically constructed and changing. When Japanese entrepreneurs faced ever intense competition to meet ever-increasing US demand, they sought to reduce costs by controlling day-labor workers. Their efforts initially worsened conditions for women workers leading to the Kōfu strikes of 1885–86, which were followed by few thereafter during the Meiji era. Within a few years, filature owners tremendously expanded the labor market and gained greater control over female workers by destroying the day-labor form of production with the establishment of factory dormitories which housed many young and initially semiskilled women, many from indebted peasant households located in distant villages.

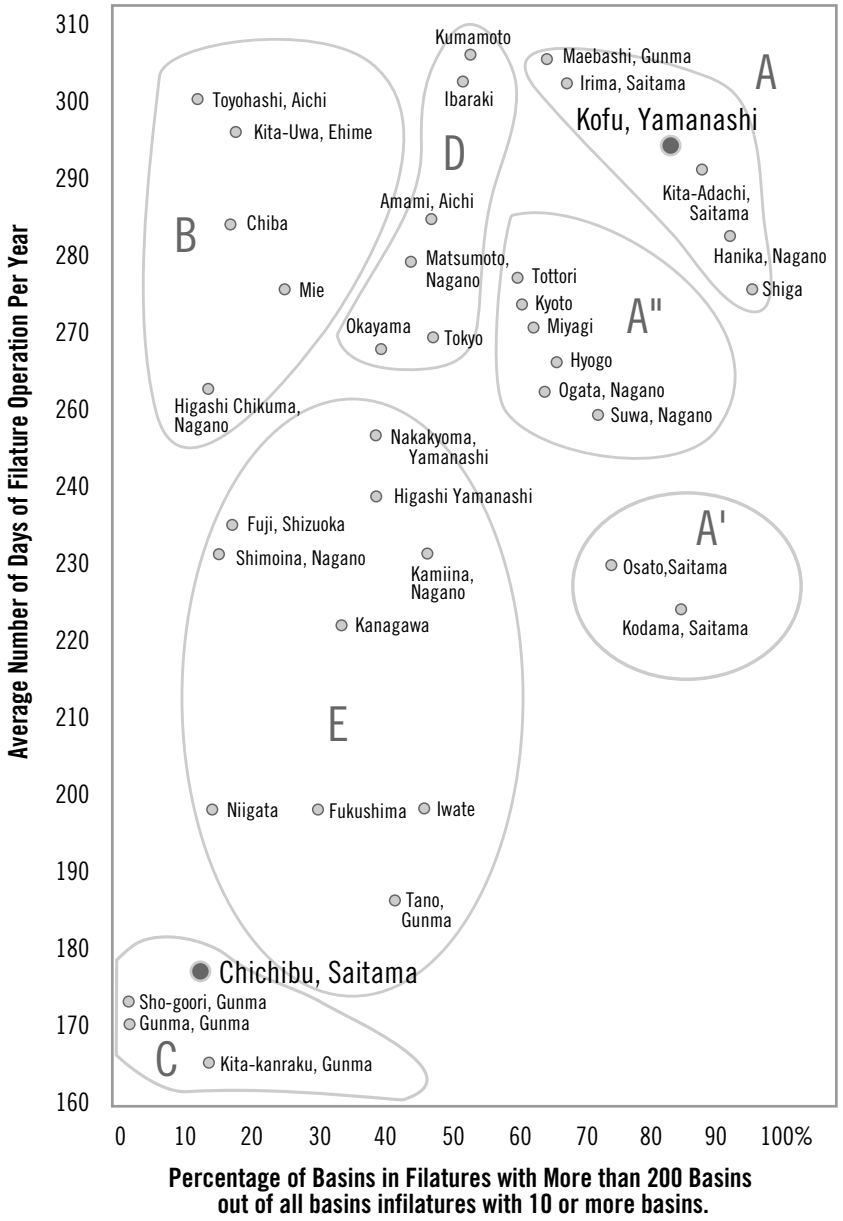
The success of mill owners in overcoming worker resistance contributed to the continued expansion of the US silk manufacturing industry. But US expansion also led to new class-patriarchal contradictions in Paterson, New Jersey, the "Lyons of America." The strikingly different local outcomes of these interrelated processes resulted from the opposite spatial strategies of labor control taken by US and Japanese entrepreneurs. Paterson entrepreneurs tried to increase the

number of women employees whom they hired at lower wages. But resistance by male workers to the hiring of female workers, combined with spreading unionization, worker militancy, and rising wages in general during the mid-1880s, led Paterson's entrepreneurs to decentralize silk manufacturing operations by relocating to annex facilities in smaller towns where they hired semi-skilled women and child laborers to operate new semi-automated and mass-production machinery. In contrast, the establishment of the factory-dorm system, raw silk production became concentrated in large-scale filatures in the urban areas of silk cities, including Kōfu. Labor resistance was not destroyed in Paterson as it was in Kōfu. In view of the interconnections of these developments, it would have been insufficient to merely observe that the Kōfu solution was a manifestation of greater coercion, as typically found in semiperipheral areas, and the Paterson solution a manifestation of greater freedom.

The transitional nature of the network's formation is exemplified not only in the fact that the Kofu strikes were the very first known factory strikes in Japan, but also by Japan's very last millenarian peasant uprising in 1884 among indebted sericulturists (Boles 1996, 1998). Just as British textile industrialization had required enclosures and slavery, the rise of the Japan–US silk industry required the full subordination and alienation of peasant lands held by sericulturists. The triumph of local landlords/creditors over indebted peasants in Japan during the mid-1880s was a truly major turning point and marker of Japan's incorporation into the capitalist world-economy. At no other period before or since did so much rural land come into the control and private ownership of the rural wealthy. Irretrievable debt to moneylenders among Japanese peasants, especially in sericulture areas where cash-crop production was advanced and tied to world-markets led to widespread land forfeitures caused in part by collapsing raw silk prices which were the direct result of the Meiji government's deflation policy and currency-trade reforms. The Matsukata reforms, launched in the early 1880s were explicitly designed to strengthen the yen, increase raw silk exports, and advance Japan's position (in the capitalist world-economy).

The Chichibu rebellion of 1884 was exemplary of all these local and world-historical changes. The cultural form of rebellion by these small-plot holding sericulturists who faced unprecedented land forfeitures was, for example, truly transitional. On the one hand, rebels were inspired by millenarian figures, deities, and led by gamblers. On the other gambler-leaders had formed "poor people's parties," joined radical factions of the national Liberty Party, which was itself the head of Japan's first popular movement for representative democracy and civil liberties. Chichibu gamblers joined the party because their millenarian notions of equality and freedom vis-à-vis dominating landlords and local officials meshed well with comparable notions of equality and freedom espoused by the

Figure 1: Hierarchy of Meiji Silk Mills by Size and Days in Operation 1918



Liberty Party vis-à-vis Japan's oligarchic government. However, both movements were crushed by government military forces. Modern landlordism took root and peasant resistance to the untrammeled expansion of rural banking and landownership, and to perhaps the lowest cost sericulture industry on the planet, had been cleared away. Japan's raw silk mill owners obtained cheap cocoons and cheap female labor from destitute peasant farmers while US silk factories obtained cheap raw silk.

In sum, this analysis of the network's unequal division of labor has permitted the interwoven connections among seemingly disparate developments and events and forms of collective protest to be understood on the basis of their mutual formation and transformation, and as formative parts of the capitalist world-economy. The method of incorporated comparison developed here has sought to explore world inequality and unequal exchange by examining the structuring of infundibular markets consequent to the integration of distinct wage and non-wage forms, and by contemplating the world-historical dimensions of local events and the local faces of global processes (Tomich 1990).

APPENDIX I: REELING INDUSTRY STRUCTURE

The sundry grades of raw silk shipped from Japan to the US may be simplified to three basic grades of quality which generally corresponded to three strata of raw silk producers. The lower quality raws tended to be produced by women in small peasant households who, as petty sericulturists, also produced their own cocoons which they reeled into raw silk using older or lower quality hand reeling apparatuses and communal or fee-based re-reeling facilities. The lower quality raws produced in small peasant households were characteristic of areas like Chichibu district where peasants increasingly competed with small and medium mill owners who used nearly the same techniques, but who purchased cocoons of higher quality and who seasonally hired skilled women reelers. Many others simply sold their cocoons to regional merchants who in turn sold them to mill owners. Small to medium mill owners purchased from local and regional merchants most of the cocoons that their mill hands reeled. The owners of the medium to large filatures, which produced most of the higher quality Japanese silk, sourced their cocoons from larger wholesalers who in turned sourced from national markets. To these different grades of raw silk also corresponded geographic concentrations of production. The largest of the medium-sized mills, which hired up to fifty or so young women workers and produced a medium quality silk, were concentrated in areas like Gunma, Fukushima, and northern Japan. The large filatures, most of which were established by wealthy silk merchants typically hired between 50 and 100 women. These highly productive

filatures arose in the "new" silk districts like Kōfu, Suwa, and Amami in central Japan, and produced the country's higher quality raw silk. The first known factory strikes in Japan occurred in Kōfu filature mills, and the last millenarian peasant uprising in Japan occurred in the Chichibu sericulture region.

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