

## CHAPTER 9

### A Theory of Systems of Political Economy, Part 1; Defining Systems and Capabilities

Now that both political and economic systems have been described, it is possible to combine the two in order to construct a theory of material social reality, encompassing systems of political economy. In this chapter, because I define political economic systems and capabilities, I will be able to propose a common standard with which to measure the relative rise or decline of particular Great Powers. In the review of previous scholarship concerning the rise and decline of Great Powers, I claimed that there was no theoretically based method for measuring rise and decline. This chapter will construct such a measure. In addition, the nature of the power of Great Powers will be broadened to include their control over global production capacity, bringing into play the chapters on production systems. Finally, discussion of the role of the state and its interaction, mainly with the production system, will lead in the next chapter to hypotheses concerning rise and decline.

#### **Defining a System of Political Economy**

In the chapter on the theory of political systems, I described the realms of politics and economics as the two subsystems of a system of political economy. The domain of the realm of political economy is a combination of the realms of politics and economics. This section will propose a method for combining these realms.

The political and economic subsystems are the two functional elements in a system of political economy. The political subsystem generates and allocates control over a population within a territory through time, while the economic subsystem generates and allocates goods and services for a population through time. Therefore, one way to define a system of political economy is as a system that generates control over, and goods and services for, a population within a territory through time. It follows that political economic power is the capability to generate control over, and to generate goods and services for, a particular population within a particular territory in a particular period of time.

These definitions sum the two subsystems of politics and economics into one system by simply adding the two definitions together. I noted in the chapter on systems, however, that properties usually emerge out of a system; these new properties are not predictable from observing the constituent elements of the system in isolation. The above definition of a system of political economy has brought out one emergent property: the population of the polity is shared by both the political system and the economic system. In addition, the above definition combines the concept of territory with the concept of an economic system. Previously, the territorial aspect of economic systems was not considered.

The two subsystems have different functions within a system of political economy. Both functions are indispensable in such a system. Most importantly, each subsystem provides support for the other subsystem. A political system, and the state within the political system, cannot exist without the economic system, and vice versa.

The two subsystems may be said to be in a state of mutual symbiosis, such that each subsystem benefits from an association with the other.

The political system is clearly dependent on the economic system to provide the resources with which to function. Therefore, another definition of a domestic system of political economy would be that it generates *goods and services* for a population within a territory over time in order to generate *control* over a population within a territory through time.

The phrase “population within the territory through time” can be used when discussing both subsystems, as seen in the paragraph above, because both subsystems share the same population, the same territory, and the same time period. Therefore I will define a *nation*, for the purposes of discussing systems of political economy, as a domestic system of political economy containing a particular population in a particular territory through time. I will therefore drop the phrase “population within the territory through time” when discussing these systems, since the phrase will be assumed.

In the formulation of a domestic system of political economy as a nation which generates goods and services in order to generate control, one function (control over space) is postulated as being dependent on the other function (transformation of matter/energy), but not vice versa. However, economic systems are not viable unless they are protected against the violence of others and unless rules of behavior are enforced; these are functions of the state. The economic system needs the state because production takes place through time; if production is interrupted before completion, virtually all output is lost. In order to guarantee producers that their efforts will not be wasted, the state must provide protection *through time*. Production also requires the

interaction of the various economic niches, which requires that the state provide protection *through space*. Therefore, the state must provide protection *through space and time*. The function of the political system, as far as the economic system is concerned, is to provide protection of the economic system through space and time.

A definition of a system of political economy that would reflect this dependence on the state would be as a system that generates control through space and time in order to generate goods and services. In this formulation, one function (the economic function) is dependent on the other function (the political function), but not vice versa.

If *both* functions are dependent on the other, in other words if the two subsystems are interdependent, then the system consists of mutually reinforcing elements, which means that the system contains a positive feedback loop. One element helps the other element which in turn loops back to help the first one, and so on. Even though this process involves positive feedback, the political economic system is stable in the sense that the nation is constantly performing at a high enough level to insure that the nation will not disintegrate into two separate spheres, the economic and the political. The structure is stable in that the elements will remain the same, bonded together because of their mutual benefit to one another.

When positive feedback leads to a stable situation, this stable state is often referred to as a “lock-in” of a particular configuration of the system. Lock-in occurs, for example, in both the “vicious cycle” of poverty, in which low income leads to inferior education which leads to low income, and also in a “virtuous cycle”, such as when investment leads to high income which leads to investment. In other words, positive

feedback can lead both to a situation in which a stable ceiling on performance is reached, and also to a situation in which a stable floor on performance is set.

In a system of political economy, the economic and political systems can form a “virtuous cycle”, a stable lock-in at a high level of performance. The economic and political systems form a *cycle* of mutual benefit. The political system protects the economic system, and the economic system provides the resources for the political system, and then the cycle repeats itself.

The following diagram shows this simple cycle:

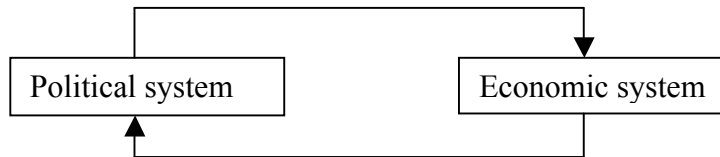


Fig. 39. Cycle of political and economic systems.

This process is nicely illustrated by Robert Gilpin in the conclusion of his discussion of “The nature of political economy” in the book *U.S. Power and the Multinational Corporation*. Gilpin writes:

Political economy in this study means the reciprocal and dynamic interaction in international relations of the pursuit of wealth and the pursuit of power. In the short run, the distribution of power and the nature of the political system are major determinants of the framework within which wealth is produced and distributed. In the long run, however, shifts in economic efficiency and in the location of economic activity tend to undermine and transform the existing political system. This political transformation in turn gives rise to changes in economic relations that reflect the interests of the politically ascendant state in the system. (Gilpin 1975, 43).

This “reciprocal and dynamic interaction” applies to the domestic system, as well as to the international system. Instead of focusing on the influence of the “politically

ascendant state”, as in the above quote, my conception of a domestic system of political economy assumes the build-up of power of the “politically ascendant” element in the *nation*; the politically ascendant element in the nation is the state.

In *The Formation of National States in Western Europe*, Charles Tilly and his co-authors concentrate on the process of the ascendancy of the state that occurred in the early modern period. The state was able to draw on increased resources, and was therefore able to increase in size and scope. Once the state increased in size, it was able to extract even more resources, which allowed the state to grow even bigger. In other words, Tilly et al. are interested in the part of figure 39 in which the economic arena helps the political system, not vice versa.

Tilly stresses the importance of the extraction of resources for the process of war-making which led to the development of the modern nation-state:

Most of the political units which disappeared perished in war. The building of an effective military machine imposed a heavy burden on the population involved: taxes, conscription, requisitions, and more. The very act of building it – when it worked – produced arrangements which could deliver resources to the government for other purposes...It produced the means of enforcing the government’s will over stiff resistance: the army. It tended, indeed, to promote territorial consolidation, centralization, differentiation of the instruments of government and monopolization of the means of coercion, all the fundamental state-making processes. War made the state, and the state made war. (Tilly 1975, 42)

Besides being Tilly’s most famous statement, the significance of the last sentence is that it implies a positive feedback process in the process of state formation. “War made the state” because the state was able to gather more resources, both from its original territory and any territory it conquered; “the state made war” with the extracted resources, which led to a more powerful “state”, which led to more “war”, and so on (Bruce Porter

(1994) bases his book “War and the State” on this cycle, and Ardant and Finer in [Tilly 1985 et al] explore the details of the extraction of resources in early modern Europe).

Douglass North, as seen in Chapter 2 of this study, focused on the second part of the political economic cycle as shown in figure 39: the effect of the political system on the economic system. For North, the advantage of a stronger state in early modern Europe was that it was able to guarantee protection and security. North emphasized security of property rights; I am emphasizing the security of the production process. In either case, the state provides security to the economic system, and the economic system provides resources to the state.

Eventually, because of this coevolution of the state and the economy, the modernizing European states exploded over the entire globe, and reshaped human society in their image. As McNeill stated, “between the fourteenth and twentieth centuries, acceleration of Europe’s capacity to produce wealth became autocatalytic – a self-sustaining process, perhaps best compared to the reaction of an atomic pile when one considers the disruptive consequences of Europe’s increasing wealth and power had for the rest of the world” (McNeill 1992, 121).

The theory of political and economic systems as proposed in this study combines the work of Tilly and North. The element missing from both of their interpretations is the system of production. Tilly assumes a system of production which provides output to the state. North assumes a production system which is being protected by the state. Since their causal sequences both terminate at the production system, they cannot adequately explain the mutually self-reinforcing nature of systems of political economy. Since I have proposed a theory of a system of production, I can more readily establish a theory of

a system of political economy than Tilly and North, even as I use their insights. In addition, since my theory of a system of production involves an explanation of the process of technological change, I am able to better explain long-term historical change than Tilly or North. Tilly, North, and others *assume* the development of the means of production, whereas my theory *explains* economic development and provides a systemic definition of the means of production (that is, as a system of production).

Thus, it is possible to construct a definition of a system of political economy in which both functions, the political and the economic, are modeled as being mutually interdependent. The problem in writing a definition for a system made up of mutually interdependent elements is that writing is a linear form of expression, implying a linear ordering of causation. In a mutually interdependent system, on the other hand, a linear ordering of causation does not exist; instead, a cyclic ordering of causation is in force. Thus, if both elements have equal priority, a system of political economy could be defined in one of two linear ways: first, as a national system which generates control in order to generate goods and services; or 2) as a national system which generates goods and services in order to generate control.

However, if there is indeed a positive feedback loop operating in a system of political economy, then the definition needs to be cyclic, and therefore infinite, or indefinitely long. For instance, using the first definition cited in the above paragraph I could say that a system of political economy is one which generates control within a nation in order to generate goods and services in order to generate control in order to generate goods and services in order to generate control, ad infinitum.



Instead, the following definition is intended to cover the meaning of an infinite cycle, with a minimum of words: *A system of political economy is a system that generates and allocates control over, and generates and allocates goods and services for, a population within a territory through time in a mutually self-reinforcing cycle.* A system of political economy is therefore more than the sum of its two parts, because each part makes the other stronger and stronger, up to a certain stable maximum, for an indefinite period of time. A political system without an economic system would be very short lived, and an economic system without a political system would be very vulnerable.

Approximations to both situations have existed in history. There have been several empires which have been based on exploitation of the subject people's resources, sometimes to the extent of taking most of the food and the people to near-starvation levels; and there have been other cases of civilizations which were thriving economically but were destroyed by invading peoples. This latter process repeated itself several times when the peoples of the steppes swept down into the "Eurasian ecumene", as William McNeill called it, which was composed of the four major civilizations of pre-modern times, the European, Middle Eastern, Indian, and Chinese civilizations (McNeill 1963, chapter 7). Time and again, peoples from the steppes interrupted the development of the Middle Eastern, Indian, and Chinese civilizations (McNeill 1963, chapters 8 and 10), thus giving an eventual advantage to the Europeans. For example, an economic historian argues that the Seljuk Turks, through their overtaxation and sometimes ruthless exploitation, are partly responsible for the decline of the Middle East in the 12<sup>th</sup> and 13<sup>th</sup> centuries (Ashtor 1978, 296-297).

More recently, Hitler's war economy was to some extent dependent on the need to conquer in order to survive. The economies of the exploited peoples, particularly to the east of Germany, were simultaneously destroyed (Kaiser 1990, 377-384). Nazi Germany had a huge productive base of its own, but the needs of the political system became disconnected from the needs of the economic system, both in Germany and in conquered countries. There was no mutually beneficial cycle; all of the benefits went to the state.

In contrast to this predatory behavior, the modernizing early modern polities of Europe were able to establish a positive feedback process between their political and economic systems – although they also exploited and destroyed extra-European societies in the process. Douglass North asserted that the construction of property rights was the key to the growth of early modern nations. Although a full exploration of early modern Europe is beyond the scope of this study, I would like to suggest that several early modern European states became less rapacious than many of their neighbors. These states did not siphon off the entire surplus of the production system, as many other states did. Some states allowed a complete economic system to develop.

A complete economic system has the following elements: 1) A complete set of the twelve production niches as specified in chapter 7, which discussed the production system as a whole; and 2) both a retail/wholesale element in the distribution subsystem, as well as a financial system.

One of the striking features of early modern Europe was the development of sophisticated financial systems (Abu-Lughod 1989; Kindleberger 1993, Chapters 2 and 3). These financial systems developed, I would suggest, because the state allowed pools of surplus capital to exist in independent hands. Without this restraint by the state, along

with the imposition of the rule of law, those pools of resources would not have been available in the first place.

This restraint on the part of the state points to an important aspect of relative rise and fall of nations: The state must *manage* the economic system. The state-as-manager is a concept implied by Douglass North, since he argues that the state must provide protection of property rights. Every economic system is fundamentally shaped by the ways in which the state manages the economic system.

When the early modern states of Europe changed the standard state management practices of the time and allowed complete economic systems to develop, they became much more powerful than they would have otherwise been, because the production systems were able to thrive. I will define a *complete system of political economy* as one in which the state manages the economic system in such a way that a complete economic system exists. A complete system of political economy is composed of a complete economic system and a state which is a competent manager.

The successful preindustrial, early modern European states were able to use the resources generated by their complete economic systems (including advancing technology) to dominate the international system. The other polities of the era did not respond to the challenge of the innovating European states. The other polities did not *adapt*. The other forms of systems of political economy were therefore eventually eliminated. In addition, the technological advantage of the European states in terms of machinery helped them to dominate the international system, especially after the industrial revolution. The explanation of European domination is therefore multicausal; there were both political economic and technological causes. The European nations took

advantage of mutually reinforcing systems of political economy, and they exploited the power imbalances that emerged after they developed more advanced forms of machinery and technology.

Recently, a literature has developed concerning what is called a *national system of innovation* (Nelson 1993; Freeman 1995). Many nations now engage in large-scale support of research and development (R&D). Much of this R&D is provided by independent firms, but governments have become central to research funding. It is assumed in this literature that countries must innovate in order to maintain a leadership position or in order to keep up with leading nations.

Much of this literature seems to equate innovation mainly with the laboratories staffed by scientists; as explained in my chapter on capital (Chapter 8), I consider the entire production system to be an innovation system. In addition, my conception of the capital system has the advantage of being set within the disaggregated structure of a production system, while the articles and books on national innovation usually either aggregate innovational measures or list sectoral spending without any systemic perspective.

Currently, many polities remain incomplete, in political economic terms. Even in the most powerful nations, furthermore, some parts of the economic system are provided by other nations in the form of imports. Completeness, like power generally, is relative.

*A Great Power must have a complete system of political economy, or it will cease to be a Great Power*; this is the first hypothesis about systems of political economy. The implication of this hypothesis is that completeness has an effect on the relative capability

of a Great Power, or any other nation. Therefore, the more niches of a political economy a nation contains, the greater its political economic capability.

This relative completeness is nonlinear. That is, the more elements a nation possesses, the more capability that the addition of one more element provides. This is because the niches of a political economic system form positive feedback relationships with each other, so that the addition of one more element will reverberate within all the other elements. Once *all* niches exist within one nation, that nation will enjoy all of the complementarities that come with a complete political economic system.

### ***Political economic capability***

*Political* capability was defined in chapter 5 as the capability to control a certain population within a certain territory in a particular period of time. The Great Powers were defined as those polities which control the reallocation of territory and population in the international political system. *Military* capability, which is the single most important aspect of political capability, was defined as the capability to project a particular amount of armed force over a particular distance in a particular period of time.

*Great Powers must possess the productive resources necessary to generate a large enough quantity of military power necessary to fight effectively in a war involving all Great Powers.* This is the second hypothesis about systems of political economy.

Paul Kennedy expresses this line of reasoning as the conclusion to “The Rise and Fall of Great Powers”:

It was as clear to a Renaissance prince as it is to the Pentagon today that military power rests upon adequate supplies of wealth, which in turn derive from a

flourishing productive base, from healthy finances, and from superior technology. As the above narrative has shown, economic prosperity does not always and immediately translate into military effectiveness, for that depends on many other factors, from geography and national morale to generalship and tactical competence. Nevertheless, the fact remains that all of the major shifts in the world's military-power balances have followed alterations in the productive balances; and further, that the rising and falling of the various empires and states in the international system has been confirmed by the outcomes of the major power wars, where victory has always gone to the side with the greatest material resources. (Kennedy 1987, 439)

Kennedy's concept of military power is similar to my concept of military capability. His concept of "military effectiveness", on the other hand, is similar to my concept of the power to achieve goals as explained in my chapter on political systems, in Chapter 5 (Kennedy 1987, 198). In other words, according to Kennedy, military power does not always translate into the ability to achieve certain goals, but production power, in general, underlies military power, and eventually military capabilities make the difference between victory and defeat.

Wars involving all Great Powers, as referred to in the second hypothesis, are very rare, but have the potential to drastically change the nature of the international system. Great Power wars can change the set of polities which are Great Powers, and these wars can create internal changes, by changing the nature of the domestic political systems of the Great Powers. In the last four hundred years, the Thirty Year's War, Napoleonic Wars, First World War, and World War II have been wars of this potential. I will refer to these as systemic wars.

For example, in World War II, Germany could have eliminated the Soviet Union as a Great Power, and perhaps Britain as well. The systems of political economy of the conquered Powers would have been changed to match

the Nazi model. Instead, democracy was imposed on West Germany, as well as Japan.

Gilpin ranks systemic wars, which he calls hegemonic wars, as the most important events in the international system: “A hegemonic war is the ultimate test of change in the relative standings of the powers in the existing system. Every international system that the world has known has been a consequence of the territorial, economic, and diplomatic realignments that have followed such hegemonic struggles” (Gilpin 1981, 198).

The capability of the production system to generate military capability is implied by the definitions of economic, political, and military capabilities, and by the logic of production. Economic capability was defined as the capability to generate goods and services, diffuse productive innovations, and move the resulting goods and services a particular distance in a particular period of time. Economic capability is used to create military capability, since military capability depends on the generation of a certain category of goods and services, military production. In turn, military capability is an important component of political capability, and so political capability is indirectly dependent on economic capability. On the other hand, as discussed previously, political capability is used by the state to manage the economic system; therefore, political capability is used to create economic capability.

This causal cycle is diagrammed below:

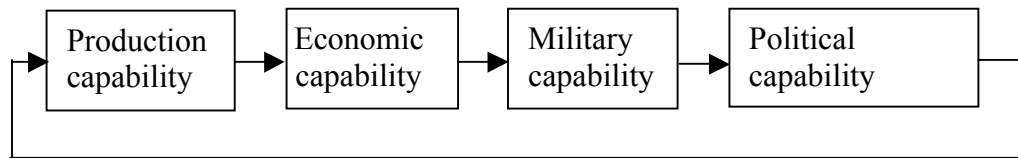


Fig. 40. Cycle of production, economic, military, and political capability.

This mutually beneficial interaction among economic and political forms of capability suggests a definition of political economic capability which is similar to the definition of the domain of political economy. Political economic capability could be defined as the capability to generate goods and services, diffuse productive innovations, move the resulting goods and services for a certain population and control a certain population, all within a certain territory in a particular period of time, in a mutually self-reinforcing cycle.

However, a capability should be a common measure that is shared among all elements. If there is one common measure, then a structure may be determined from the arrangement of elements of different capability. In order to simplify the model of a system of political economy enough to find this common measure, I will search for elements which are common to both of the political economic subsystems, the political subsystem and the economic subsystem.

The political system is based, to a great extent, on military capabilities, and military capabilities are based, to a considerable degree, on material goods



such as military equipment. Military equipment is a form of machinery. Like all other machinery, military equipment is created by other kinds of machinery, and in particular, by reproduction machinery. In addition, reproduction machinery is used to create production machinery, which is used to create final output. Thus, machinery seems to be a common denominator across a domestic system of political economy. In order to explore this concept, I will propose a structure of the domestic system of political economy.

The following diagram shows the domestic system of political economy as a combination of the political and economic systems, without considering military equipment or state management of the economy:

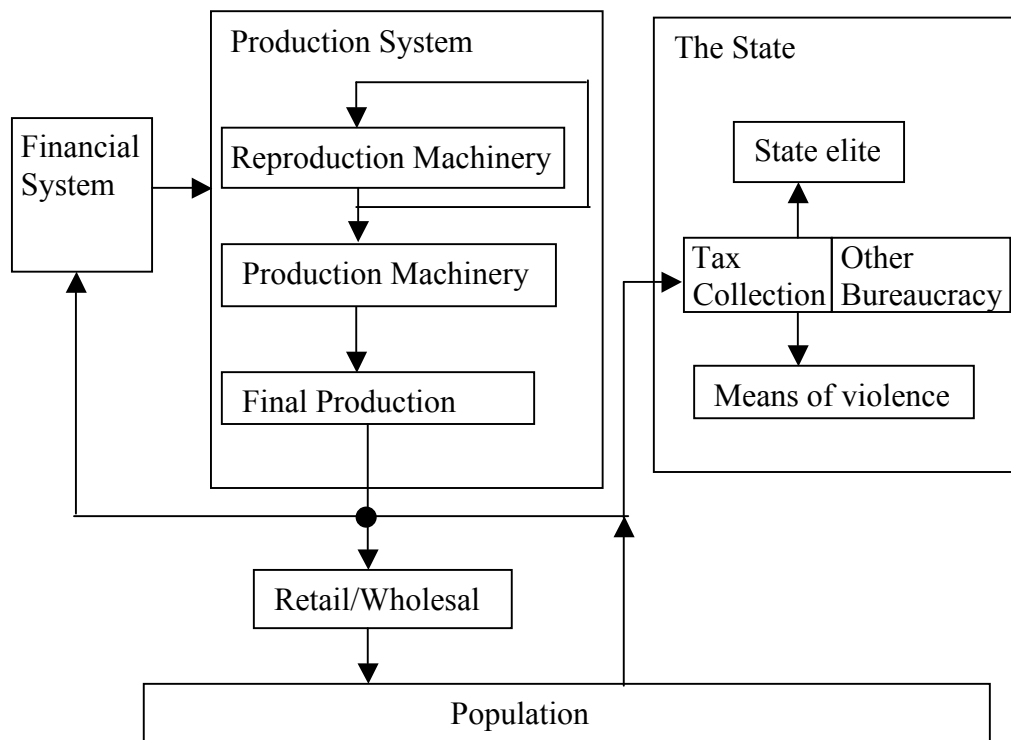


Fig. 41. Structure of domestic system of political economy.

This simplified model of a system of political economy shows some of the flows of goods and services. All elements of this system will be referred to as political economic niches, or simply niches. Like the production system, each element serves a particular function within the system, and therefore each element is similar to a niche as explained in the discussion of economic systems, in chapter 6.

All goods and services originate from the production system. After moving through the intermediary sectors of retail and wholesale, a certain percentage of this output moves to the population. Other parts of the production output are received as input by the financial and tax collection niches. Resources collected as taxes from the production system and from the population are used to provide resources to the bureaucracy (including tax collection), to state elites, and to the means of violence. In the simplified diagram of figure 41, the state returns nothing to the production system, but the financial system directs investment into the production system.

Now I will add the generation of military equipment and state management of the system of political economy:

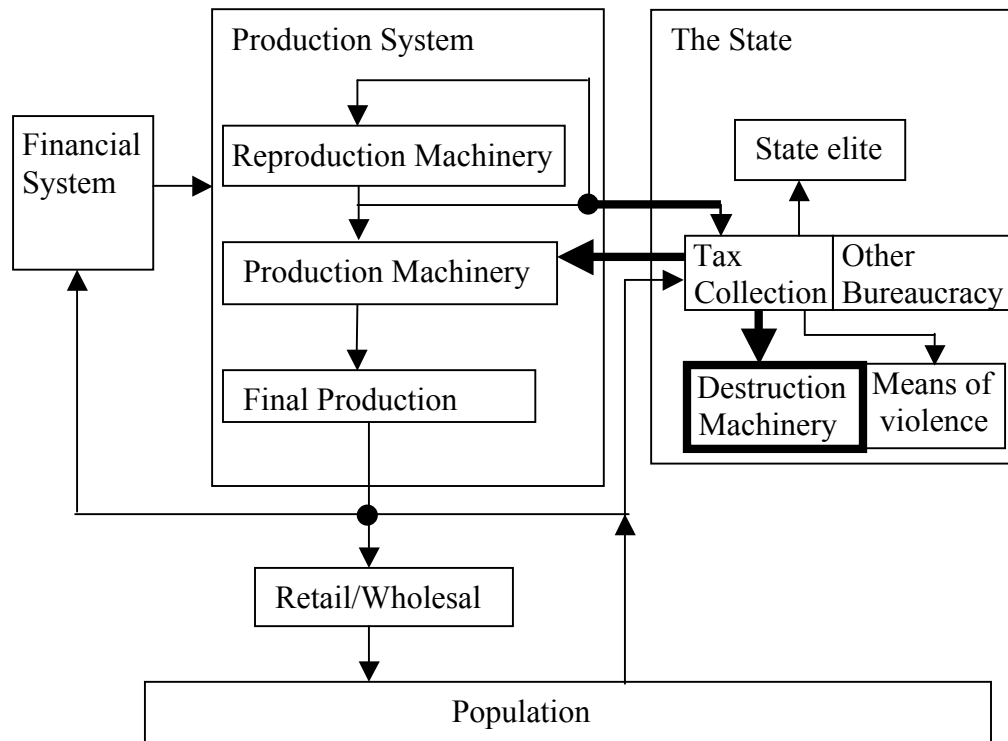


Fig. 42. State interaction with production system

In figure 42, the new additions are shown with thick lines. Reproduction machinery is sent, via tax collection, to a new element in the state system, destruction machinery (this process is shown with a thick arrow from reproduction machinery to tax collection, and then by a thick arrow from tax collection to destruction machinery). Like the production machinery niches, the destruction machinery niche uses reproduction machinery to generate destruction machinery. In return, the state sends a certain amount of resources to the production system in an attempt to guarantee that the production system will be able to fulfill the state's needs, in terms of final production and

reproduction machinery (this is shown by the thick arrow from tax collection to the production system as a whole). This is part of the state management function.

Destruction machinery is the machinery used by the means of violence, both inside and outside the territory controlled by the state, in order to project military power. In the twentieth century these kinds of machinery have included tanks, missiles, fighter jets and bombers, aircraft carriers, and more mundane equipment such as guns and bullets.

Destruction machinery is the negation of production machinery; the purpose of destruction machinery is to destroy goods, services, and people, while the production and population generative subsystems create goods and services and people. Destruction machinery is useful for the protection of generative capabilities because only destruction machinery can repel, or destroy, destruction machinery from other states which threaten destruction of economic assets.

In modern wars, one of the most important military objectives has been to use destruction machinery in order to destroy production and reproduction machinery. For example, discussing the Allied strategic bombing of 1944, Richard Overy concludes that “bombing gradually dismembered the economic body” of Germany (Overy 1995, 125, see also 130-131).

Machines which destroy must themselves be produced. Reproduction machinery is used to produce destruction machinery in the same way that reproduction machinery is used to produce production machinery. Reproduction

machinery is the most important component of the physical capital which exists in the destruction machinery niche. A tank needs machine tools, steel, electricity, and increasingly, semiconductors, in order to be built. Any powerful modern state will have a stake in the performance of its reproduction machinery industries. Since reproduction machinery is so important for military power, the Great Powers that control reproduction machinery control the capability to create military power as well.

*Because of the importance of reproduction machinery for the creation of destruction machinery, and the importance of final production goods and services in order to feed and cloth the armed forces of the nation, the state has generally had a motivation to recycle resources back into the production system.*

This is the third hypothesis about systems of political economy.

In other words, recycling resources is a critical part of the state management function. For instance, much of the development of machine tools was financed by the U.S. Army in the mid-nineteenth century, because the Army was interested in producing guns by using interchangeable parts, which required high quality machine tools (Smith 1985). In the 1950s, the U.S. Department of Defense funded much of the early work on transistors because of their importance for military equipment (Misa 1985). As McNeill has shown, states have a long history of supporting military, and thus reproduction, machinery development (McNeill 1982).

We therefore have the following flow of production within a political economy:

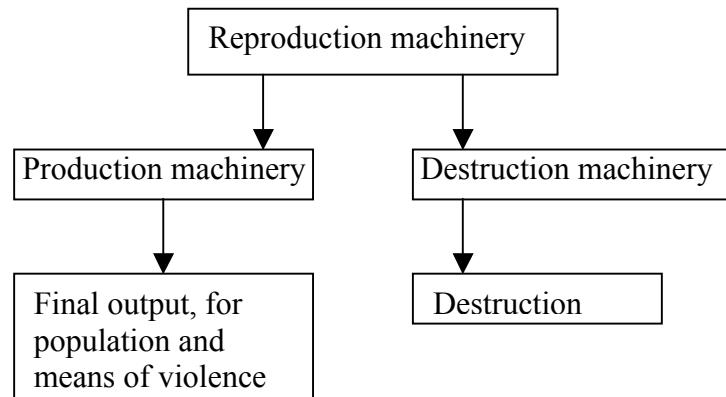


Fig. 43. Flow of production within nation.

Reproduction machinery is the common link between the two subsystems of political economy. Reproduction machinery is used to generate goods and services for the economic system, and to generate the destruction machinery used by the state to control the population within a territory. Final output is used to support the population, and also to support the people who occupy positions in the means of violence.

More generally, reproduction, production, and destruction machinery together form the material basis of a system of political economy. Reproduction machinery and *destruction* machinery are critical to the functioning of the political subsystem. Reproduction machinery and *production* machinery are the basis of the economic subsystem. Since the economic and political subsystems are mutually beneficial and reinforcing, and since the machinery industries are central to the operation of these subsystems, then the logical conclusion is that

the reproduction, production, and destruction machinery niches are mutually beneficial and reinforcing.

Previously I proposed that domestic political economic capability be seen as the capability to generate control and goods and services for a nation. Since machinery is the basis of the capability to *generate control and goods and services*, then another way to define domestic political economic capability is to say that it is the capability to *control and generate reproduction, production, and destruction machinery* within a territory through time. Thus, the term “generate control and goods and services” has been replaced with the term “control and generate reproduction, production, and destruction machinery,” since machinery is what is used to generate goods and services.

A more succinct way of looking at this capability is to describe the control and generation of machinery as the control over the *capital assets* of particular political economic *niches*. Within a niche, there exist various capital assets, in terms of human capital, machinery, physical structure, and natural resources; these are the components of a political economic niche (besides unskilled labor), in order of importance to the generation of political economic capability. Therefore, we can say that a particular niche in the nation has a particular political economic capability based on a common measure, the capital assets of that niche. *Political economic capability is the capability to control the capital assets of a particular political economic niche within a particular nation over a particular period of time.* What is a political economic niche?

## ***The Domestic System of Political Economy***

It was previously observed that the production system is composed of a set of twelve niches, which constitute a set of functions, each of which constitutes a combination of a category and stage of production. Each niche serves a different, but necessary, function within the production system. The wider economic system is also composed of a financial system and a wholesale/retail sector, which are part of the distribution system. In addition, the population exists as a separate entity. Within the political system, the state is a subsystem of the political system, as the production system is a subsystem of the economic system. Each of the state sectors (the state elites, bureaucracy, destruction machinery and means of violence) are on the same level in the hierarchy of domains as the production system niches, financial system, and wholesale/retail sector.



The following is a diagram of the proposed hierarchy of domains, with the domestic system of political economy at the top, consisting of the top four levels:

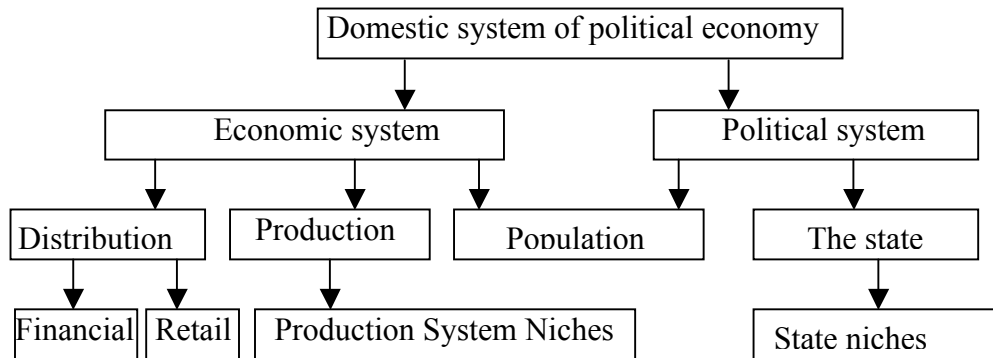


Fig. 44. Hierarchy of domestic system of political economy.

An arrow pointing downward indicates that the lower system is a subsystem of the higher system. In the next chapter on rise and decline (chapter 10), the important elements under discussion will be the financial system, production system, and the state. That discussion will ignore retail and wholesale, thus equating distribution with the financial system. Thus, the domestic system of political economy will be analyzed in the next chapter without the intervening layer of the economic system and the political system.

In terms of understanding political economy at a more general level, however, I will use the lowest level shown in the diagram above, including the financial system, retail/wholesale, the twelve production system niches, the population and the state niches. However, instead of considering the capability of each state niche separately, I will consider the state to be only one political economic niche. The state is hierarchical, and thus any assets that exist in any

part of the state are indirectly controlled by the state elites. By contrast, the other political economic niches are not hierarchically related to one another.

The following diagram shows the political economic niches of a nation:

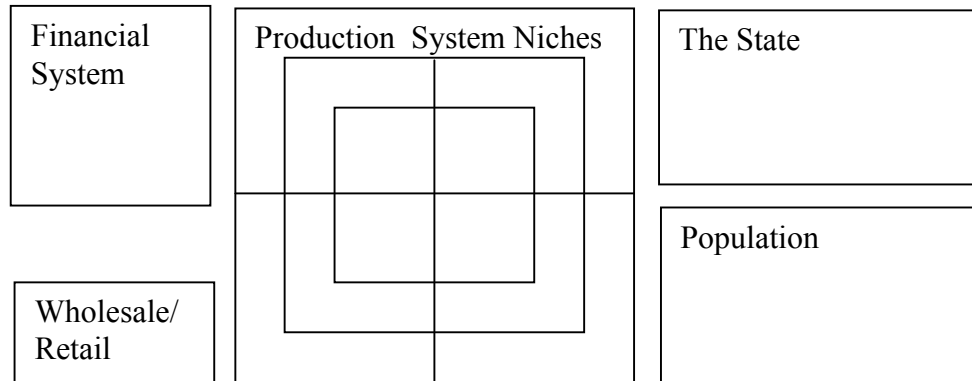


Fig. 45. Niches of a domestic system of political economy (nation).

Each niche fulfills a specific function in the domestic system of political economy. The state is considered as one niche because it is a hierarchy. The state elites have ultimate control over all state capital assets. The main assets of the state are destruction machinery, the reproduction machinery used to create the destruction machinery, and the buildings, offices and transportation equipment used by the bureaucracy, state elites, and enforcement agents. The infrastructure that the state usually builds is categorized according to its appropriate production system niche, even though the state provided the resources. Assets are categorized according to their function, not their source of funding.

Tax revenue is collected in terms of money, but the uses to which taxes are put are manifested in goods and services. As indicated above, the state

takes all of its resources from the production system, either directly from production system niches or indirectly through the financial system or the population. The state's revenue is transformed into salaries for employees, assets, or resources returned to targeted parts of the production system, as shown above.

The word "nation" will be used as shorthand for a domestic system of political economy, and the term "national niche" will refer to a political economic niche. The assets that each national niche contains may be used by the people who either work in that niche or the people who control assets in that niche; one of the main uses of these assets is to influence the members of the state. If some niches have more resources than others, the larger niches will ordinarily have a greater influence within the state.

The final definitions of a system and capability of political economy have been determined. A domestic system of political economy is a system that generates control over, and goods and services for, a population within a territory through time in a mutually self-reinforcing cycle. Political economic capability is the capability to control a certain quantity of capital assets within national niches within a nation. I will also refer to political economic capability as *national power*, since I have defined a domestic system of political economy as a nation, and capabilities are the resources which are used for the projection of power.

## ***Defining Great Powers and International Capabilities***

The discussion of the domestic system of political economy can be used to construct a definition of a system of international political economy and of international political economic capability. The state is always the interface between the international and domestic systems of political economy. Therefore, a discussion of the international system of political economy, or more simply, the international system, must involve the state.

A state, in a modern nation, almost always controls all of the military assets of a nation. This control is not simply a case of formal ownership. As Seymour Melman has shown, for instance, in the U.S., the Department of Defense acts as a central office for the entire military industrial sector. The companies within this military industrial sector are owned by private individuals. But the planning and many of the production decisions that are ordinarily carried out by top management in civilian industries are instead carried out by the Department of Defense elites in the military industrial sector (Melman 1985, Chapter 3).

A state that produces military equipment, therefore, has an initial base of political economic power. That is, the state controls destruction machinery assets, as well as the reproduction machinery assets which produce destruction machinery.

Ultimately, the state can control any assets within its territory. This is because violence, in the short run, is the final arbiter of all disputes. In the long-run, on the other hand, the means of violence are dependent on the means of

production. Unless the means of production can generate the physical assets of the means of violence, the means of violence will eventually become ineffective. But the state, using its means of violence, can always take physical control of any assets within its territory.

Because of this ultimate control by the state, political economic power in the *domestic* arena translates into political economic power in the *international* arena. Any assets that are within the territory controlled by a state can be considered as part of the capability of the state and of the nation in which the assets reside. Even if the assets within a nation are owned by people in different nations, the nation which *contains* the asset can *control* the asset.

This focus on the *territorial*, as opposed to the *personal* location of control is similar to the distinction drawn by national accountants between Gross *Domestic* Product, or GDP, and Gross *National* Product, or GNP. GNP measures the sum of the goods and services produced by firms which are owned by individuals which are citizens of the nation, and includes those produced in other nations which are owned by citizens of the nation being measured. GDP measures the sum of all the goods and services produced within a specific territory of a nation. GDP has become the international standard, not GNP (BEA 1991).

Therefore, international political economic power mirrors domestic political economic power. We can measure the international distribution of political economic power by adding up all of the reproduction, production, and destruction assets within the territory of each nation. This is the most

aggregated measure of international political economic power. This reveals what I will call the *global aggregate distribution* of political economic capabilities.

*The Great Powers of the industrial era have been those nations that among themselves have collectively controlled the change in allocation of territory because the Great Powers are those nations that have controlled, within their territories, the global reproduction, production, and destruction machinery niches.* In other words, the Great Powers control most of the political economic power, or capabilities, of an international system. This control is not total, but the Great Powers collectively have a near-monopoly in these niches. The Great Powers form an oligopoly of these niches. This is the fourth hypothesis about political economy. A succinct historical discussion of this hypothesis will be offered here.

The first industrial nation was Great Britain, which virtually created many categories of machinery, most notably machine tools, steam engines, large-scale iron manufacture, and textile machinery. The two most powerful nations during the eighteenth century and through the Napoleonic Wars were France and Britain. The French Encyclopedia supervised by Diderot shows the sophistication of French production technology in the eighteenth century; Adam Smith used the Encyclopedia as the basis for his famous pin factory example concerning the division of labor (Diderot 1959 [1763]). During this historical period English inventors were taking machinery designs a step further than Diderot.

By the middle of the nineteenth century, when Great Britain was at the height of its power, British machinery output and expertise were clearly superior to all other nations, with the possible exception of the United States. By the end of the nineteenth century, both the United States and Germany were challenging British global dominance, as both the U.S. and Germany came to be important producers and exporters of machinery. Through World War I and the 1920's, the United States, Germany, and Britain, in that order, dominated the world market in reproduction and production machinery (Herrigel 1989 and League of Nations 1927). This dominance translated into a near-monopoly of production of military equipment in World War I.

By the 1930s the long-term industrial development of Japan was resulting in significant machinery output for that nation, and the harrowing short-term industrial development of the Soviet Union was setting the stage for the conflict of five Great Powers during World War II. As in World War I, the Great Powers produced virtually all military equipment in World War II (League of Nations 1945 and Hillmann 1952).

By the 1950s, Great Britain's long presence as one of the elite of the machinery-making nations came to an end, as did her global political influence. In the 1960s, Germany and Japan regained their position, so that four nations controlled the bulk of machinery output through much of the 1980s: the United States, Soviet Union, Japan, and Germany (Economic Commission for Europe, Various Issues).

During the 1980s, the Soviet production of machinery collapsed along with its political system. Germany continues to dominate machinery production on the European continent, but Italy and France have made the global region of the Euro perhaps the largest machinery production area by the turn of the millennium. Japan also continues to be a major competitor, and despite growth of total production, the U.S. economy is declining in terms of machinery production.

The Statistical Appendix to this study will examine data concerning machinery throughout the twentieth century in greater detail. The main finding of the appendix is that three or four countries, which can be identified as Great Powers, have consistently controlled approximately two thirds of the global production of most classes of machinery.

Thus, a *prima facie* case to be made that: 1) Great Powers control the reallocation of territory among nations; 2) they control the production of the most important types of machinery in terms of political economic power; and 3) they are also effective in fighting systemic wars. Great Powers contain states that control the territories which contain *global* production system niches. Great Powers therefore have a near-monopoly of the niches which have the greatest causal capability within a production system, the machinery niches.

In a previous chapter I claimed that the machinery niches within an economic system had a greater causal capability to enable economic growth than other niches. The largest possible economic system is the global economic system, covering the whole world. Like a domestic economic system, it has



various niches, all of which must be present in order for the system to operate efficiently. A diagram of the global production system niches could indicate the percentage of assets controlled by particular nations for particular niches, or it could simply show, in money terms, the aggregate assets for particular global niches.

Those countries or sets of countries that control most or all of the assets of a niche have a near-monopoly on the political economic power contained within such a niche. The closer the niches are to reproduction machinery niches, the more political economic power a nation possesses.

The Great Powers have controlled the capability of other countries to change or maintain their level of output because Great Powers have controlled the production of the capital assets used to generate output. For example, if country A produces the machinery that country B uses to produce output, then country A controls the capability of country B to generate output, in the long-run. In other words, when country B imports machinery, the state of country B potentially controls the imported machinery since the imported machinery is now within the territory of the state of country B. However, the causal capability to change output lies with country A, not country B. The machinery-producing country controls the rise and decline in political economic capability of the machinery-importing country for three reasons: 1) the machinery-producing country can choose not to export to the importing country; 2) the importing country is dependent on the exporting country for technological changes; and 3) all machinery eventually depreciates and become unusable, and

so the importing country, in the long-term, is dependent on the exporting country for the maintenance and existence of its final production niches.

This situation is shown in the following diagram:

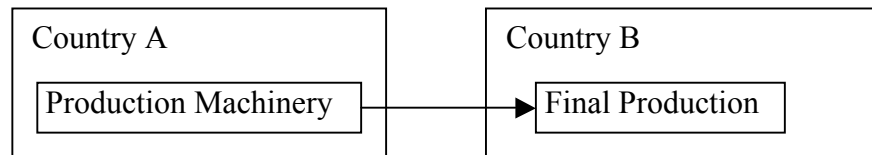


Fig. 46. Production machinery dependence.

The production machinery niches of Country A provide the production machinery which is used by the final production niches of Country B. Country A controls the production machinery niches of Country B, since Country A contains the capital assets which are used to produce the production machinery that is used to create final production in Country B.

Since the Great Powers control the reproduction, production, and destruction machinery niches within the global economy, they also control the long-term capability of all nations to produce and distribute output. Previously I claimed that there are three stages of production, from reproduction machinery to production machinery to final production. To return to my example, if the final production niches of country B are dependent on the production machinery niches of country A, then country A has potential political economic power over the final production niches of country B.

If country B imports the output of the final production niches of country A, then it can be said that the final production niches of country B are *controlled*

by country A. Country A controls the capital assets which produce the final output for country B. This is a different situation than the previous example, in which Country B imported the machinery from country A, in which case country A only had the power to control the *change* in the final production niches of country B.

The following diagram shows this state of affairs:

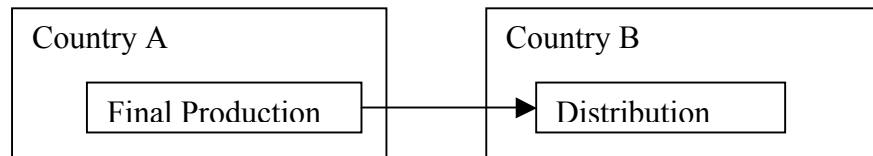


Fig. 47. Final production dependence.

Country A produces the goods and services which are then distributed in Country B.

When country B imports, for example, all of its automobiles from country A, then it can be said that country B has an automobile sector – but the automobile political economic niche (that is, the capital assets of the automobile industry) reside in the territory of country A. Similarly, if country B imports all of its machine tools from country A, it can be said that country B has a reproduction machinery niche – but that that niche is positioned within the space of country A, in terms of capital assets. If, however, country B does not even import reproduction machinery, because it produces no production machinery, then it can be said that country B has *no* reproduction machinery niches.

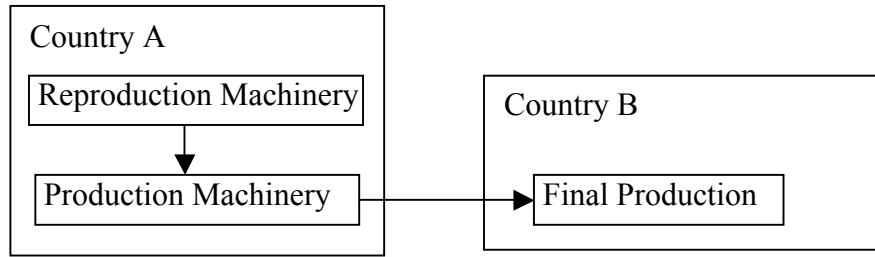


Fig. 48. Reproduction machinery powerlessness.

In figure 48, Country B has no reproduction machinery niches, its production machinery niche resides in Country A, and the capability to change the final production niches of Country B is controlled by Country A.

For example, many East Asian countries produce goods which are exported elsewhere, particularly to the United States. These countries use production machinery equipment for their final production niches which are imported, mainly from Japan. The production machinery niches of these east Asian nations therefore reside in Japan, since they import all of these machines from Japan. Since they do not produce production machinery, they have no reproduction machinery niches. These Asian nations contain final production niches within their territory, but since Japan produces the production machinery of these niches, Japan controls the change in the capital assets of the final production niches.

On the other hand, in so far as these east Asian nations produce all of the goods for various industries in the United States, these nations control such American industries. These east Asian nations hold a certain amount of political economic power over the United States, but the Japanese hold a much greater

amount of political economic power over the east Asian countries, since the Japanese control the machinery niches, which hold greater causal capability than the final production sectors.

In general, if a nation imports the output of a niche, the importing nation can be said to *contain* the corresponding niche, but the exporting nation *controls* the importing nation's niche, because the exporting nation contains within its territory the capital assets used to create the output of that niche. Since capital assets are the measure of political economic capability, the exporting nation has political economic capability, or power, over the importing nation's niche. The focus is on which nation *produces* the output, not which nation *uses* the output. The user, in my model, is dependent on the producer, and has less power, in political economic terms, than the producer.

The same considerations apply to military equipment. Since most countries received their military equipment from the U.S. or U.S.S.R. during the Cold War, and since the superpowers controlled the capital assets which generated those military machines, therefore, according to my definition, the superpowers controlled the destruction machinery niches of most of the countries of the world. This control gave the U.S. and Soviet Union tremendous international political economic power.

Financial assets can be translated into control over particular classes of machinery. Much of the importance of international flows of investment capital is that such flows are translated into machinery and physical structures which nations can use to produce goods and services. Thus, by restricting the focus of

international power to machinery, the most important aspects of financial flows can also be captured, and financial assets do not have to be considered separately from other capital assets.

The three sets of political economic machinery niches – reproduction, production, and destruction – have an ordering of causal capability. This ordering can be used to further differentiate levels of power among nations.

Reproduction machinery niches are the most important machinery niches for three reasons. First, these classes of machines are used to make the production machinery which is used to make final production. Second, reproduction machinery is used to make destruction machinery. Third, as argued earlier, the reproduction machinery stage has the greatest capability to encourage technological change of any part of the economic system.

Production machinery industries are more important than destruction machinery industries for three reasons. First, production machinery creates final production for the population, including the people within the state and the members of the military establishment, as was pointed out above. A large part of the prosecution of a war has always involved the supply of goods to military personnel, and this supply has always been dependent on the final production niches of the belligerent countries (Van Creveld 1977). If a warring country is dependent on another country for its supplies, the supplying country has considerable power over the warring country.

The second reason that production machinery is more important as a determinant of political economic power than destruction machinery is that, as

discussed above, a nation producing production machinery may have political economic power over a nation which imports from the producer of production machinery. In addition, the existence of production machinery niches within a particular nation means that other nations do not have this aspect of political economic power over the nation possessing production machinery sectors.

Third, technological developments in production machinery usually have a greater use in the destruction machinery sectors than vice versa (Melman 1983, chapters 8 and 13, Melman 1985, chapter 5, Alic et al. 1992). The use by civilian industry of military research is referred to as *spin-off*. Much research that is considered spin-off is actually research concerning reproduction and production machinery that has been financed by the military. As suggested in hypothesis 3, the state has an interest in supporting the production system. Much of the research classified as military is actually devoted to general technologies of production.

For the purposes of understanding the relative importance of various parts of the system of political economy, the source of resources is not as important as the niche which is being improved by the research. Important technologies which are considered spin-off, such as computers and machine tools, have often been part of reproduction machinery niches, since reproduction machinery is used to create destruction machinery. That same reproduction machinery can also be used to create production machinery. Breakthroughs in certain kinds of military equipment, such as tanks, is rarely applied to final production.

The spin-offs that become available to the nonmilitary sectors of the nation could have usually been obtained much more efficiently if the resources had been targeted directly to the civilian sectors. In other words, the opportunity cost of research in the military sectors is high, because the funds and human capital workers used in the military sectors have been diverted from possible civilian uses.

Thus, production machinery industries serve a number of purposes for the increase of national power. Destruction machinery industries, on the other hand, serve only one purpose, to help the nation create military power, which is also critical for national power. Economic and political economic power are differentiated largely by the addition of the capital assets of military production to the latter. Economic capability involves just reproduction and production machinery, while political economic capability involves reproduction, production, *and* destruction machinery.

Thus, *there is a distribution of political economic causal capability within the machinery sectors of the nation, from reproduction machinery niches to production machinery niches to destruction machinery industries, respectively.* This is the fifth hypothesis about systems of political economy. This ordering of causal capability is also reflected within the international system of political economy. Nations which control reproduction machinery industries are at the apex of international political economic power.



## ***The International System of Political Economy***

The international system of political economy can therefore be defined as the generation and allocation of domestic political economic niches, in terms of capital assets, among the nations of the system. Because political economic capabilities have been defined in terms of capital assets, and since capital assets are the means by which the various capabilities of the niches are generated, the international system of political economy can be said to *generate* niches.

International systems of political economy also *allocate* political economic niches among nations, as has been discussed above in reference to the control of machinery niches by Great Powers. Thus, my theory of systems of political economy is useful for understanding the detail of relations of power among particular nations, in terms of the kinds of goods that are produced, exported and imported. For instance, the discussions that have occurred over the unequal terms of trade between countries trading mainly natural resources and countries trading manufactured goods can be understood within the context of my system of political economy. Resource-providing countries control a particular kind of asset, natural resources, but these capital assets confer relatively little political economic power on the states of those countries, while for the machinery manufacturing countries the terms of trade are greatly in their favor because of the importance of machinery. Resource-providing countries often do not even control their own final production niches, in the cases in which they import most of their goods.

My system of political economy can also be used to explain the scholarship associated with Immanuel Wallerstein's concept of the World System (Wallerstein 1974, Chapter 7). According to Wallerstein, there are three tiers of power in the world-system, reflecting "a hierarchy of occupational tasks, in which tasks requiring higher levels of skill and greater capitalization are reserved for higher-ranking areas" (Wallerstein 1974, 350). The most powerful, called the core-states, control most of the surplus generated in the global economy. While Wallerstein conceives of core-states as controlling surplus that emanates from an assumed production system, my equivalent to Wallerstein's concept of core-states is the concept of Great Powers – the countries which control machinery production.

Unlike Wallerstein's theory, my theory explains why the most powerful states change in levels of power, and gives a clear measure of how power is distributed. Wallerstein's second tier, which he calls the semi-periphery, has been particularly difficult to define. In my theory, a semi-periphery can be defined as the nations such as the ones I discussed in east Asia – they contain final production niches, but they import their machinery. Finally, Wallerstein's periphery can be seen to be equivalent to those countries which only provide natural resources to the other two tiers, and do not even control production machinery, because they import final production goods.

My theories are a useful addition to Wallerstein's because Wallerstein, like many neo-Marxist writers (see Arrighi 1994 and Chase-Dunn 1989), does not seriously consider production as a system. For these scholars, in fact,

finance seems to be virtually the entire focus of their discussion of the economy. Technological changes, and the operation of production systems, is left out of their accounts. As a consequence, change is exogenous for World Systems writers. In my theories, change is largely an endogenous set of processes.

Instead of discussing terms of trade or semiperipheral or peripheral countries, however, the central focus of this study is the role played by the Great Powers in the international division of labor. The division of labor is defined in terms of the production system, and in particular, in terms of the stages of production (that is, the reproduction machinery, production machinery, and final production stages).

The Great Powers, for the most part, control both the change in the reproduction machinery niches of all nations and the output of the reproduction machinery niches, because the Great Powers control most of the production and destruction machinery industries. Since reproduction machinery is only used to make production and destruction machines (besides more reproduction machines), if non-Great Powers are not making production or destruction machinery, then non-Great Powers are not using reproduction machinery. Therefore, only Great Powers tend to have reproduction machinery niches, and therefore Great Powers control these most critical classes of machinery.

Thus, at least in the industrial age, territory is not as important as control over capital assets. Capital assets such as reproduction, production, and destruction machinery, are used to control territory, and therefore political economic power is more important than political power.

By using the concepts of political systems and economic systems to form a new, higher domain of political economy, various properties emerge which were not evident in the discussion of political or economic systems. First, the role of destruction machinery has been included as an element in the system. Destruction machinery requires production, which is an economic system function, and destruction machinery is used to control territory, which is a political system function. Thus, destruction machinery straddles both systems, and therefore can only appropriately be understood within the context of a discussion of political economy.

Second, the state, an element in the political system, survives with the resources of the production system, part of the economic system. A full understanding of the state is not possible without considering the state as an element in a system of political economy.

Third, the national control of niches of a production system has ramifications for international behavior, because nations use control of other nation's niches in order to exert influence. Finally, as I will explain in the next chapter, political economic processes are important for understanding international dynamics and relative rise and decline of nations.

There are three ways of characterizing political economic capabilities, from the most aggregated to the least aggregated. At the highest level of aggregation, the capital assets of each nation are combined to form one number representing that nation, and the global aggregate distribution of capabilities is determined from the relative sizes of the capital assets of each nation. However,

it may be difficult to form this one measure. The easiest measure would be to add the money value of all reproduction, production, and destruction machines, either together or separately. Another measure would be to count all engineers, scientists, and skilled production workers, in order to compare relative levels of human capital. Finally, an inventory of natural resources could be attempted, although such a measure would be much less important than machinery or human capital measures.

The advantage of aggregating political economic capabilities at the highest level is that the processes of snowballing accumulation of power and balance of power in the international system can be more easily explained. This task will be taken up in the next chapter.

At the next level, involving global niches, the share of each nation in each global production niche can be determined, considering the global economy as one economic system. The advantage of this approach is that the Great Powers are discernable as those nations that control the first two stages of global production, reproduction machinery and production machinery, and as those nations that also control the global destruction machinery niche.

Finally, at the national niche level, the control by a particular nation over an amount of capital assets in a particular niche of a particular nation (including itself) can be measured. The ability of other nations to change the niche can be measured by adding up the assets used in the niche which are imported from other countries. The actual control of the niche can be determined by measuring the imports from other countries into the particular national niche. The

advantage of this approach is that relations of power between and among various specific nations can be ascertained, which can be particularly useful for an historical narrative.

Thus, there are aggregate, global niche, and national niche methods of measuring political economic capabilities. The fundamental level is the national niche level, that is, the amount of capital assets controlled by a particular nation over the particular niche of a particular nation. This level is fundamental because the other two measures can be considered aggregations of the national niche level. Depending on the phenomena to be discussed, the appropriate measure can be chosen.

The domestic system of political economy and the international system of political economy have been defined. Political economic capabilities and power have been defined, and three measures of the distribution of political economic power among the nations of the international system have been proposed. I now turn to the processes of rise and decline which are a part of the domestic and international systems of political economy.