

Book Title: New Mode of Capitalist Production  
Organization---Research on Modularity Production  
Network

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Abstract

After two hundred years' development, the capitalist production mode evolves into a new shape---network economy. The traditional mode of production features the vertical control of final product producers, while the new global production network allocates resource effectively around product standards on a global scale, forming modular production and composition under the control of standards. The rise of ICT provides the conditions for transnational production. If the second industrial revolution, by introducing science into production process, enabled capital to stand, for the first time, on the material bases belonging to capitalism's own nature, then today's technology network comprised of autonomous computer terminals, fiber optic cables and digital technology, once again constitutes the technical basis in line with the nature of contemporary market economy agents. Modular production network not only incorporate enterprises into organizational structure with fuzzy borders, but also integrates national and local economy, resulting in complex geography-economy. The network effects inherent in network structure subvert the negative feedback mechanism of market competition, leading to multi equilibrium, path dependence and lock-in effect, which hastens economic change and increases uncertainty.

Modularity, as a way to handle complexity, composes matter into hierarchies and makes the components interchangeable. Under the complex and uncertain network economy background, the advantage of modularity is becoming more and more obvious. A hierarchical industrial structure-- modularity production network comes into shape. Modularity production network is a combination of technological design rules and institutional exchange and distribution rules. It's technological essence is a hierarchical enterprise topology technologically carried by design rules, with the non-stake control legally supported by intellectual property rights, capable of reducing the complexity to establish network connection through the configuration of module operator and promoting the evolution of complex product system, so as to balance between the flexibility of network nodes and the network's overall order. It's economic essence is contemporary centre - periphery system of international division of labor dominated by standard-setter (multinational companies), conducive for transnational monopoly capital to reap profit in the midst of the complex economic environment.

Modular production network contains duality prevailing the objective world, for specific aspects: 1. the duality of division of labor, i.e. the coexistence of division of labor among organizations and division of labor within organization; 2.the duality of evolving, including the duality of product architecture's evolving trends, i.e. the coexistence of integration at the level of key components and modularity at the level of product system; product architecture cycles between integration and modularity; the duality of knowledge's evolving direction, i.e. module suppliers try to tap tacit knowledge within modules, while standard-setter derives tacit knowledge from within the borders of different organizations and to codified it into explicit knowledge; the duality of enterprise organization's evolving trends, i.e. the coexistence of vertical disintegration and horizontal integration. Since modularity is a kind of hierarchical system, the production network formed based on modularity also has a hierarchical organizational structure. The centre of modular production network is the

multinational corporation setting design rules, who is also known as final assemblers, platform leadership and network flagship. The stratum surrounding the center is first-tier suppliers comprised of specific module manufactures and interchangeable module contractors. At the bottom of the pyramid locates small to medium sized periphery suppliers. The relationship between network flagship and other network members is both of market equal exchange and organization hierarchical control. The former justifies claim from all network members to network surplus, while the latter leads to asymmetric distribution of residual claim and residual control. And, even in the modular era, the first-tier suppliers engaged in manufacturing still conform to the logic of economies of scale, making them involve in large-scale integration. With intellectual property rights of design rules, network flagships can control the first-tier suppliers without holding the latter's equity. The first-tier suppliers control periphery suppliers with ownership of physical assets and the monopoly status at the middle layer.

As suppliers stratify, labor forces are increasingly differentiated into core labor force and periphery labor force. Employers induce core labor force's effort through combination of stimulation and control. The two sides appear as partnership on the surface. With regard to periphery labor force, employers push their labor productivity to the limit in production seasons. In slack times, employers cease to hire those workers. The numerical flexibility of periphery labor force is used to withstand market fluctuations. With divide-and-conquer strategy by capital and weakening of labor protection from state, capital regain the overwhelming dominance over the labor force. The differentiation of labor force deprives collective identity of workers and dilute workers' class consciousness. As a result, the development of Labor party stalls, And the income gap between core labor force and periphery labor force widens. Left-wing theorists and practitioners need to review the working class and labor movement in order to cope with the changes brought about by the globalization of production.

The implication of international division of labor's evolution on industrial structure is that services sector, particularly productive services industry has become the dominating sector in developed countries, while the national economy of developing countries is dominated by high energy consumption, high pollution and low-margin manufacturing. Developed countries don't leave much space for china's producer service industry as they do for china's manufacturing industry. In modular era, the only way to create the demand source for China's producer service industry, is to construct the independent modular production network, i.e. to establish China's own brand and own products platform. What Chinese enterprises have to do is to reverse the standardized process by transferring the open modular production structure into integrated structure, then to create new integrated architecture through setting up its own design rules, so as to take advantage of the manufacture capabilities of global suppliers. The above mentioned goal can only be achieved if Chinese government will strengthen the division of labor among china provincial regions and create business environment promoting the supply chain integration among Chinese enterprises.

The book is organized as follows: Chapter I Introduction, shows the causes, values, methods and frameworks of the study; Chapter II Literature Review, cards the literature of modular production network theory and related enterprises network theory, global production network theory and global value chain theory, in order to provide a panorama of network organization research. The unique perspective of this book is offered based on review of the existing archive. Chapter III The environment for the emergence and development of modularity production network, outlines the environment where modular production network generates and develops through the study on large-scale evolution of economic patterns and metamorphosis process within the economic pattern of capitalist economy. Triggered by the study on the evolution of economic patterns, this chapter then introduce the paradigm shift of economics thought, emphasizing the scientific world outlook and development concept guiding the research of modularity production network. The category of modularity and modularity production network is given at the height of scientific

world outlook and development concept. Chapter IV The duality of modularity production network, summarizes many mutual contradictory, interdependent dualities of modularity production network based on its technological and economic essence. The implications of these dualities on China's participation in modularity production network are analyzed and advices on how to raise Chinese enterprises' international competitiveness by taking advantage of the mutual conversion of contradictory duality are then offered. Chapter V The governance structure of modularity production network, first states the hierarchy of modularity production network's organization, then explains how the governance structure corresponds to the function of different units within network flagship and the function of each organizations at all levels in the network. Finally, financing governance structure is analyzed, illustrating different finance pattern at different developmental stage and level of the network. Chapter VI The pricing mechanism of modular production network, studies on how network flagship manage bilateral market through bilateral pricing mechanism. Chapter VII The effect of the development of modularity production network on labor-capital relations, outlines the new labor force landscape where labor forces are increasingly differentiated into core labor force and periphery labor force. This chapter goes on to study the social economic implications of the differentiation and its impact on contemporary labor movement. Chapter VIII The enlightenment of modularity on developing China's producer service industry offers policy recommendations based on the above theoretical analysis of modularity production network.