

# REVIEW

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# The Stratification of the World-Economy:

## An Exploration of the Semiperipheral Zone\*

*Giovanni Arrighi*  
*Jessica Drangel*

### I. Statement of the Problem

*I.1.* One of the most striking features of the world-economy is the existence of a significant number of states that seem to be permanently stationed in an intermediate position between “maturity” and “backwardness,” as modernization theorists would say, or between “center” and “periphery,” as dependency theorists would say. By way of illustration, one may think of some Latin American states, such as Argentina, Chile,

\*This article was prompted by questions raised in the Research Working Group (RWG) on Semiperipheral States and in a previous project on the Political Economy of Southern Europe, both at the Fernand Braudel Center. The latter project was mainly concerned with political change in Southern Europe. Its results have been published elsewhere (Arrighi, 1985a). The RWG on Semiperipheral States was formed three years ago and has been concerned with the social and political economy of developmental processes through an examination of selected case studies. Its results will be published in a book in 1987. At this time of writing this article, the countries analyzed by and the persons involved in the RWG were the following: Argentina (Roberto P. Korzeniewicz), Chile (Miguel Correa), India (James Matson), Israel (Beverly J. Silver), Italy (Giovanni Arrighi), Mexico (Jessica Drangel), Poland (Ravi

Mexico, and Brazil; of South Africa; and of most Southern and Eastern European states, including the U.S.S.R.

In the course of the twentieth century, all these states have experienced far-reaching social and economic transformations, often associated with political convulsions. Yet in important respects they have failed to "catch up" with the select group of states that, at any point of time, have set the standards of status and wealth in the world-system. From this point of view, and taken as a group of states, their position today appears to be as intermediate as it was 50 or perhaps even 100 years ago.

The existence of a relatively stable intermediate group of states is at variance with the expectations of modernization and dependency theories alike. According to modernization theory, intermediate positions are temporary because they are *transitional*: States come to occupy intermediate positions on their way from backwardness to modernity. In contrast, according to dependency theory, intermediate positions are temporary because they are *residual*: The polarizing tendencies of the world-economy will ultimately pull states in intermediate positions toward the center or toward the periphery. Starting from different, indeed opposite premises, modernization and dependency theories thus agree on the essential instability of intermediate positions.<sup>1</sup>

I.2. These views have been implicitly or explicitly challenged in the 1970's by theories that came to emphasize the impor-

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Palat), Portugal (Carlos Fortuna), South Africa (William G. Martin), Taiwan (Dennis Engbarth), and Turkey (Eyüp Özveren). We are indebted to all the participants in the RWG as well as to Immanuel Wallerstein and Brian Van Arkadie for stimulating discussions, comments, and criticisms at various stages of preparation of the article. Special thanks are due to Bill Martin and Beverly Silver for detailed comments on an earlier draft, to Bill Davis for computer assistance, and to Roberto Korzeniewicz and Trevor Abrahams for help in the elaboration and presentation of data.

1. These tendencies are still evident in more recent studies. Thus, on the one hand, Rostow (1978: 561, *et passim*) stresses the national uniqueness of cases of stagnant economic growth. On the other hand, Amin (1982: 168, 196, *et passim*) argues that polarization is immutable, and that semi-industrialized countries face a bleak economic future.

tance of intermediate positions. Mostly presented as qualifications and elaborations of dependency theory, some began to conceptualize intermediate positions between center and periphery by defining "subimperial" states (Marini, 1969) or "go-between nations" (Galtung, 1972). Other theories acknowledged the possibility that development in general and industrialization in particular might occur within states while still reproducing a structure of dependence (Cardoso & Faletto, 1979).

These important qualifications and elaborations of dependency theory contain two main shortcomings. In the first place, they are too narrowly focused on a special case, that of the "dependent" or "subordinate" state epitomized by certain Latin American countries. This focus leaves out of consideration some of the most significant instances of intermediate socio-economic status—first and foremost the U.S.S.R., which, far from being dependent or subordinate, is one of the two world superpowers. And, conversely, it may lead one to include among intermediate states countries (such as Canada) that have in all respects attained core status but present features of "structural dependency."

In the second place, the theories in question, while couched in a world-systems perspective, focus on individual states as they come to occupy intermediate positions or as they experience "dependent development." This leaves the analysis open to various kinds of "fallacies of composition" in the sense that what is found to be true for individual states may not be true for groups of states.

*I.3.* Building upon these previous theorizations, Wallerstein's concept of semiperiphery was introduced precisely to avoid these shortcomings. The details of the concept will be critically examined in the second part of this article. For now, suffice it to say that Wallerstein follows dependency theorists in assuming a world-economy structured in core-periphery relations. These relations, however, do not link national or regional economies, as in most versions of dependency theory, but economic activities structured in commodity chains that cut across state boundaries. Core activities are those that command a large share of the total surplus produced within a

commodity chain and peripheral activities are those that command little or no such surplus.

All states enclose within their boundaries both core and peripheral activities. Some (core states) enclose predominantly core activities and some (peripheral states) enclose predominantly peripheral activities. As a consequence, the former tend to be the locus of world accumulation and power and the latter the locus of exploitation and powerlessness.<sup>2</sup>

The legitimacy and stability of this highly unequal and polarizing system are buttressed by the existence of semi-peripheral states defined as those that enclose within their boundaries a more or less even mix of core-peripheral activities. Precisely because of the relatively even mix of core-peripheral activities that fall within their boundaries, semi-peripheral states are assumed to have the power to resist peripheralization, although not sufficient power to overcome it altogether and move into the core.

These assumptions hold for groups of states (core, semi-peripheral, peripheral) not for individual states:

Over time the loci of economic activities keep changing. . . . Hence some areas "progress" and others "regress." But the fact that particular states change their position in the world-economy, from semiperiphery to core say, or vice versa, does not in itself change the nature of the system. These shifts will be registered for individual states as "development" or "regression." The key factor to note is that within a capitalist world-economy, all states cannot "develop" simultaneously *by definition*, since the system functions by virtue of having unequal core and peripheral regions (Wallerstein, 1979: 60-61; emphasis in the original).

According to this conceptualization, the relative importance of each stratum or group of states remains more or less constant throughout the history of the capitalist world-economy (Hopkins & Wallerstein, 1977: 129). This stable three-tiered structure of the world-economy is in turn assumed

2. Wallerstein's thoughts on the semiperiphery are scattered in books and articles published over the last ten years. The most important articles can be found in Wallerstein (1979 and 1984) and the most recent formulation in Wallerstein (1985).

to play a key role in promoting the legitimacy and stability of the system.<sup>3</sup>

In this article we shall be exclusively concerned with the claim that intermediate states constitute a distinct structural position of the world-economy. We shall investigate whether three distinct structural positions of the world-economy can be empirically identified, and whether the relative importance of each stratum has actually remained more or less constant, not over the whole history of the world-economy, but over the last 45 years.

*I.4.* Even so delimited, the problem has no easy solution. Wallerstein's suggestions on how to identify the semiperipheral zone are not too helpful. In an early writing on the topic, he answers the question, "How can we tell a semiperipheral country when we see one?" by providing two criteria: one, "[in] a system of unequal exchange, the semiperipheral country stands in between in terms of the products it exports and in terms of the wage levels and profit margins it knows"; and, two, "[the] direct and immediate interest of the state as a political machinery in the control of the market (internal and international) is greater than in either the core or the peripheral states" (1979: 71, 72).

In a later writing, we are told that the semiperiphery

includes the economically stronger countries of Latin America: Brazil, Mexico, Argentina, Venezuela, possibly Chile and Cuba. It includes the whole outer rim of Europe: the southern tier of Portugal, Spain, Italy and Greece; most of Eastern Europe; parts of the northern tier such as Norway and Finland. It includes a series of Arab states: Algeria, Egypt and Saudi Arabia; and also Israel. It includes in Africa at least Nigeria and Zaire, and in Asia Turkey, Iran, India, Indonesia, China, Korea and Vietnam. And it includes the old white Commonwealth: Canada, Australia, South Africa, possibly New Zealand (Wallerstein, 1979: 100).

It is immediately clear that this long list of states (accounting for something on the order of two-thirds of world population)

3. This is an additional assumption that concerns the function of the semiperipheral zone and that is neither necessary nor sufficient to account for its existence.

is not based on the two criteria given above. It includes states that (1) export the most diverse kind of products, (2) are characterized by the most diverse wage levels (and, in as far as we can tell, profit margins), and (3) pursue the most diverse policies toward the internal and world markets. As a matter of fact, the list simply includes all states that seem to occupy an intermediate position in the world-economy from the point of view of *either* their income levels *or* their power in the interstate system. The connection between such positions and the structure of the world-economy, as spelled out in the concept of semiperiphery, is completely lost, and the list could have been drawn up without any reference to such a concept.

It is no wonder that even sympathetic scholars who have tried to use the concept of semiperiphery complain about its ambiguities and lack of operationality. Thus, Milkman, who welcomes the concept as “a long overdue improvement over the two-category schemes still prevalent in much of the theorizing about international relations, finds it “one of the weakest and most ambiguous components of Wallerstein’s framework” (1979: 264). And Evans, who uses the concept to situate his “Brazilian model,” frankly admits that “[until] the idea of the ‘semi-periphery’ has been specified theoretically and the characteristics of ‘semi-peripheral’ countries have been better elaborated, using the term is primarily a way of asserting that there is a distinct category of countries that cannot be simply considered ‘peripheral’ and yet are structurally distinguishable from center countries” (1979: 291).

This is a minimal use of the concept of semiperiphery which does not do justice to its innovative thrust and the richness of its theoretical and practical implications. We shall therefore take up Evans’s challenge to specify further theoretically and to operationalize the concept in question. We shall begin, in Part II, by restating and elaborating Wallerstein’s conceptualization of the semiperiphery. In Part III, we shall derive from this revised conceptualization operational criteria for the empirical identification of the three zones of the world-economy. As it turns out, the application of these criteria to data covering the period 1938-83 allows us not only to identify the three zones in

question, but also to observe some interesting patterns of development of the world-economy as a whole and of each of its zones. The fourth and concluding part of the article will briefly outline the main theoretical implications of these findings and the work that remains to be done.

## II. The Concept of Semiperiphery

### *II.1.* It has been remarked that

The concept of semiperiphery remains a prisoner of the ambiguity of its usages. For it refers us back to two different definitions, without really reconciling them. One is economic: the semiperiphery is located in space and covers those regions where the sum of "surpluses" coming in and going out hovers around the zero point. This suggests an intermediate situation in the hierarchy of the world-economy, linking a negative balance with the "core" and a positive one with other, less advanced countries . . . . The other definition is political. It emphasizes the voluntary action of states to improve the relative position of their countries by accepting competition but by pursuing a policy of catching-up (Aymard, 1985: 40).

This ambiguity is compounded by the fact that the term "semiperiphery" is sometimes used to suggest an intermediate position in the hierarchy of the interstate system. A confusion between the position of a state in relation to the world division of labor and its position in the interstate system, for example, underlies Wallerstein's long list of semiperipheral countries referred to in Part I. It shows up more spectacularly in Chirot's claim that, since complete decolonization has reduced the power differential between core and peripheral states, formal sovereignty has eliminated the periphery, and the countries of Asia, Africa, and Latin America can now be categorized as semiperipheral (1977: 148, 179-81).

To avoid these ambiguities, we shall use the term "semiperiphery" exclusively to refer to a position in relation to the world division of labor and never to refer to a position in the interstate system. In doing this, we do not imply that command in the economic and the political world arenas are not closely



interrelated. On the contrary, we want to emphasize that the separation of the two types of command is a peculiarity of the capitalist world-economy (as opposed to world-empires) that must be subjected to close theoretical and empirical scrutiny rather than assumed away by postulating their identity (see II.5, below).

*II.2.* As we turn to the dichotomy core-periphery, through which world-systems theory defines the structure of the world-economy, we are faced with more ambiguities. The dichotomy is meant to designate the unequal distribution of rewards among the various activities that constitute the single overarching division of labor defining and bounding the world-economy. All these activities are assumed to be integrated in commodity chains.<sup>4</sup> These chains can be analyzed from two distinct points of view. One is that typical of classical economics as well as of its Marxian critique. It focuses on the distribution of the total product among labor incomes, property incomes, and a residual that can be referred to as “pure profit” or entrepreneurial income. The other is that typical of world-systems theory. It focuses on the distribution of the total product, not among factors of production, but among the various nodes of the commodity chain (“economic activities”)—each consisting of a combination of different factors of production.

Classical economists (and Marx) purposefully brushed aside (mainly through the assumption of pure competition) the inequality of rewards accruing to different units of the same factor of production as they seek remuneration in different kinds of activity. World-systems theory puts at the center of its conceptualizations precisely what classical economists had brushed aside. In doing this, however, it has retained the term “surplus” (through which classical economists designated non-

4. “Take an ultimate consummable item and trace back the set of inputs that culminated in the item—the prior transformations, the raw materials, the transportation mechanisms, the labor input into each of the material processes, the food inputs into the labor. This linked set of processes we call a commodity chain” (Hopkins & Wallerstein, 1977: 128).

labor incomes) without clearly defining its meaning in the new theoretical construction.

In our view, the use of the term “surplus” is neither necessary nor helpful in defining core-periphery relations. All we need is to assume that economic actors (irrespective of whether they seek a remuneration for labor-power, assets, or entrepreneurial energies), far from accepting competition as a datum, continuously endeavor to shift, and some succeed in shifting, the pressure of competition from themselves onto other actors.<sup>5</sup> As a result, the nodes or economic activities of each and every commodity chain tend to become polarized into positions from which the pressure of competition has been transferred elsewhere (core-like activities) and positions to which such pressure has been transferred (peripheral activities).

It follows that aggregate rewards in peripheral activities will tend to approach levels of remuneration that are only marginally higher than what the factors of production engaged in them would collectively fetch outside the overarching world division of labor. In contrast, aggregate rewards in core-like activities will tend to incorporate most if not all of the overall benefits of the world division of labor.<sup>6</sup> Whether or not the rewards of each class of factors of production (wages, rents, and profits), as opposed to aggregate rewards, are higher or lower in core or peripheral activities is a different issue. It

5. This was indeed the spirit of the original formulations of the center-periphery dichotomy by Prebisch and his associates (United Nations, 1950; Prebisch, 1959). This formulation, however, did not take into sufficient account the dynamic and long-term aspects of the relationship. See Hopkins and Wallerstein (1977: 115-16) and II.3. below.

6. We may choose to use the term “surplus” as a short-hand designation of the differential between the total product of a commodity chain and the total rewards that would accrue to factors of production if they were remunerated at the rates obtaining in peripheral activities. If we do so, we can say (as we did in section I.3. above) that core activities are those that command a large share of the total surplus produced within a commodity chain and peripheral activities are those that command little or no such surplus. We must, however, be aware that, conceptually, this notion of surplus is quite distinct from that of surplus-value used by Marx and the classical economists to designate property and entrepreneurial incomes.

depends on how aggregate rewards are distributed between wages, rents, and profits within each activity.

To determine this, we need additional assumptions and hypotheses that do not pertain to the definition of core-peripheral activities. We may assume that profits absorb the entire differential between the rewards of core and peripheral activities, in which case wages and/or rents will be the same in both kinds of activities. Or we may assume that wages and/or rents absorb the differential, in which case profits will be the same in core and peripheral activities. Only under a most restrictive set of assumptions can we take, as Wallerstein (1979: 71; 1984: 16), Chase-Dunn (1984: 87), and others suggest and do, the level of wages (or of profit) as a criterion for distinguishing core and peripheral activities. This restrictive set of assumptions is neither necessary to define rigorously core-periphery relations nor useful in capturing the variety of situations (in terms of factorial distribution of rewards) in and through which core-peripheral relations have historically been reproduced. In what follows we shall therefore take only the level of *aggregate* rewards as indicative of the core or peripheral status of an activity.

*II.3.* We further assume that no particular activity (whether defined in terms of its output or of the technique used) is inherently core-like or periphery-like. Any activity can become at a particular point in time core-like or periphery-like, but each has that characteristic for a limited period. Nonetheless, there are always some products and techniques that are core-like and others that are periphery-like at any given time.<sup>7</sup>

The reason for this assumption is that, following Schumpeter, we trace the fundamental impulse that generates and sustains competitive pressures in a capitalist economy to profit-

7. This differentiates our position from that of Prebisch and the Economic Commission for Latin America (ECLA) referred to in footnote 5. Wallerstein has the merit of having disentangled the concept of core-periphery relations from any particular pair of products (such as raw materials versus manufactured products) or from any particular pair of regions/countries. He still confounds, however, the core-periphery relation with the use of more or less mechanized techniques (see, for example, 1984: 16).

oriented innovations defined as “the setting up of a new production function” (1964: 62) or, in our terms, the setting up, widening, deepening, and restructuring of commodity chains. Thus broadly defined, innovations include the introduction of new methods of production, new commodities, new sources of supply, new trade routes and markets, and new forms of organization.

The intrusion of these innovations “incessantly revolutionizes the economic structure *from within*, incessantly destroying the old one, incessantly creating a new one” (Schumpeter, 1954: 83). In Schumpeter’s view, this process of “creative destruction” is the essence of capitalism. On the one hand, it is “not only the most important immediate source of gains, but also indirectly produces, through the process it sets going, most of those situations from which windfall gains and losses arise and in which speculative operations acquire significant scope” (1964: 80). On the other hand, it causes disequilibria and cutthroat competition; it makes preexisting productive combinations obsolete; it inflicts widespread losses (1964: 80).

As a consequence,

[spectacular] prizes much greater than would have been necessary to call forth the particular effort are thrown to a small minority of winners, thus propelling much more efficaciously than a more equal and more “just” distribution would, the activity of that large majority of businessmen who receive in return very modest compensation or nothing or less than nothing, and yet do their utmost because they have the big prizes before their eyes and overrate their chances of doing equally well (Schumpeter, 1954: 73-74).

Schumpeter used this conceptualization to explicate, among other things, the alternation of long phases of economic “prosperity” and “depression,” or A- and B-phases as they are now called. By assuming that revolutions in production functions occur in discrete rushes, which are separated from each other by spans of comparative quiet, he divided the incessant working of the process of creative destruction into two phases—the phase of revolution proper and the phase of absorption of the results of the revolution:

While these things are being initiated we have brisk expenditure and predominating “prosperity” . . . and while [they] are being completed and their results pour forth we have the elimination of antiquated elements of the industrial structure and predominating “depression” (1954: 68).

Just as Schumpeter assumed that profit-oriented innovations and their effects (the dampening of competition at one pole and its intensification at another pole) cluster *in time*, so we can assume (irrespective of the validity of that other claim) that they cluster *in space*. That is to say, we can substitute “where” for “while” in the above quotation and read it as a description of core-periphery relations in space, instead of a description of A-B phases in time.<sup>8</sup>

*II.4.* Capitalist enterprises are seldom, if ever, involved in a single activity but pool different activities within their organizational domains and will therefore be characterized by mixes of core-peripheral activities. It follows that in pursuing maximum/higher profits each enterprise will continuously endeavor to upgrade that mix by entering new fields of operation and abandoning others as well as transforming the activities in which it is involved at any given time. This is tantamount to saying that each capitalist enterprise, beside generating competitive pressures through innovations, is always and simultaneously involved in responding to the pressures created by other enterprises—that is in moving out of (or transforming) the activities in which the competitive pressure is high or increasing, and entering activities in which the competitive pressure is low or decreasing.

Two things must be noticed about this process. First, it is a zero-sum game. As the rise of an activity to core status implies the decline of one or more other activities to peripheral status (i.e., it implies that competitive pressures have been shifted

8. We could, of course, retain both readings and trace the two types of unevenness to a common source. For a tentative step in this direction, see Arrighi, et al. (1986). It should also be noticed that the previous quotation from Schumpeter (1954: 73-74) needs no change to read as a description of core-peripheral relations—unless we want to make it more general by substituting “political and economic actors” for “businessmen.”

from one activity to other activities), the success of an enterprise in upgrading its mix of core-peripheral activities always implies a more or less generalized downgrading of the mixes of other enterprises. Secondly, as the capitalist enterprise is a locus of "accumulation" (of assets, expertise, specialized knowledge, and organization), the present capabilities of an enterprise to upgrade its mix of activities will to some extent depend upon its past success in doing so.

It follows that core activities will tend to cluster in a relatively small group of enterprises that, to borrow another expression from Schumpeter, "are aggressor by nature and wield the really effective weapon of competition" (1954: 89). As should be clear by now, this "really effective weapon of competition" is the ability to shift continuously the pressure of competition from one's organizational domain onto activities that fall outside that domain, by generating a continuous stream of innovations within a given domain, and/or by shifting the domain itself in response to other enterprises' innovations. We shall refer to this group of enterprises, within which core activities tend to cluster, as "core capital" and to its obverse (the necessarily much larger group of enterprises on whose domain of activities the pressure of competition is shifted) as "peripheral capital" (see Averitt, 1968).

The clustering of core and peripheral activities into two different groups of enterprises does not in and by itself produce a similar polarization of the space of the world-economy into core and peripheral zones. To be sure, the polarization of capitalist enterprises will, at any given time, have a spatial dimension in the obvious sense that core capital must be located somewhere. We may also assume that core enterprises are attracted to the same locations by some external economy that ensues from their sticking together. And we may call the ensemble of these locations the "core zone."

Generally speaking, however, any spatial polarization of this sort would be highly unstable in the longer run because the "cost disadvantages" of locations in the core zone would inevitably outstrip its "revenue advantages." That is to say, the main advantage for core capital of operating in a core zone is

the proximity to the large and stable markets afforded by the high rewards that accrue to core activities. But these high rewards are to some extent always reflected in higher rents and/or higher wages than those obtained in peripheral zones. The more core capital crowds into a specific core locale, the more the disadvantages associated with these higher rents and/or wages are likely to outstrip the advantages associated with proximity to high revenues and, therefore, to trigger a relocation of core capital toward what previously were more peripheral locations. In the absence of factors other than the profit-maximizing activities of capitalist enterprises, the polarization of the space of the world-economy into core and peripheral zones would thus be extremely volatile: While, at any given time, core and peripheral activities would cluster in different locales, the specific locales that play the role of core or peripheral zone would be changing all the time.

*II.5.* Other factors, however, are and historically have been continuously at work. The competitive struggle among capitalist enterprises has not taken place in a political void, but has been closely interrelated with the formation of states—that is, of formally sovereign territorial jurisdictions. Following world-systems theory, we assume, one, that a multiplicity of such states (each with autonomous responsibility for political decisions within its jurisdiction, and each disposing of armed forces to sustain its authority) has been integral to the formation of the world-economy, and, two, that almost all commodity chains of any importance have traversed their boundaries.

As each state has formal jurisdiction over the movement of commodities, assets, labor-power, and entrepreneurial energies across and within its frontiers, each state can affect to some degree the modalities by which the social division of labor operates. By restricting or enhancing the freedom of undertaking or entering specific economic activities, states can upgrade some activities to core status and downgrade others to peripheral status—they can, that is, affect the very core-peripheral structure of the world-economy.

If the world-system had a single overarching state apparatus, the latter could enforce true and complete monopolies that would be the main if not the only determinant of core-peripheral relations. The same would be true of any state apparatus among many, if there were no overarching world division of labor. But in a capitalist world-economy divided into a multiplicity of state jurisdictions, and continuously subject to the endogenous shocks of innovations in production functions, the power of each state apparatus to shape core-peripheral relations is always limited by the power of other states to do the same and, above all, by the competitive pressures continuously generated by economic innovations.

In this connection, states can be assumed to be involved in a zero-sum game analogous to the one played out among capitalist enterprises but with radically different ends and means. The analogy lies in the fact that, one, states enclose within their jurisdictional domain a mix of core-peripheral activities that they strive to upgrade, and, two, that the actual upgrading of the mix enclosed by any one state (or group of states) always implies a more or less generalized downgrading of the mix enclosed by other states. Given the first assumption, the second follows as a corollary of our definition of core-periphery relations.

States, however, are not profit-maximizing units. Nor do they organize and control the economic activities that fall under their jurisdictions as closely and directly as capitalist enterprises do. The primary function of states is not the accumulation of wealth but the reproduction of their monopoly of the legitimate use of violence over a given territory against challenges from other states and from their own subjects. States therefore pursue legitimacy and use force in such a pursuit—an objective and an instrument that are normally alien to the capitalist enterprise.

Notwithstanding these differences between capitalist enterprises and states, we assume that states too strive to upgrade (or to prevent the downgrading of) their mix of core-peripheral activities. Economic command has a cumulative character that



is wanting in political command because “wealth” can be accumulated more easily than “power.” The capacity to bring (cumulating) economic command to bear upon (noncumulating) political command is thus always an important ingredient in the struggle for legitimacy and power among states and between states and their subjects.<sup>9</sup>

In a capitalist world-economy, the capacity of states to do so is always problematic. The main difficulty is that economic command is largely dependent upon an innovative participation in the world division of labor (II.3), and that capitalist enterprises have progressively become the specialized agencies of such participation (II.4). The problem of upgrading a state’s mix of core-peripheral activities is thus largely a problem of being able to attract and develop organic links with “core capital” (as defined in the previous section). This capacity is only in part a reflection of a state’s political power—the chance that its commands will be obeyed by other states and by its subjects. For the reasons given below, it depends equally if not more on the extent to which a state has already developed organic links with core capital and, therefore, already encloses within its jurisdiction a predominantly core mix of activities.

This dependence of the present and future capacity of a state to upgrade its mix of core-peripheral activities on its previous success in doing so, generates, to use Myrdal’s (1956) expression, processes of “circular and cumulative causation” that have been the bread and butter of dependency theory. These processes are most obvious and plausible when they are referred to the opposite ends of the spectrum formed by the various mixes of core-peripheral activities enclosed by states: the peripheral end, consisting of states that enclose predom-

9. It is not, however, the only ingredient. Economic peripherality can be compensated or more than compensated in the political arena by size, ideology, organization, and political innovations of various kinds (see Schurmann, 1974). This was demonstrated in a striking way by the military and political defeat of the most powerful core state (the U.S.) by a relatively small and economically peripheral state (Vietnam). At the same time, the defeat did not significantly affect the relative economic command of the two states, which remained as core (U.S.) and as peripheral (Vietnam) as they were before the confrontation.

inantly peripheral activities, and the core end, consisting of states that enclose predominantly core activities.

Given the large gap between the mixes that characterize these two groups of states, the assumption that core states have a much greater capability than peripheral states to retain/attract core capital within their jurisdiction is relatively easy to justify. For the large (and growing) differential between the rewards that accrue to core-like activities and those that accrue to peripheral activities<sup>10</sup> is necessarily reflected in a capability of core states (and a corresponding incapability of peripheral states) (1) to control access to the most remunerative outlets of all major commodity chains, (2) to provide the infrastructure and services required by core-like activities, and (3) to create a political climate favorable to capitalist entrepreneurship.

This means that core states control the revenue advantages of core locations and can use that control both to develop a symbiotic relation with the core capital that is already located within their jurisdiction, and to attract more core capital from peripheral locations. To be sure, peripheral states control the cost advantages of peripheral locations. Generally speaking, however, they cannot use this control to compete effectively with core states in attracting core capital for two main reasons.

In the first place, given the much larger number of peripheral than core states, it is easier for the latter to bargain and obtain free access to the cost advantages of peripheral locations than it is for the former to bargain and obtain free access to the revenue advantages of core locations. As a consequence, the cost advantage of peripheral locations is far more "dependent" on a free access to the revenue advantages of core locations than the latter are dependent on a free access to the former.

In the second place, and closely related to the above, in the environment typical of the core zone—characterized by remunerative markets, efficient infrastructures and services, and a political climate favorable to capitalist enterprise—high costs

10. On the circumstances under which the differential in question can be assumed to be not only large but also growing, see footnote 16.

are not an obstacle but an incentive to the continuous stream of innovations that is required to reproduce the zone's core status. In contrast, in the environment typical of the peripheral zone—characterized by fragmented and discontinuous markets, inefficient infrastructure and services, and a political climate often unfavorable to capitalist entrepreneurship—high costs are powerless in sustaining innovations while low costs simply provide an incentive to organize peripheral activities.<sup>11</sup>

It follows that, over time, core states and core capital tend to develop a symbiotic relationship that increases each other's capability to consolidate and reproduce their association with predominantly core-like activities. The obverse of this tendency is the endemic inability of peripheral states to escape their association with predominantly peripheral activities. Taken together, the two tendencies imply a stable if not growing polarization of the space of the world-economy into a peripheral and a core zone.

*II.6.* This conclusion is plausible when referred to states that have jurisdiction over a mix of core-peripheral activities that falls either below a very low threshold of core-like activities present in the mix (peripheral states) or above a much higher threshold (core states). There is no reason, however, for supposing that it applies to all those states that happen to have jurisdiction over a more or less even mix of core-peripheral activities (semiperipheral states).

These states will be subject to the same polarizing tendencies that continuously reproduce the core and peripheral zones of the world-economy. Yet the more or less even mix of core-peripheral activities that falls under their jurisdiction offers

11. Another reason lower wages in the peripheral zone fail to attract core activities is that they are normally accompanied by tendencies that offset their positive effects on costs of production. Since the rewards in peripheral activities are, by definition (II.3), only marginally higher than what factors of production could earn outside the social division of labor of the world-economy, if the differential in rewards is largely a wage differential, there will be a strong tendency among peripheral householders to withdraw periodically labor-power from the circuits of the world-economy. As a consequence, labor supplies and outlets for capitalist production become even more discontinuous and unreliable than they previously were with obvious negative effects on profitability.

semiperipheral states the chance to resist peripheralization by exploiting their revenue advantage vis-à-vis peripheral states and their cost advantage vis-à-vis core states. They may do this in a number of ways. They may attempt to obtain some kind of isolation from competitive pressures by strengthening the linkages that connect the core and peripheral activities that fall within their boundaries at the expense of the linkages that cut across those boundaries. Or they may try to follow the opposite policy of strengthening one or another cost advantage of production located within their jurisdiction in competition with core locales. Or they may try some combination of these two strategies in an attempt to have the best of two worlds: some protection of core activities within their boundaries and intensification of competition in the core activities located outside their boundaries. Whatever the strategy, state action in the semiperipheral zone does make a difference: By selectively exploiting the peripheralizing tendencies of the world-economy, semiperipheral states will normally manage to counteract them.

These strategies, however, will generally be counterproductive from the point of view of upgrading the mix of core-peripheral activities of states in the semiperipheral zone. To the extent that semiperipheral states succeed in isolating the core-like activities located within their jurisdiction from world competitive pressures, they also deprive them of the advantages of operating in a wider economic space and of the incentive to generate the continuous stream of innovations which alone, in the long run, can reproduce core positions. To the extent that semiperipheral states succeed in enhancing the cost advantages of locations within their jurisdictions, producers in the semiperipheral zone can effectively compete with producers in the core zone. This competition, however, far from upgrading the mix of core-peripheral activities of the semiperipheral zone, is one of the mechanisms that turns core-like activities into peripheral activities and keeps the mix of the zone more or less even.

This conceptualization does not exclude the possibility that individual semiperipheral states, pursuing a particularly inno-

vative combination of economic policies and/or blessed by a world-economic conjuncture that gives them some strong competitive advantage, can upgrade their mix of core-peripheral activities until they become core states. Nor does it exclude that peripheral states can similarly move into the semiperipheral zone. On the contrary, these transitions must be considered not only real possibilities but key mechanisms of reproduction of the three separate zones of the world-economy. Just as the endemic inability of peripheral states to escape their association with predominantly peripheral activities is the obverse of the core state's capability to consolidate their association with predominantly core-like activities (II.5), so the inability of the bulk of semiperipheral states to move into the core (and of peripheral states to move into the semiperiphery) is the obverse of the success of some states to upgrade their mix of core-peripheral activities and move to a higher position. Our conceptualization does imply, however, that these are exceptions through which the rule is enforced, and that the rule is for states to remain in the zone in which they already happen to be.

*II.7.* In sum, states are not passive recipients of mixes of core-peripheral activities. Although all of them strive to upgrade or at least to prevent the downgrading of the mix that falls under their jurisdiction, the capability actually to succeed in the endeavor is not equally distributed among all states. It varies discontinuously with the weight of core-like activities in the mix that already falls under a state jurisdiction.

According to our conceptualization, the interaction of economic and political processes of the world-economy produces a frequency distribution of world population by the mix of core-peripheral activities of the state of residence of the type shown in Figure 1. The distribution is assumed to be highly skewed toward the lower end of the range of core-peripheral mixes because peripheral activities are, by definition, far more crowded than core activities. Point PC on the x-axis corresponds to the threshold above which states have the capability to upgrade the mix that falls under their jurisdiction, so as to

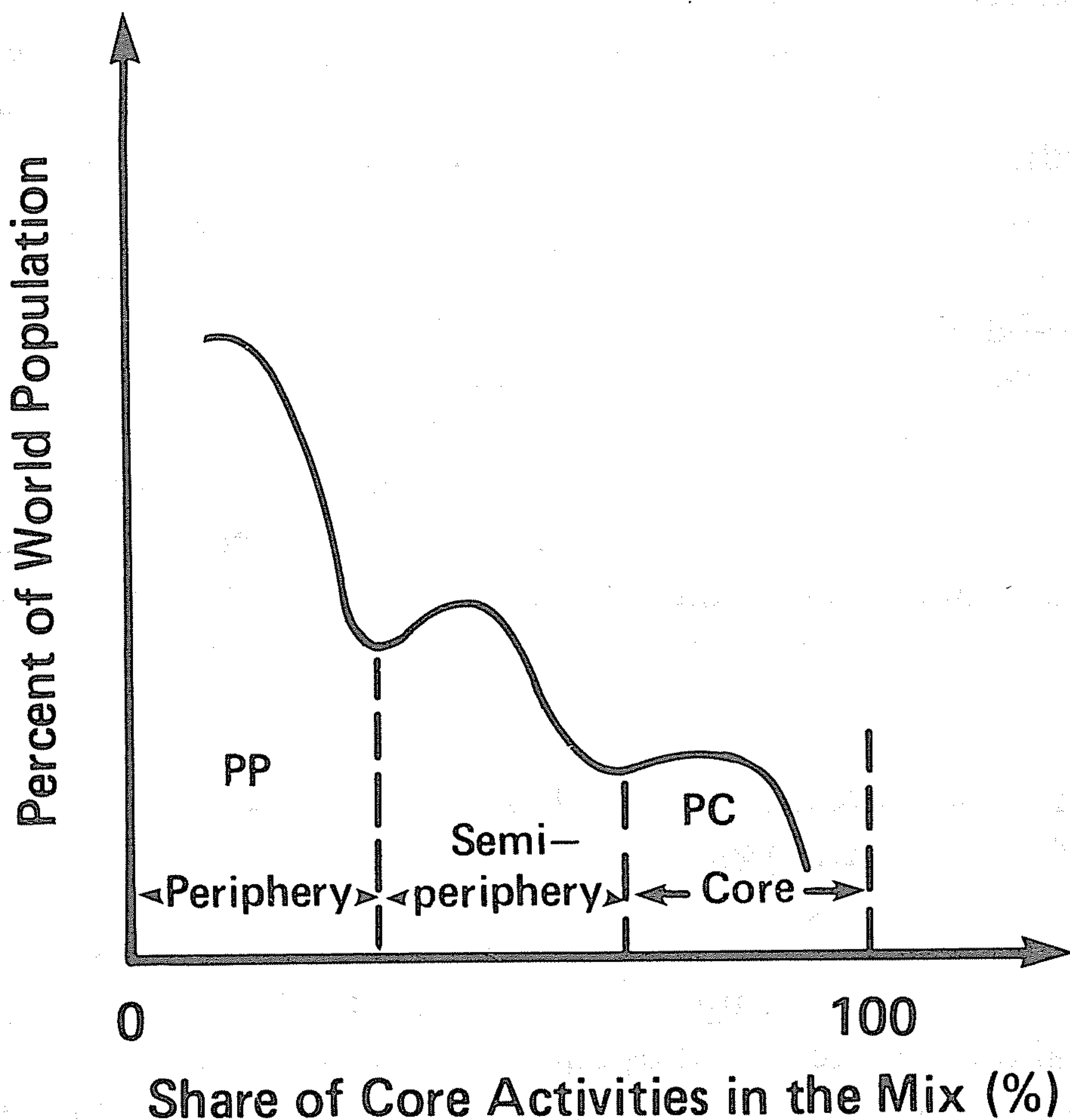


Figure 1: Hypothetical Distribution of World Population (Percentage of World Population by Mix of Core-Peripheral Activities of the State of Residence)

consolidate their core position; and point PP corresponds to the threshold below which states have little or no power, not only to upgrade but even to prevent the downgrading of their mix provoked by the consolidation of core positions. We shall refer to these thresholds as “perimeter of the core” (PC) and “perimeter of the periphery” (PP) to designate the fact that they define, respectively, the lower boundary of the core zone and the upper boundary of the peripheral zone.<sup>12</sup>

12. The term “perimeter of the core” (and, by analogy, the term “perimeter of the periphery”) is taken from Lange (1985) who, however, uses it in a different sense (see Arrighi, 1985b: 247).

Between these two thresholds lies the semiperipheral zone, that is the ensemble of all states that, because of the more or less even mix of core-peripheral activities over which they have jurisdiction, wield the power to prevent the downgrading of their mix but have little power to promote its upgrading. This tri-modal distribution allows us to give a precise analytical meaning to the concept of semiperiphery because it provides us with two obvious cutting points through which we can unequivocally single out three groups of states or zones of the world-economy: a peripheral, a semiperipheral, and a core zone. All we need at this point in order to identify the three zones is some operational measurement of the various mixes of core-peripheral activities.

### III. The Stratification of the World-Economy: An Empirical Analysis

*III.1.* It must be stated at the outset that there is no operational way of empirically distinguishing between peripheral and core-like activities and therefore of classifying states according to the mix of core-peripheral activities that falls under their jurisdiction. As repeatedly emphasized (II.2, II.3), no line or technique of production can, in and of itself, define an activity as core-like or periphery-like.<sup>13</sup> Whether a particular activity is one or the other always depends on its ever-changing relationships of cooperation and competition with all other activities of the world-economy. In order to classify activities as core-like or periphery-like, we would minimally need a complete map of all commodity chains of the world-economy, as well as an assessment of the relative competitive pressure at each of their nodes. This is in itself an impossible task which would only raise further problems of meaningful quantification and aggregation of the data collected.

13. The most sophisticated attempts at classifying states according to activities are, to our knowledge, Snyder and Kick (1979) and Nemeth and Smith (1985). While unhelpful in identifying the three zones of the world-economy, these studies can be very valuable in defining the trade patterns of states in different structural positions once these positions have been identified on some other grounds (see III.6 below).

Fortunately, we do not need to undertake such an exercise. Mixes of core-peripheral activities play in world-systems theory a role analogous to that played by "marginal utility" in neo-classical price theory or "labor embodied" in Ricardian and Marxian theories of value. All such "quantities" play a key role in their respective conceptualizations but cannot be subjected to direct measurement. What matters is to be able to derive from the conceptualization a set of empirically verifiable hypotheses that can provide us with indirect measurements of key variables.

From this point of view our conceptualization is highly operational. According to our assumptions, core activities command aggregate rewards that incorporate most, if not all, of the overall benefits of the world division of labor, whereas peripheral activities command aggregate rewards that incorporate few, if any, of those benefits (see II.2. above). The greater the weight of peripheral activities in the mix falling within the jurisdiction of a given state, the smaller the share of the total benefits of the world division of labor commanded by the residents of that state. And, conversely, the greater the weight of core activities, the larger the share of those benefits commanded by the residents of a state. The differences in the command over total benefits of the world division of labor must necessarily be reflected in commensurate differences in the GNP per capita of the states in question.

We can therefore take GNP per capita expressed in a common monetary unit as an indirect and approximate measurement of the mix of core-peripheral activities that fall within the jurisdiction of a given state. We take the log of GNP per capita, not only because of its highly skewed distribution, but mainly because we are interested in the relative rather than the absolute differences among states. And we take GNP per capita in U.S. dollars at market exchange rates because we are interested in differences in command over world economic resources rather than in differences in actual standards of living.<sup>14</sup>

14. The problems of comparing GNP per capita of different countries converted into a common monetary unit through the use of market exchange rates are well-known.



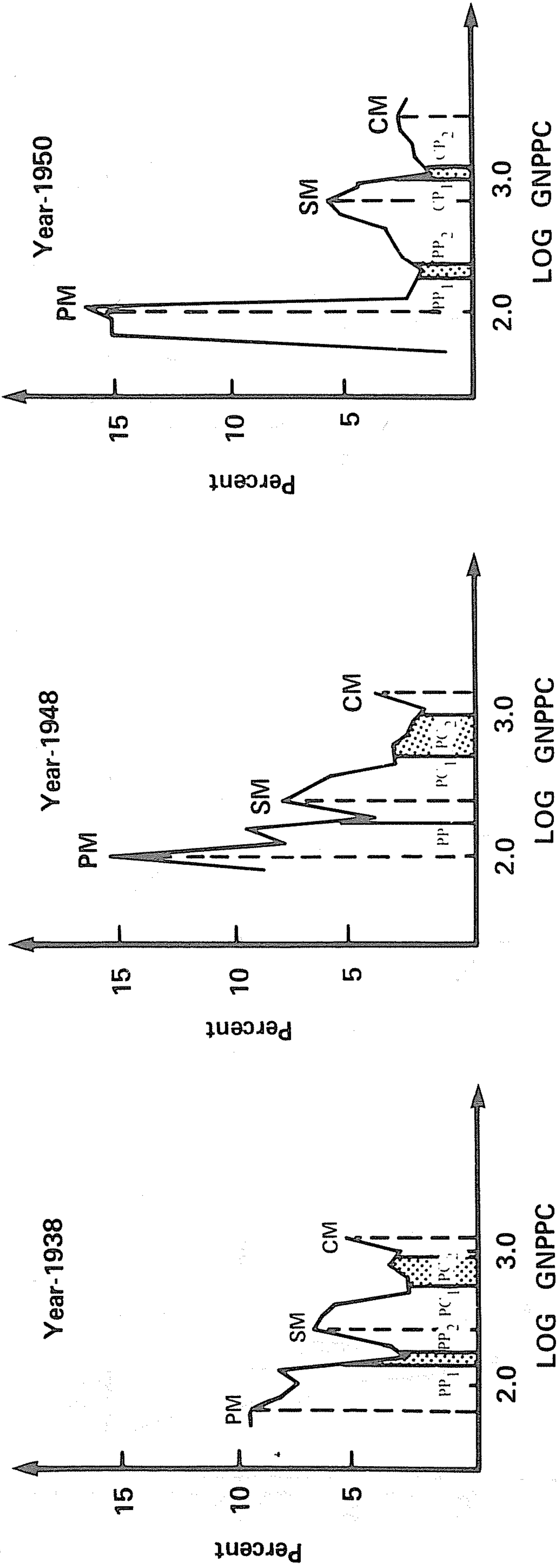
*III.2.* Using data from the sources specified in Appendix I, population by state (as percentage of total population) was plotted by the log of GNP per capita in 1970 U.S. dollars, by intervals of one-tenth. The resulting frequency distributions, smoothed by means of a three-intervals moving average, are shown in Figure 2. As can be seen, five out of nine distributions (1938, 1950, 1975, 1980, and 1983) are roughly tri-modal, whereas the tri-modality of the distributions for 1948, 1960, 1965, and especially 1970 is more doubtful.

In all instances, however, the distributions present the following analogies with the ideotypical distribution of Figure 1: (1) All have a maximum in the lower ranges of logged GNP per capita that stands out as an obvious "peripheral mode" (PM); (2) at the other extreme of the range, all turn upward generating a local maximum that can be identified as the "core mode" (CM); (3) all but the 1960 distribution (which has two intermediate peaks of equal frequency separated by a single interval) have one intermediate peak (separated from the core and peripheral modes by one or more low-frequency intervals), which we can identify as the "semiperipheral mode" (SM). In the case of 1960, we have somewhat arbitrarily chosen as the semiperipheral mode the interval falling between the two peaks.

The fact that the three zones are in most instances separated by one or more low-frequency intervals, rather than by single cutting points (PP and PC) as in Figure 1, does not in any way contradict our previous conceptualization. On the contrary, the longer the low-frequency stretch, the stronger must we consider the evidence that the periphery, semiperiphery, and core zones constitute separate structural positions of the

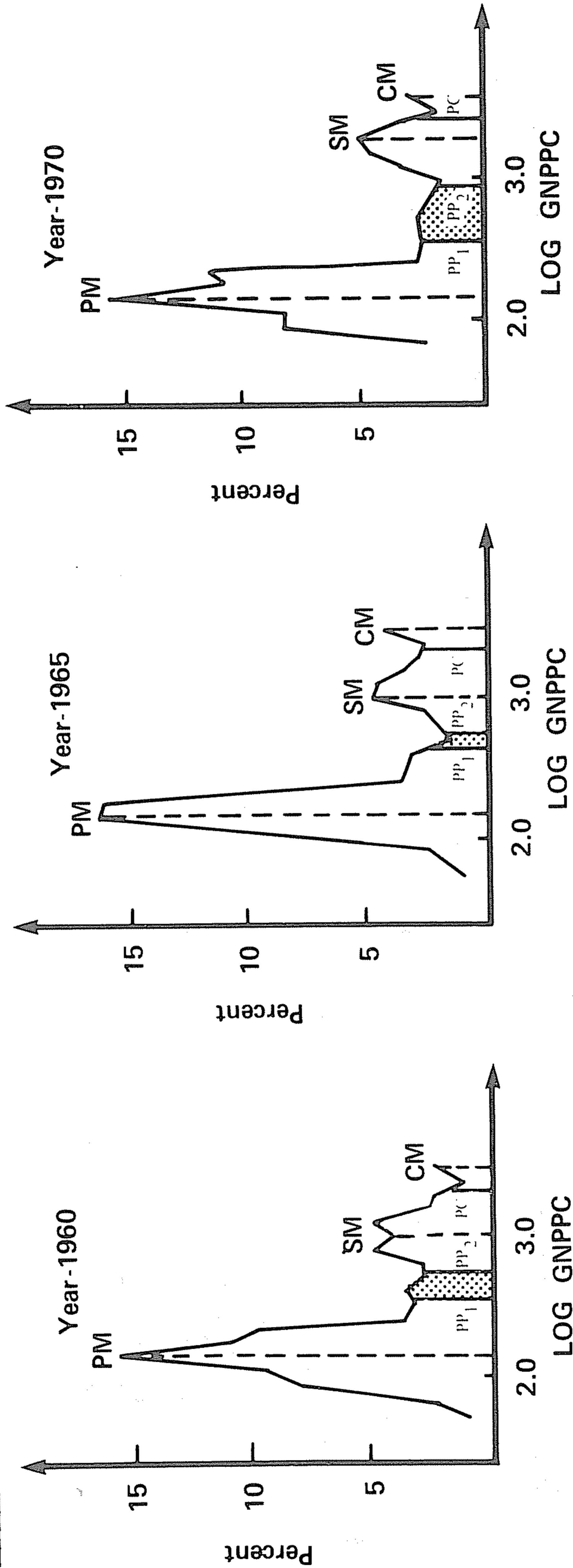
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They derive from the fact that exchange rates reflect what currencies command on the world market rather than what they command within the jurisdictions of the respective states. Studies are in progress to find conversion criteria that will make national accounts comparable in terms of currency purchasing power rather than implicit command over world-economic resources (see Kravis, et al., 1975, 1978, 1982). From our point of view, however, the problem does not arise because our conceptualization refers to command over world economic resources and not to actual standards of living.



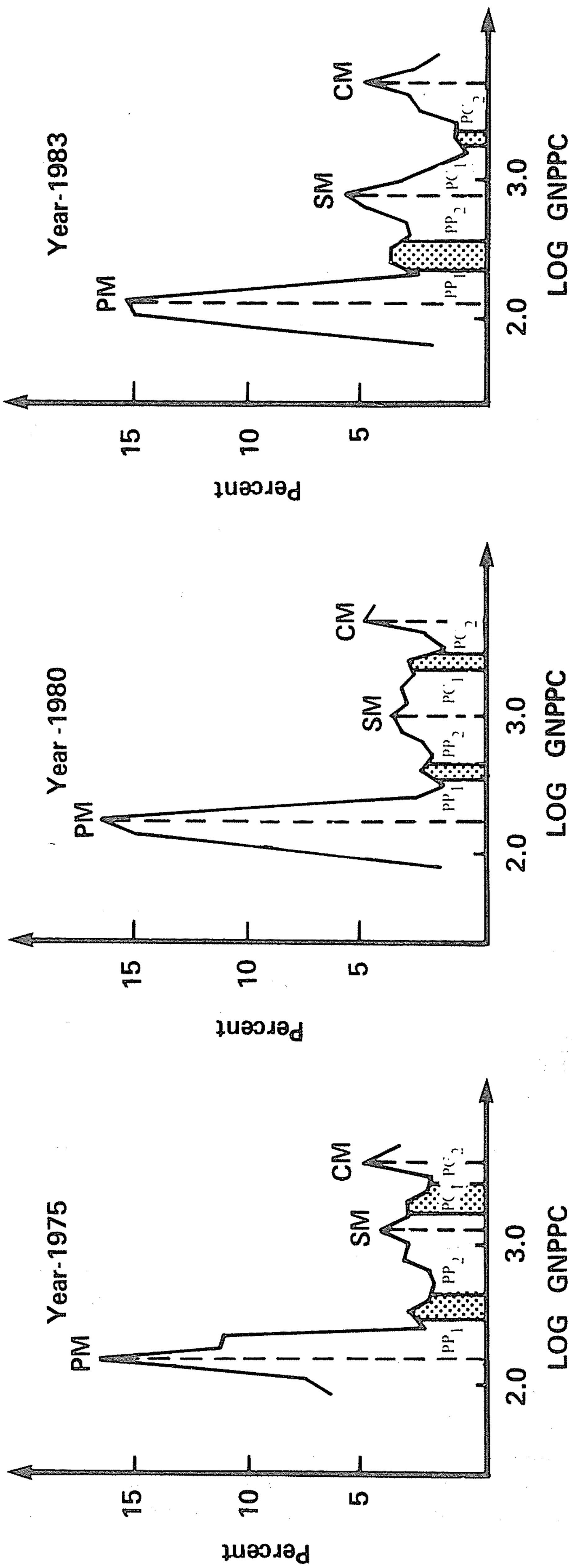
NOTE: See Appendices I and II.

Figure 2a: Actual Distribution of World Population (Percentage of Total Population by Log of GNP Per Capita of the State of Residence)



NOTE: See Appendixes I and II.

Figure 2b: Actual Distribution of World Population (Percentage of Total Population by Log of GNP Per Capita of the State of Residence)



NOTE: See Appendixes I and II.

Figure 2c: Actual Distribution of World Population (Percentage of Total Population by Log of GNP Per Capita of the State of Residence)

world-economy. Long low-frequency stretches, however, do not provide obvious cutting points at which to set the boundaries between the zones, as they often present more than one minimum that could be legitimately chosen as the actual boundary. The coding procedure we have adopted (see Appendix II) represents a compromise between the need to define the zones in the spirit of our previous conceptualization and the need to retain for further analysis as many features as possible of the actual distributions.

Generally speaking, in interpreting both the discrepancies and the similarities between the actual distributions of Figure 2 and the ideotypical distribution of Figure 1, it should be borne in mind that the latter refers to spans of time long enough to allow structural factors to counteract the short-term effects of random factors and the medium-term effects of conjunctural factors. The various smoothing procedures we adopted, as well as those already embodied in our data base, were meant to eliminate as many random influences as possible from the observed distributions. The fact that, even after the smoothing, some of these distributions are still a very pale reflection of a tri-modal distribution is in part due to the influence of the conjunctural factors that we shall presently discuss. In part, however, it is due to the fact that random shocks are not just “disturbing” influences on the “normal” working of the system but are integral to it. Innovations and parities among national currencies, for example, are both key systemic features of the world-economy. But both are also generally subject to some degree of randomness in their occurrence and short-term effects.<sup>15</sup>

15. In the very short run, the effects of innovations on the distribution of benefits have a strong random component in the sense that benefits and losses initially accrue to states and enterprises according to the particular combination of resources they *happen* to “sit on,” rather than or in addition to their past, present, and future capabilities to appropriate benefits. These random effects, however, will immediately trigger off actions and reactions which, over time, will reshape the distribution of benefits in accordance to relative capabilities.

*Mutatis mutandis*, similar considerations apply to another key factor in the distribution of benefits: the system of parities at which the various national currencies exchange with each other. At any given time, a more or less large number of such

Granted all this, the observed distributions of Figure 2 suggest that random influences are only part of the story. More specifically, the fact that five out of nine distributions show rough but clear features of tri-modality suggests that, in all likelihood, systematic influences of the kind assumed in our conceptualization are indeed at work. In order to assess the extent and nature of these influences, let us now turn to an intertemporal analysis of our nine distributions.

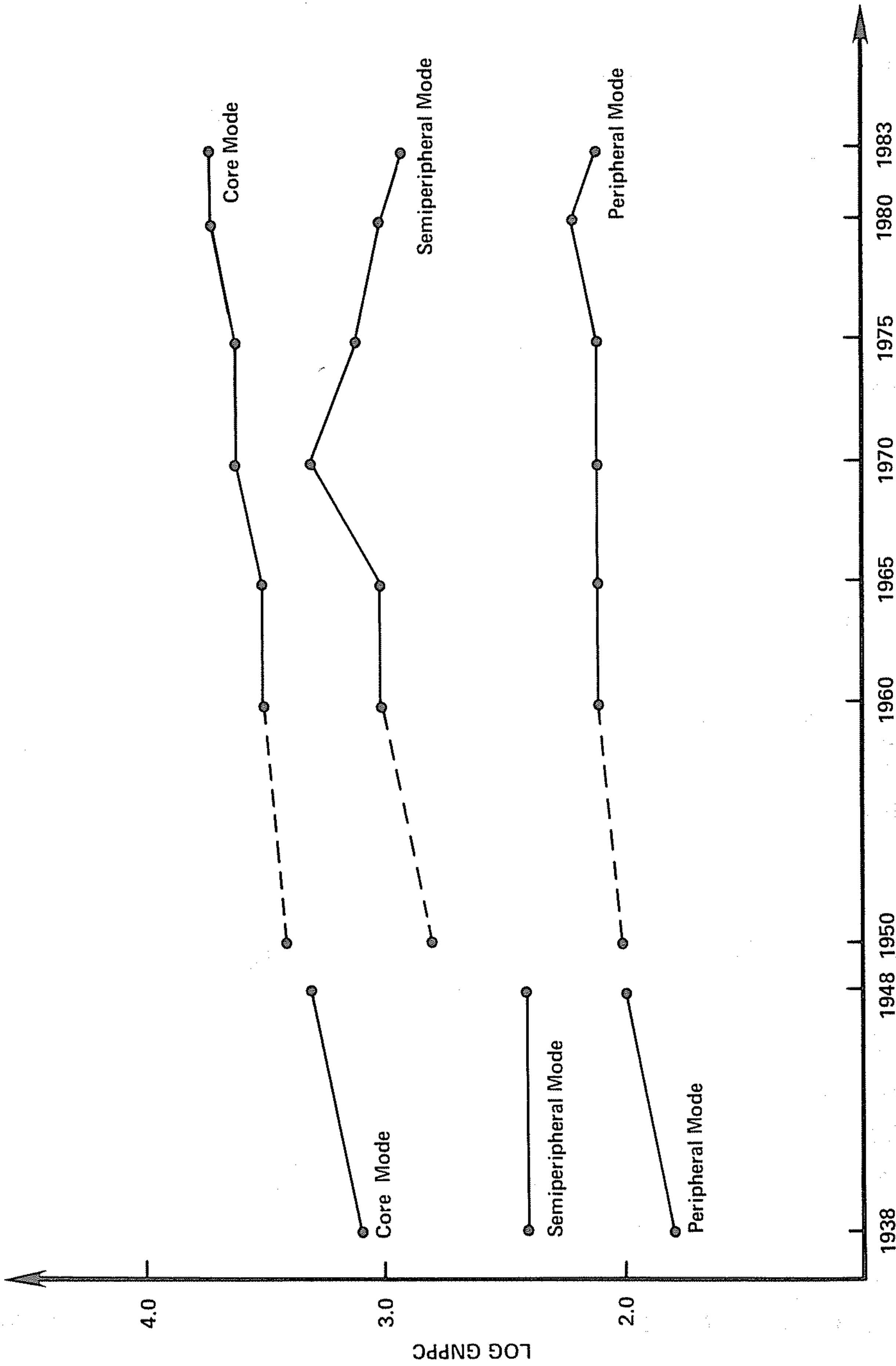
*III.3.* The modes of the three zones for the various years under consideration have been plotted in Figure 3, and the cumulative distribution of world population by zone in Figure 4. When points are not joined by a line (as 1948 and 1950), it means that they are not comparable. When they are joined by a broken line (as 1950 and 1960), it means that comparability is limited (see Appendix I).

The two charts bring into relief different aspects of the stratification of the world-economy. Figure 3 shows the evolution over time of the distance or gap between zones, and Figure 4 shows the evolution over time of their relative size or weight.

When we focus on the distance between, and relative sizes of, the core and the peripheral zones, two main facts emerge from our charts. First, the gap between the two zones (as measured by the difference of the logs [or by the ratio] of their modal GNP per capita) has increased in the period under consideration but the entire increase has occurred since the middle 1960's. As can be seen from Figure 3, the core and the peripheral modes experienced rapid growth in 1938-48, slow growth in 1950-60 and zero growth in 1960-65. In all these periods the two rates of growth were identical. After 1965, however, although the core mode resumed its ascent in step-like but steady fashion, the peripheral mode stagnated so that

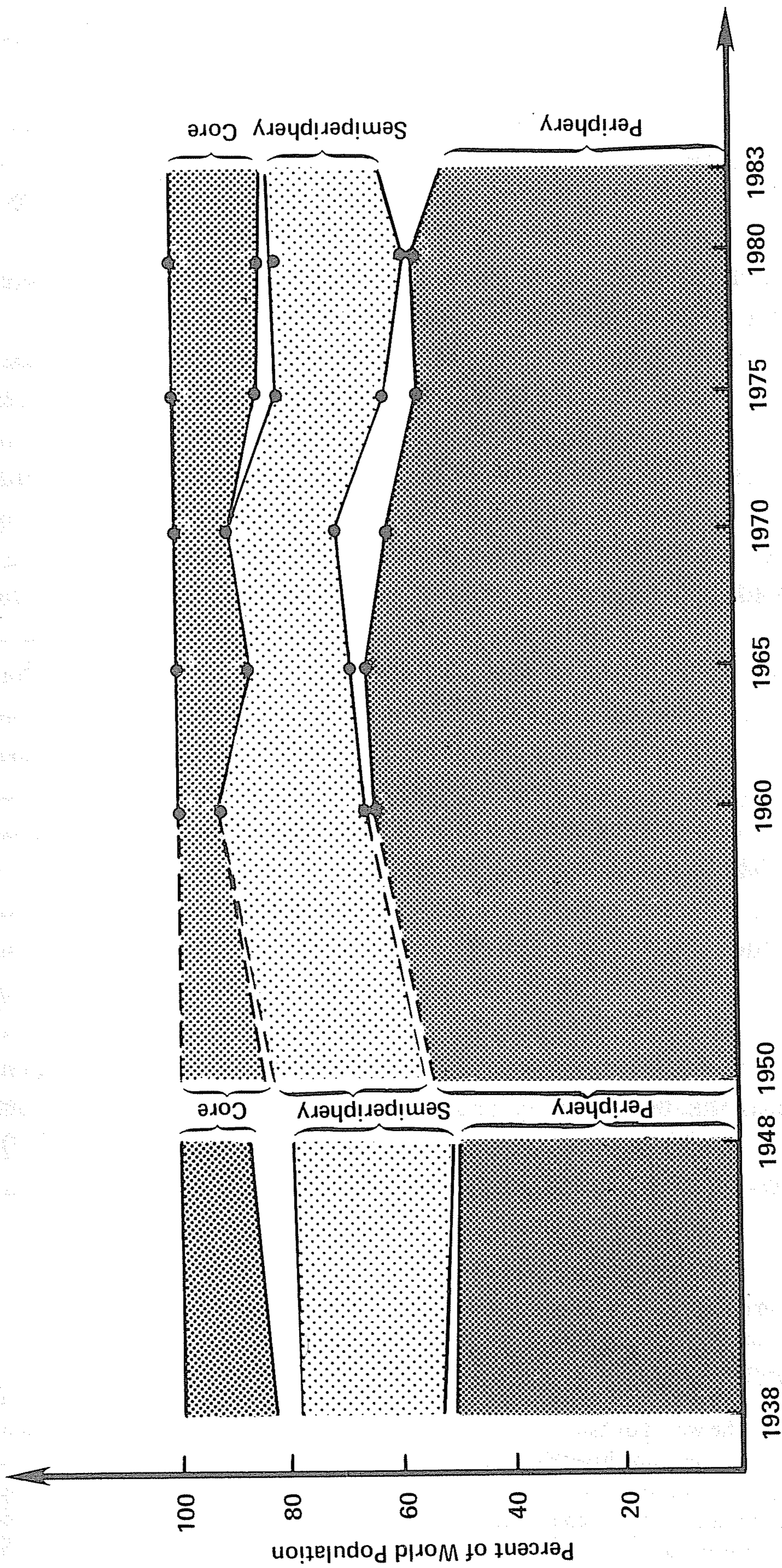
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parities are *créées par hasard* (as Walras would have said), that is, they include a random component that will be reflected in the observed distribution of benefits among states. Only in the longer run, will the relative capabilities to appropriate benefits emerge as the key determinant of both the system of parities and the distribution of incomes.



NOTE: See Appendixes I and II.

Figure 3: Trends in the Modal GNP Per Capita of the Three Zones



NOTE: See Appendixes I and II.

Figure 4: Trends in Relative Size of the Three Zones (Percentage of World Population in Each Zone)



in 1983 it still was at its 1960 level. Secondly, as can be seen from Figure 4, the relative size of the peripheral zone increased sharply from 3-4 times the size of the core zone in 1938/1948/1950 to 7-9 times in 1960/1965/1970. Thereafter, however, it has declined, attaining in 1980/1983 more or less its 1938/1948/1950 level.

These trends can be interpreted as evidence that over the last 45 years the polarizing tendencies of the world-economy have not lessened but changed in intensity and mode of operation. In the 1940's no polarizing tendencies are in evidence. From 1950 up to the middle 1960's they materialized in a *widening* peripheralization (i.e., in an increase in the relative proportion of world population located in the peripheral zone); since the middle 1960's, in contrast, they have materialized in a *deepening* peripheralization (i.e., in a widening of the gap that separates the core and the peripheral zones). The net outcome has been the following: *While the size of the periphery relative to that of the core is in the early 1980's more or less what it was in the 1940's, the gap between the modal rewards of the two zones has widened appreciably.*<sup>16</sup>

If we now switch our focus to the semiperipheral zone, we are struck by the fact that the polarizing tendencies of the world-economy have in the long run failed to affect in any significant way the size and position of the semiperipheral zone. Notwithstanding considerable short- to medium-term fluctuations, by the early 1980's, its mode occupied as intermediate a position as it did in 1938 or in 1950 (see Figure 3). Moreover, it is interesting to notice that the size of the semi-

16. In interpreting this finding, it should be borne in mind that a constant degree of polarization between any two of the three structural positions of the world-economy (expressed in terms of mixes of core-peripheral activities as in Figure 1) implies a growing or a narrowing gap expressed in logged GNPPC according to whether the benefits of the world division of labor can be assumed to be increasing or decreasing over time. Since the three structural positions are defined in terms of unequal capabilities of states to appropriate those benefits, if the inequality in capabilities remains the same but the benefits are increasing, the gap between the rewards of those who have lower and those who have higher capabilities should also increase (and if the benefits are decreasing, the gap between rewards should also decrease).

peripheral zone has remained remarkably constant throughout the period (see Figure 4).

The picture that emerges from Figure 3 is one of two relatively rigid lines (corresponding to the trajectories of the peripheral and core zones) enclosing a space within which a third, more flexible line (corresponding to the trajectory of the semiperipheral zone) moves up and down between the "ceiling" set by the trajectory of the core zone and the "floor" set by the trajectory of the peripheral zone. When the intermediate line gets close to the ceiling, as it does in the decade 1960-70 (or the floor), the boundaries between the semiperiphery and the core (or the periphery) in Figure 2 tend to be blurred and the corresponding frequency distribution may seem to have turned bi-modal.

This, however, proves to be only a temporary effect of the pulls and pushes to which the trajectory of the semiperipheral zone is subject. These pulls and pushes can be interpreted as evidence of the fact that the semiperipheral zone is subject to the same polarizing tendencies that keep the core and peripheral zones wide apart. Yet in relative terms, the semiperipheral zone sometimes loses (as in 1938-48 and again in 1970-83) and sometimes benefits (as in 1950-70) from these tendencies, and this alternation is what has reproduced the semiperiphery as a distinct structural position of the world-economy.

This finding seems to substantiate our claim that semiperipheral states are capable of selectively exploiting the peripheralizing tendencies of the world-economy so as to prevent the downgrading of their mix of core-peripheral activities but not sufficiently to attain core status (II.6). However, according to our assumptions, the main reason for the existence of a three-tiered structure of the world-economy is its division into a multiplicity of state jurisdictions endowed with unequal capabilities to enforce/resist peripheralization. States in the upper tier find it relatively easy to remain there; states in the lower tier find it extremely difficult to move upward; and states in the middle tier generally have the capability to resist peripheralization but not the capability to move into the upper tier. Upward and downward mobility of

individual states is thus not excluded but considered exceptional (II.6).

It follows that in order to substantiate our hypothesis it is not enough to show that a three-tiered structure of the world-economy can be identified over a relatively long period of time, as we have just done. It is also necessary to show that the state-composition of each zone has not substantially changed over an equally long period of time. If we find that this has actually been the case, then we have good reasons to believe that the reproduction of the three-tiered structure is no mere accident but probably the outcome of the unequal capabilities of states to enforce/resist peripheralization.

*III.4.* In order to verify the extent to which the reproduction of the three-tiered structure of the world-economy over the last 45 years has been associated with a high or low mobility of states across the boundaries of the three zones, we have constructed double-entry tables that classify states according to their position at the beginning and at the end of three different periods: 1938/50-1975/83 (Table 1), 1938/50-1960/1970 (Table 2) and 1960/70-1975/83 (Table 3).<sup>17</sup> Table 1 is the most important, because it covers the whole period and because it compares years in which the three-tiered structure of the world-economy was most clearly in evidence. We therefore start with Table 1 and then discuss the two subperiods covered by Tables 2 and 3.

There are two ways of reading Table 1: (1) along the rows or the columns to gauge the gains and losses of each zone, or (2) along the diagonals to gauge the overall mobility (or lack thereof) of the system. Reading along the main diagonal (core/core, periphery/periphery), we single out all the states that in 1975-83 were exactly in the same structural position as they were in 1938-50. If we add them up, we obtain a total of 66 states out of 93 (or 71%) which account for 84% of the total population of the 93 states, irrespective of whether we take the 1950 or 1983 population figures. These percentages already

17. The procedure followed in classifying states, as well as the names of the states falling in each slot, are specified in Appendix III.

TABLE 1  
Position of States in 1975-83 Compared to Their  
Position in 1938-50

		Position in 1938-50					Total	
		Core	PC	Semi-periphery	PP	Periphery		
Position in 1975-83	Core	(a) 11	4	3			18	(+7)
		(b) 13.1	2.6	5.6			16.5	(+3.4)
		(c) 10.4	1.8	4.3				
	PC	(a)	1	4			5	(-1)
		(b)	.1	1.4			1.3	(-2.0)
		(c)	.1	1.2				
	Semi-periphery	(a)	1	23	5	1	30	(-3)
		(b)	.6	18.6	0.8	0.8	20.4	(-5.9)
		(c)	.8	17.6	1.0	1.0		
	PP	(a)		2	4	2	8	(-5)
(b)			0.5	0.3	2.7	4.7	(+2.4)	
(c)			0.7	0.5	3.5			
Periphery	(a)		1	4	27	32	(+2)	
	(b)		0.2	1.2	51.6	57.3	(+2.2)	
	(c)		0.3	1.5	55.5			
Total	(a) 11	6	33	13	30	93	(0)	
	(b) 13.1	3.3	26.3	2.3	55.1	100.0		
	(c)					100.0		

NOTE: (a) # of states; (b) % of population in 1950; (c) % of population in 1970. See Appendix III for sources and procedure.

imply a low overall mobility of states across the boundaries of the three zones. The states along the main diagonal, however, are not only ones that have *not crossed* the boundaries from one zone to another. The states along the two contiguous diagonals (core/perimeter of the core, periphery/perimeter of the periphery) are states that have moved from a zone to its upper or lower boundary (or from a boundary to a contiguous zone) but without crossing the boundary itself. Altogether they are 22 states that accounted for 10% of total population both in 1950 and in 1983.

In sum, 95% of the states for which we could find data (and 94% of total population) were in 1975/83 still on or within the boundaries of the zone in which they were in 1938/50. Taking the period as a whole, upward or downward mobility in the system has been truly exceptional. According to Table 1, it has been limited to three cases of transition from a semiperipheral to a core position (Japan, Italy, and Libya, as can be seen from the corresponding table of Appendix III); one case of upward mobility from periphery to semiperiphery (South Korea, to which Taiwan would probably be added if we had data for the later years); and one case of downward mobility from semiperiphery to periphery (Ghana).

The fact that two relatively large states (Japan and Italy) have succeeded in moving from the semiperiphery to the core and the fact that demographic growth in the peripheral zone has been higher than in both the core and the semiperiphery account for the seeming polarization of the system shown in the "total" column of the table. In this column, we have put in brackets the losses (-) or gains (+) of states and of percentage points of total population experienced over the period by each position. Taking the three intermediate positions together (semiperiphery, perimeter of the core, and perimeter of the periphery), in the 45-year period considered they have lost 9 states out of 52 (7 to the core and 2 to the periphery) and 5.6 percentage points of population out of 31.9 (3.4 to the core and 2.2 to the periphery).

At this rate, it would take a century or more for the semiperiphery to lose its significance—assuming that it would do so when it accounted for 15% or less of world population. But of course we do not know whether the loss of the last 45 years can be extrapolated into the future, as it might have been influenced by cyclical or conjunctural factors. The period covered by our data is not long enough to allow us to isolate any such influences. It is long enough, however, to give us some idea of their possible impact on the trend. We have already seen how the polarizing and peripheralizing tendencies of the world-economy have been characterized by different intensi-

ties and modes of operation in different subperiods of the time span covered by our data (II.3). Tables 2 and 3 can now provide us with further insights into this changing mode of operation.

The most striking features of these two tables are, one, that they both show a greater overall mobility than Table 1 and, two, that the mobility is exclusively downward in the period 1938/50-1960/70 and exclusively upward in the period 1960/70-1975/83. The central diagonal (core/core, periphery/periphery) of Table 2 accounts for 51% of the total number of

TABLE 2  
Position of States in 1960-79 Compared to Their  
Position in 1938-50

		Position in 1938-50					Total
		Core	PC	Semi-periphery	PP	Periphery	
Position in 1960-70	Core	(a) 3 (b) 7.3					3 7.3
	PC	(a) 7 (b) 5.2					7 5.2
	Semi-periphery	(a) (b)	7 5.7	13 17.6			20 23.3
	PP	(a) (b)		7 2.6	1 0.4		8 2.9
	Periphery	(a) (b)		12 5.1	12 2.0	30 54.3	54 61.4
	Total	(a) 10 (b) 12.5	7 5.7	32 25.2	13 2.4	30 54.3	92 100.0

NOTE: (a) # of states; (b) % of population. See Appendix III for sources and procedure.

TABLE 3  
Position of States in 1975-83 Compared to Their  
Position in 1960-70

		Position in 1960-70					Total
		Core	PC	Semi-periphery	PP	Periphery	
Position in 1975-83	Core	(a) 3 (b) 6.7	7 4.2	7 7.0	2 .22		19 18.3
	PC	(a) (b)		5 1.2	1 .11		6 1.35
	Semi-periphery	(a) (b)		11 10.7	6 3.3	15 7.1	32 21.0
	PP	(a) (b)				8 4.0	8 4.0
	Periphery	(a) (b)				39 55.3	39 55.3
	Total	(a) 3 (b) 6.7	7 4.2	23 19.0	9 3.6	62 66.4	104 100.0

NOTE: (a) # of states; (b) % of population. See Appendix III for sources and procedure.

states and for 80% of the total population and that of Table 3 for 51% of the states and 73% of the population (as against 71% of the states and 84% of the population in Table 1). Most of the differences between Tables 2 and 3, on the one hand, and Table 1, on the other hand, are not mainly due to a greater mobility of states across the boundaries of the zones. Rather, they are due to greater mobility to and from the zones and their contiguous perimeter(s), as witnessed by the fact that the differences are considerably reduced if we add up the squares of all three

central diagonals. The corresponding percentages are 87% of states and 95% of population in Table 2 and 76% of states and 86% of population in Table 3 (as against 95% of states and 94% of population in Table 1).

Except for the population percentage of Table 2 (which is now slightly higher than the population percentage of Table 1), the differences are reduced but still fairly large. We can thus conclude that the mobility of states in the three-tier structure of the world-economy has been lower in the period 1938-83 as a whole than in each of its subperiods. As already mentioned, mobility in the two subperiods has been in opposite directions. Without entering into unnecessarily cumbersome details, this opposition is brought out very clearly by Tables 2 and 3, as in the former all the null slots are above the main diagonal (implying generalized downward mobility), whereas in the latter all the null slots are below the main diagonal (implying generalized upward mobility).

It follows that the long-term stability of the three-tiered structure of the world-economy over the last 45 years has been associated with a medium-term pendulum-like movement of extensive downward mobility of states in the period 1938/50-1960/70 and of a somewhat more extensive upward mobility in the period 1960/70-1975/83. The net outcome is shown in Table 1, which we have already discussed. It implies that the upward movement of the later period brought most states that had experienced downward mobility in the earlier period back to where they were in 1938/50. However, some states were left behind and did not recoup their earlier position (Ghana being only the most clear-cut case), whereas others (such as Japan, Italy, Libya, and South Korea), which had not experienced downward mobility in the earlier period, nonetheless moved up, thus gaining a foothold in a higher tier.

This pendulum-like movement is easily interpreted in light of the major events of the world-economy in the period under consideration. The central event has undoubtedly been the establishment of U.S. hegemony, which ushered in a cluster of technological and organizational innovations of world-economic significance. Core-periphery relations were accordingly



revolutionized and a new "standard of coreness" established. For a while, the U.S. (state and capital) wielded "the really effective weapon of competition," to use the expression we have borrowed from Schumpeter (II.4). Competitive pressures shifted discontinuously from one set of activities to another set, and the mix of core-peripheral activities of most states was correspondingly downgraded. According to our data, only two states fully stood up to the new standard of coreness: Canada (structurally part of the U.S. economy) and Sweden (see Table 2 and the corresponding table of Appendix III).

Traditionally core states such as West Germany and the U.K. were pushed into the perimeter of the core, and states that were on the perimeter of the core, such as France and Belgium, were pushed over into the semiperiphery. This characterization is not just the product of statistical artifacts. It also makes sense in terms of the historical processes of the world-economy, as witnessed by the fact that in the 1950's and early 1960's all these traditionally core states were engaged in an intense competition with traditionally semiperipheral states to capture the technology, organization, know-how, and finance of the new hegemonic power. Moreover, this was done by offering cheaper labor supplies than could be obtained in the latter.

The point is that the establishment of U.S. hegemony changed the rules of the competitive game (as any cluster of innovations of world-economic significance to some extent always does). It forced core countries into the performance of semiperipheral roles and started a race to "catch up" with the new standard of coreness. To the extent that the core zone became less crowded, the semiperipheral zone became more so and therefore subject to intensifying competitive pressures. These intensifying competitive pressures, in turn, trickled down toward the lower reaches of the zone, pushing semiperipheral states toward the perimeter of the periphery or right into the periphery.

States suddenly plunged (or lifted into) a zone by random shocks or revolutions in production functions, however, do not by that very fact turn into organic members of that zone. A state becomes an organic member of a zone only when its

economic and political institutions have been shaped by a protracted association with a given mix of core-peripheral activities (see II.5). This is why all the core states that were forced into semiperipheral roles in the 1950's and 1960's (joined by a few new-comers) managed to reenter the core zone in the 1970's. As these states moved to the core, the competitive pressures were to some extent diminished in the lower tiers, and the general upward mobility that has characterized the 1970's ensued.

III.5. In light of these conclusions, the sharp decrease in the relative size of the core zone in the 1950's and its steady increase in the 1960's and 1970's (see Figure 4) can now be re-interpreted as a reflection of the exit and reentry of some of its organic members in the course of the swings of downward and upward mobility. As for the trends in the gaps between the three zones shown in Figure 3, we are now in a position to assess the extent to which they reflect gains and losses of the organic members of the zones rather than shifts in the membership of the zones.<sup>18</sup>

In order to isolate these influences, we must identify groups of states that, on account of their long permanence in a given zone, can be considered its organic members. As it turns out, 74 out of 93 states remained *throughout* the period within or on the boundaries of a given zone, thus qualifying as its organic members: 10 of the core, 20 of the semiperiphery, and 44 of the periphery (see Appendix III).

In Figure 5, we have plotted the logged GNP per capita of each of these three groups taken as a whole, as well as the range of the GNP per capita of each group (log [mean +/- standard deviation]). By comparing the trends of Figure 5 with those of

18. Take for example the rapid increase in the mode of the semiperiphery in 1950-70, which created the impression of a fusion of the core and semiperipheral zones, and its equally rapid fall in 1970-83, which promptly reestablished the distance between the two zones. Was this sharp up-and-down the expression of an *improvement and then worsening* in the position of the organic members of the semiperiphery vis-à-vis the organic members of other zones? Or was it due to the conjunctural *worsening and then improvement* in the position of some organic members of the core zone vis-à-vis other members of the *same* zone? Or was the upswing simply the expression of exceptionally high rates of growth of a few members of the semiperiphery and the downswing the "statistical effect" of their cross-over into the core zone?

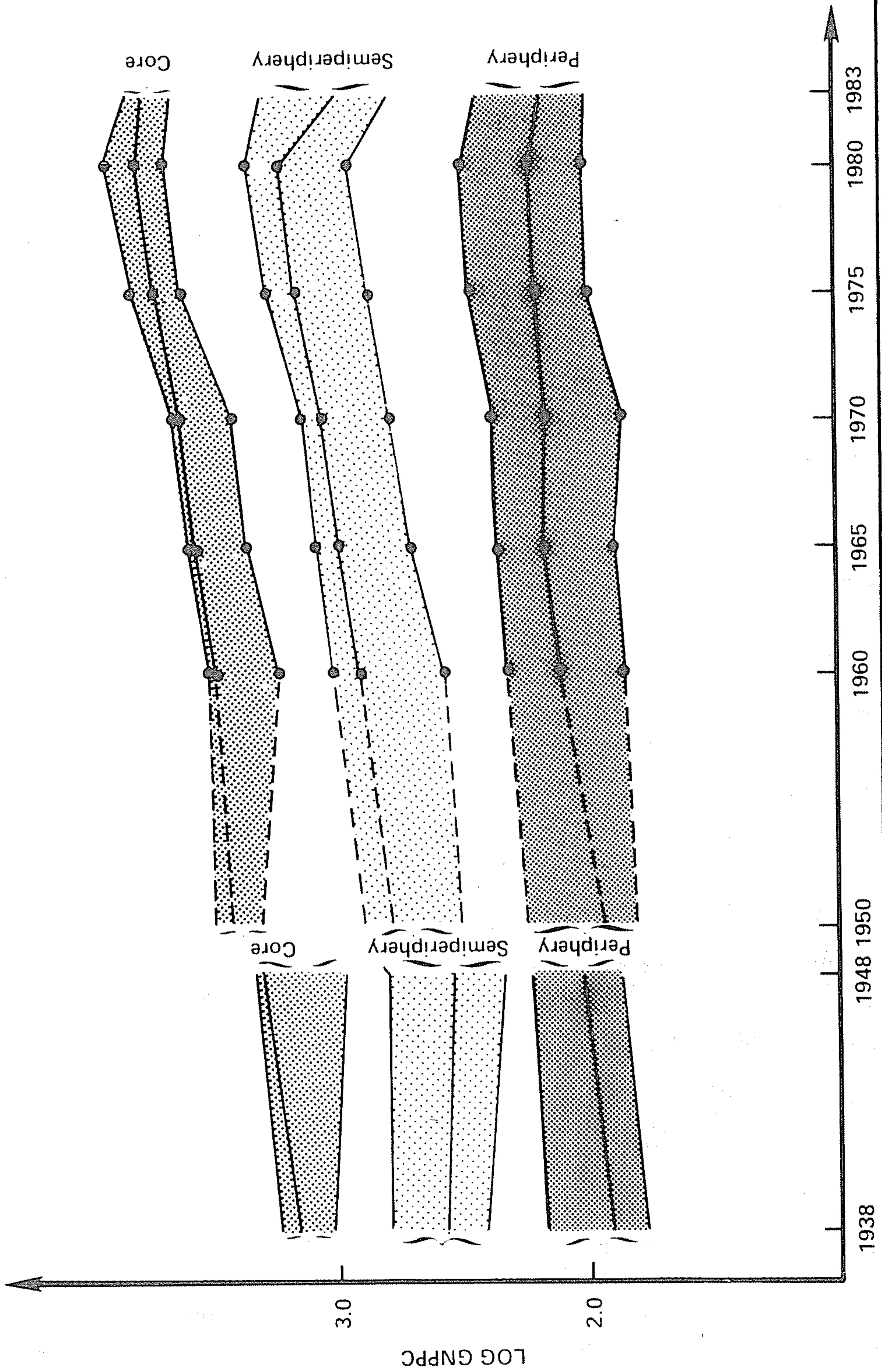


Figure 5: Trends in Relative Economic Command (Weighted Averages and Ranges of GNP Per Capita of Organic Members)

Figure 3, we can assess the extent to which the latter reflected structural rather than conjunctural factors. The main difference between the two charts is that the short- to medium-term instability of the semiperipheral mode of Figure 3 has largely disappeared in Figure 5. Except for the sharp downturn of 1980-83, the trend in the GNP per capita of the group of 20 semiperipheral states is as steady as (and in 1950-80 steadier than) the corresponding trends of the 10 core states and 44 peripheral states.

The implication is that most of the short- to medium-term instability of the semiperipheral mode and of the boundaries of the distributions of Figure 2 derives from the fact that at any given time the semiperiphery does not include only its organic members. Throughout our period, the latter have constituted the majority of the states that happened to be in the semiperipheral zone, and statistically they account for the long-term stability of the trimodal distributions of Figure 2 evinced by the trends of Figures 3 and 4.

However, although the group of organic semiperipheral states exerts the strongest influence on the trend, the short- to medium-term fluctuations are mainly due to the fact that the semiperiphery is also a buffer zone between the core and the periphery. At any given time, the semiperiphery always includes some states that have been more or less temporarily demoted from the core (or promoted from the periphery) by one of the many random or systematic shocks through which the world-economy operates.

In our period, as we have seen, there have been no lasting demotions from the core zone and only one seemingly lasting promotion from the periphery (S. Korea). Yet there have been temporary but significant shifts in the position of states on and around the boundaries of the three zones that have affected both the boundaries themselves and the mode of the semiperipheral zone. In 1960, 1965, and 1970, the effect was so strong as to blur the boundary between the core and the semiperiphery and make the distributions look almost bimodal.<sup>19</sup>

19. This blurring of the boundary and the sharp increase, and then decrease, of the semiperipheral mode in 1965-70 were to some extent due to another factor: the

In sum, a comparison of Figures 3 and 5 suggests that, once we adjust the trends to eliminate the influence that conjunctural and transitional members have on the mode and boundaries of the semiperiphery, most fluctuations in the relative position of the three zones disappear, but the long-term trends remain very much the same. Little therefore needs to be changed in our earlier conclusions concerning the polarizing tendencies of the world-economy over the last 45 years (see III.3).

As can be seen from Figure 5, over the period as a whole, the adjusted trends still show an increased polarization between the core and the peripheral zones with the semiperiphery retaining its intermediate position. They also show that this overall tendency has not developed uniformly throughout the period. In 1938-48, there was no increasing polarization between core and periphery, but only between the core and the semiperiphery, which thus converged toward the periphery. In 1950-65, the three zones grew at about the same rate. As a matter of fact, in 1950-60, the gaps between the three zones narrowed somewhat as the rate of growth of the periphery exceeded that of the semiperiphery, and that of the semiperiphery exceeded that of the core. As we saw, these were years of widening rather than deepening peripheralization. In 1965-80, the semiperiphery kept up with the rate of growth of the core, while the periphery stagnated and fell behind both zones. The widening of the gap between periphery and core is entirely concentrated in this period. Finally, in 1980-83, all the zones

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presence in the semiperipheral zone of states involved in a transition to the core or to the periphery. When a state actually "takes off" into a transition to core position, it will for a time experience extremely high rates of growth. If it is a large state in terms of population, these high rates of growth will inflate the rate of growth of the semiperipheral mode and/or blur the boundaries between the zones. As soon as the transition is completed, the rate of growth of the mode will fall back and clear boundaries be reestablished. It is doubtful whether the transitions of Libya and Italy have had any significant influence on the distributions of Figure 2. Libya's population is too small to have any influence on the aggregate figures, and Italy's ascent to the core was rather flat since it consisted of a movement from the upper reaches of the semiperiphery to the lower reaches of the core. Japan, in contrast, certainly had an influence on the semiperipheral mode and boundaries because of both its size and its extremely rapid growth.

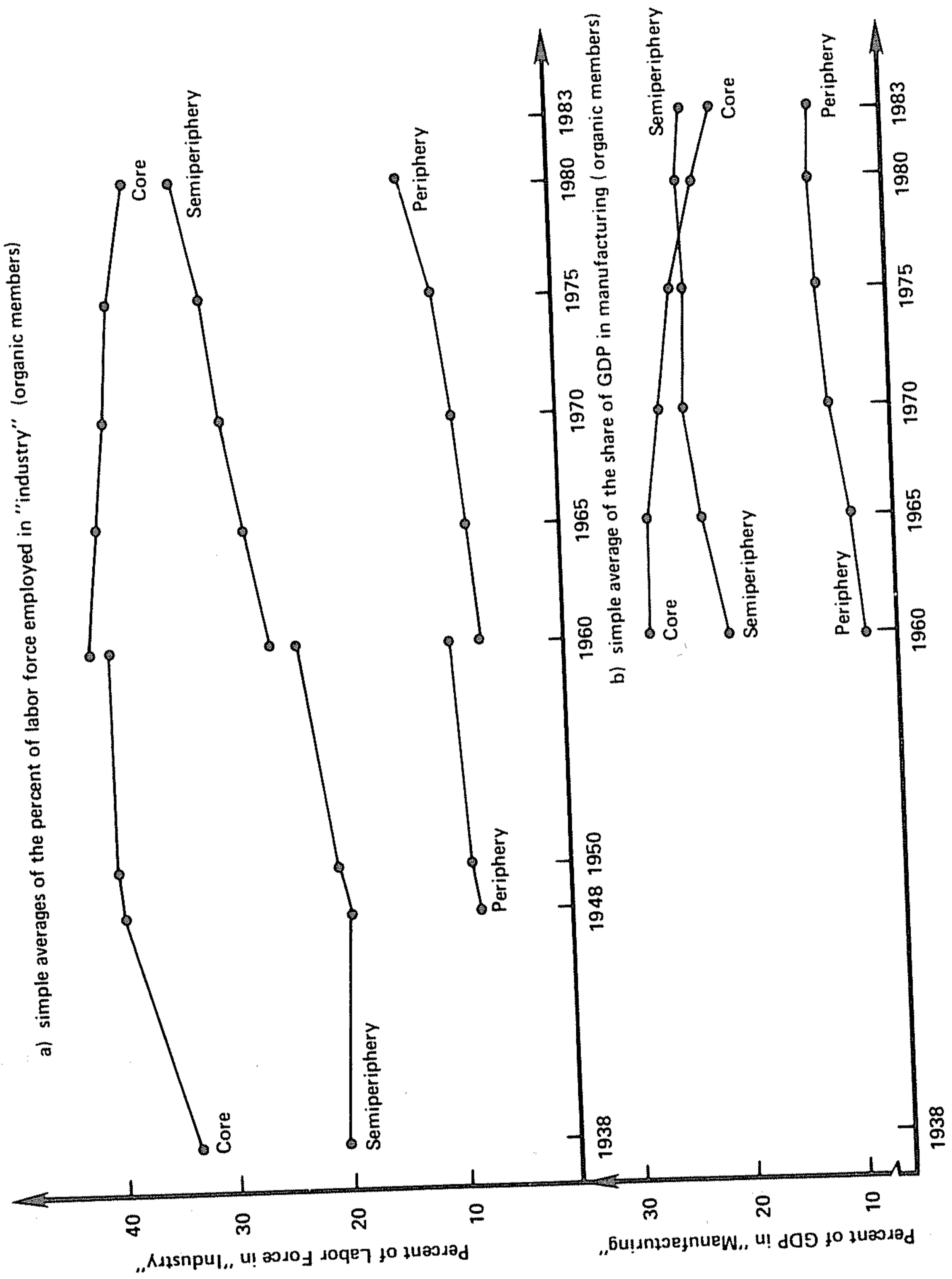
experienced a decline, but the decline of the semiperiphery was much sharper than that of the other two zones. Indeed, it was so sharp that in the short span of three years the semiperiphery lost all it had gained vis-à-vis the periphery in the previous 15 years.

*III.6.* Before we draw some conclusions from these findings, one final point has to be made. We started our empirical investigation by saying that there is no operational way of distinguishing between peripheral and core-like activities and therefore of classifying states according to the mix of core-peripheral activities that falls under their jurisdiction (II.1). However, having found a way of classifying states into groups that are likely to reflect different mixes of core-peripheral activities, we are in a position to identify the activities that were core-like at any given time.

This requires an investigation into the kind of activities that have been associated with organic members of the three zones. If we were to find that at any given time the organic members of the core zone specialized in particular kinds of activities (which were also less widespread among the organic members of the other two zones), we could say that those kinds of activities were core-like at that particular point in time. An investigation of this sort falls beyond the scope of this article except in one particular respect: the changing status of "industrial activities."

In development studies, "industrialization" and "development" are often treated as synonyms. The terms "developed countries" and "industrial countries" are used interchangeably, and the industrialization of less developed countries is taken as a symptom of their "catching up" with the more developed ones. Warren (1980) and other critics of dependency theory rely heavily on the fact that, in terms of industrialization, the gap between developed and less developed countries has been narrowing. Our findings can be used to bring some new light on this issue.

In Figure 6 part a, we have plotted the average percentage of the labor force employed in "industry," and in Figure 6 part b the average share of "manufacturing" in GDP for the three



NOTE: See Appendixes I and II.

Figure 6: Trends in the Degree of Industrialization

groups of states that we have identified as organic members of the core, periphery, and semiperiphery. For the period after 1960, both charts show a significant narrowing of the gap between the degree of industrialization of the core, on one hand, and that of the semiperiphery and periphery, on the other hand. As a matter of fact, according to the chart of Figure 6 part b, sometime in the late 1970's the semiperiphery not only caught up with but overtook the core in terms of degree of industrialization.

As these indexes refer to the same groups of states as the indexes of Figure 5, we can compare them period by period in order to assess the changing relationship between industrialization and relative economic command. In the period 1938-48, there seems to be a strong positive correlation between the two. As we have seen (III.5), this was a period in which the semiperiphery was losing economic command in relation to both the core and the periphery. This relative loss is closely mirrored in the indexes of industrialization of Figure 6, so there are good reasons for supposing that in this period core-like activities were largely industrial activities. Interestingly enough, it was at the end of this period that Prebisch and his associates first introduced the concept of core-periphery relations and formulated it in terms of a primary activities-industrial activities dichotomy.

In the period 1950-60, a positive correlation between industrial activities and core-like activities is still in evidence but in a different form. It manifests itself in a narrowing of both the industrialization and the GNP gaps that separate the core from the periphery and semiperiphery. Semiperipheral and to a lesser extent peripheral states begin to erode the "monopoly" of core states over core-like industrial activities. The erosion is reflected in a relative decline of the economic command of core states.

1960-65 are transitional years: The gap in industrialization continues to decrease, but there is no corresponding relative decline in core states' economic command. This can be taken as a symptom of the fact that the positive correlation between industrial and core-like activities was losing strength. In the



subsequent twenty years a weakened positive correlation turned into an increasingly strong *negative* correlation. In 1965-80, while the periphery and the semiperiphery continued to industrialize as rapidly as they had done in the previous two decades, the core began to de-industrialize by both the share of labor force and the share of GDP indexes (see Figure 6). As a consequence, the industrialization gap between the core and the semiperiphery disappeared or almost disappeared (depending on the index we choose) and that between the core and the periphery narrowed considerably. Yet in this same period the economic command of the semiperiphery relative to the core remained constant, and that of the periphery worsened (see Figure 5 and III.5).

The implication is that industrial activities were being peripheralized—they were, that is, losing their previous core status. Interestingly enough, it was toward the end of this period that Wallerstein suggested that the core-periphery dichotomy should be disentangled from the primary activities-industrial activities dichotomy (see footnote 7). The importance of this suggestion is underscored by trends in 1980-83, when the semiperiphery further increased its industrial “advantage” vis-à-vis the core and simultaneously experienced a sharp drop in its economic command relative to both the core and the periphery.

In sum, the industrialization of the semiperiphery and periphery has ultimately been a channel, not of subversion, but of reproduction of the hierarchy of the world-economy. This finding illustrates the process emphasized in our previous conceptualization whereby the generalized attempt by political and economic actors to capture what at any given time are core activities stimulates competition that turns these activities into peripheral ones (II.6). In the 1940's, industrial activities (or at least many of them) were indeed core activities. In the 1950's, lured by the “spectacular prizes” thrown at such activities, political and economic actors of the periphery and semiperiphery threw themselves into “industrialization.” At first, they reaped some benefits and thereby induced others to follow suit. In the 1960's and 1970's, however, industrial activities

became increasingly overcrowded so that not only the spectacular prizes disappeared, but even the smaller benefits reaped by the early-late-comers progressively turned into the widespread losses of the 1980's.

At this point a new question arises: In which particular economic sectors do core activities concentrate today, if they no longer cluster in industrial or manufacturing activities? It has been suggested that industrialization has been displaced as the basis of core activities by the growing importance of vertically integrated transnational corporations in all branches of economic activity (from agriculture and mining to manufacturing, distribution, and banking). These latter developments have served to dissolve and blur any previously existing correlation between the core-periphery dichotomy and dichotomies based on the specific kind of commodities produced (e.g., manufacturing versus agriculture) or even on the techniques of production used (e.g., high productivity versus low productivity).

Within transnational corporate organizations, activities carried out in different national locales are part of integrated and joint processes that make such distinctions irrelevant if possible at all. The relevant distinction is between activities that involve strategic decision making, control and administration, R&D, on one hand, and activities of pure execution, on the other. The core zone tends to become the locus of the "brain" activities of corporate capital, the peripheral zone tends to become the locus of the "muscle and nerves" activities, and the semiperipheral zone tends to be characterized by a more or less even mix of "brain" and "muscle and nerves" activities (Arrighi, 1985b: 275).

The validity of this or alternative hypotheses can only be verified through an investigation of the type suggested at the beginning of this section. The evidence we have presented, however, suggests that in any event a high degree of industrialization as such cannot provide an explanation of the capacity shown by core states in the 1970's and 1980's to re-establish their command over the benefits of the world division of labor.

#### IV. Concluding Remarks

This has been a preliminary investigation in more than one respect. As we have just seen, new questions are raised that require far more extensive and detailed research than we have yet been able to do. Additional research is required not only to address these new questions but also to provide the analysis of the world-economy with more solid empirical and theoretical foundations. The limited reliability and comparability of the data we have used have narrowly constrained the possibilities of manipulating and drawing conclusions from them, and of course more reliable and comparable data might have produced somewhat different results.

The main limitation of our data, however, is not their reliability and comparability. It is the short time span they cover. As they hardly cover one long wave (the transition from B- to A-phase of 1938-48, the A-phase of 1950-65/70, and a B-phase that is still in progress), we cannot say much concerning the cyclical rhythms and the *longue durée* of the world-economy and its three-tiered structure. The evidence we have presented, however, does not support the view that in B-phases the polarizing tendencies of the world-economy are weaker than in A-phases, as suggested by Frank (1969) and others. The A-phase appears as a period of widening peripheralization and the B-phase as a period of deepening peripheralization, and, while all the genuine transitions to an upper tier were completed in the B-phase, the corresponding "take-offs" occurred in the A-phase (III.3-5). This might well be a peculiarity of the single long wave that our data happen to cover, but in order to ascertain this we would have to extend our investigation much further back in time.<sup>20</sup>

Last but not least, the statistical evidence we have presented simply shows that over the last 45 years the world-economy has behaved *as if* our hypotheses were accurate representations of historical processes. In order to find out whether this is actually the case, there is of course no substitute for historical analysis.

20. A first step in this direction has been taken in Arrighi, et al., 1986.

But when all is said and done, it seems to us that our preliminary investigation has established strong *prima facie* evidence for the conclusion that the world-economy shows patterns of stratification and development that cannot be explained in terms of either "modernization" or "dependency." To be sure, both types of theory could claim some relevance to an explanation of one or another of our findings. But neither can provide a comprehensive explanation of the overall pattern they reveal.

Modernization theory (and its developmentalist variants), for example, could claim that there has been some catching up. As a matter of fact, if catching up is defined in terms of industrialization, there has been quite a lot of it. This claim should not be lightly dismissed. The industrialization and the even more extensive deruralization of peripheral and semiperipheral states have social and political implications of the greatest importance for the states that have experienced them as well as for the future of the world-economy (Arrighi & Silver, 1984). These implications, however, can be easily misconstrued if we do not take into consideration the most striking finding of our investigation: the fact that all this catching up has not significantly affected the differentials in economic command that separate the different tiers of the world-economy.

In this respect, dependency theory scores much better than modernization theory. In support of the former, our investigation has shown that the world-economy has indeed been subject to widespread polarizing tendencies. According to our measurements, these tendencies may not have been as strong as assumed by the more extreme versions of dependency theory, but they certainly have been extensive and strong enough to dismiss any claim of the developmentalist perspective to a holistic understanding of the world-economy.

In one important respect, however, the two theories fail equally. Neither of them can in fact explain the persistence of an intermediate group of states that as a group, is neither catching up with the small group of states that sets the

standards of wealth in the world-economy nor joining the large group of states that sets the standards of poverty. Numerically, this is a relatively large group of states—about twice the size of the core group and about half the size of the peripheral group. But its significance for the politics of the world-economy is far greater than these numbers indicate.

In the interwar years, two major political innovations of world significance originated in this group: communism in the U.S.S.R. and fascism in Italy. In the postwar years, the U.S.S.R. remained steadfastly in this group while becoming one of the two superpowers. In the current world-economic crisis, the group includes most of the major epicenters of political turmoil (South Africa, Iran, Iraq, Syria, Israel, Nicaragua, El Salvador, Poland) and all the great debtor states other than the U.S. (Argentina, Mexico, Brazil, Venezuela, Chile, Poland).

The semiperiphery has thus been and continues to be a zone of political turbulence. In light of this, it is surprising that semiperipheral states have been studied from all different angles except for what they all have in common: the fact, to put it crudely, that they are stuck in-between, and that they have to run fast in order to remain where they are.<sup>21</sup> After “Eurocentrism” and “Third-Worldism,” the time is ripe for a closer look at the semiperipheral zone.

## Appendix I:

### Sources and Use of the Data

The distributions of Figure 2, from which Figures 3-5 and Tables 1-3 are derived, are based on the following sources: Woytinsky and Woytinsky (1953) for 1938 and 1948, World

21. The fact that semiperipheral states have to run very fast in order to remain in an in-between position is implicit in our hypothesis that, in the semiperipheral zone, the polarizing tendencies of the world-economy are neutralized by state action (II.6). The point is made explicit and subjected to historical verification in the analyses of the Research Working Group on Semiperipheral States, referred to at the beginning of the article.

Bank (1984) for 1960-83, and World Bank (various years) for 1980 and 1983. For 1950, we have used estimates that Morawetz (1977) has derived from World Bank data. From these sources we obtained GNP per capita in U.S. dollars, which we converted into constant 1970 dollars by using the U.S. GNP deflator given in U.S. Department of Commerce (1975 and various years).

The Woytinsky and Woytinsky data only cover 57 states in 1938 and 58 states in 1948. The World Bank data cover between 101 and 105 states according to the year. As our main concern was to identify the *global* distribution of income (and the position of states in relation to such distribution), at different points in time, we always took *all* the states included in each source. This procedure considerably reduced the intertemporal comparability of data. Moreover, given the large size of some states that were omitted from one source or the other (mainly the U.S.S.R., from the World Bank data, and China, from the 1948 Woytinsky and Woytinsky data and from the World Bank data prior to 1980), the distributions of some years were greatly distorted. To reduce these distortions we integrated the data of both sources with data from other sources (to be specified below).

Notwithstanding these integrations, the comparability of the distributions across time remains limited, particularly when they switch from one source to another. Thus, in all the charts, we have acknowledged the lack of comparability of 1938-48 with 1950, and the limited comparability of 1950 with 1960-83. However, the indexes of Figure 5 are constructed on the basis of constant "baskets of states" (see Appendixes II and III) and therefore provide a more reliable basis for intertemporal comparisons than the indexes of Figures 3 and 4.

As for the integration of the sources listed above with data from other sources, we have followed two different procedures. In the case of China, Romania, and Hungary (for which World Bank sources provide data for the more recent years), we have estimated their position in previous years on the basis of the rates of growth of GNP per capita in U.S. dollars implicit in the series provided by Banks (n.d.). In the case of the U.S.S.R., for

which the World Bank does not provide any data, we have taken the estimates for 1950-80 given in Central Intelligence Agency (1982), to which we have added our own estimate for 1983 based on a plausible rate of growth for the period 1980-83.

In assessing the reliability and comparability of the data, the purpose for which they have been used should be borne in mind. This was twofold: to see whether they generated a trimodal distribution and, if they did, to single out the intervals of low frequency that could be used as the boundaries of the three zones (see Appendix II). Throughout the paper no significance is ever attached to the GNP per capita of any *single* state other than in relation to those boundaries. Moreover, even the trends and fluctuations in the modal or average GNP per capita of *groups* of states are always analyzed *in relation to* the modal or average GNP per capita of other groups of states. In other words, what matters in assessing the reliability and comparability of our data is their capacity to provide us with an indication of the distribution of rewards in the world-economy and the approximate position of states in relation to that distribution.

## Appendix II:

### Procedure Followed in Defining the Boundaries and Size of the Three Zones

The boundaries between the zones (see Figures 2a-2c) and, by implication, the relative size of the zones shown in Figure 4 have been defined according to the following procedure.

As a preliminary step, we singled out the three maxima in the distributions that could be identified as the core, semiperipheral, and peripheral modes. We have taken the mid-point of the interval of highest frequency in the low ranges of logged GNP per capita (GNPPC) as representative of the peripheral mode (PM), and the mid-point of the interval of highest frequency at the opposite end of the range as representative of the core mode (CM). The semiperipheral mode was then defined as the point of highest frequency in the range three intervals to the right of

the peripheral mode and three intervals to the left of the core mode. The "three-intervals clause" was introduced to ensure (with a one-interval margin) that the same states would not enter into the determination of two different modes via the three-intervals moving average. This criterion left indeterminate the semiperipheral mode for the 1960 distribution, which has two intermediate peaks of equal frequency in the intermediate range (see Figure 2b). Since the two intermediate peaks were separated by a single interval, we felt justified in taking the latter as representing the semiperipheral mode. Had the two intermediate peaks been separated by more than one interval, we would have considered the distribution as nontrimodal and discarded it.

The 1970 distribution should have been discarded for a different reason, namely because what we have chosen as SM and CM are not separated by more than three intervals (see Figure 2b). By strictly applying the procedure defined above, we should have chosen as the semiperipheral mode the much flatter maximum enclosed between PP1 and PP2. This seemed to us excessively formalistic. We have therefore chosen the interval of higher frequency marked as SM as the semiperipheral mode. However, we made sure that none of our main inferences depended crucially on this choice, and made clear throughout the discussion of the data that the trimodality of the 1970 distribution is questionable.

Having determined the three modes, the boundaries between the zones were defined as follows:

- (1) If the distribution had only one local minimum between two modes, the interval representing that minimum was taken as the boundary separating the two zones, provided that the states falling in that interval had not entered (via the three-intervals moving average) in the determination of one or both of the two modes. The boundaries determined in this way were the perimeter of the periphery (PP1-PP2) for 1950 and 1965 and the perimeter of the core (PC1-PC2) for 1950.



- (2) If the distribution had only one local minimum between two modes, but the states falling in the corresponding interval had entered in the determination of both modes, the distribution would have been considered non-trimodal and discarded. This case did not arise in any of the distributions considered.
- (3) If the distribution had only one local minimum between two modes and the states falling in the corresponding interval had entered in the determination of one of the two modes, the interval was included in the zone, and the boundary was defined by a line rather than an interval. The perimeters of the core for the years 1960, 1965, and 1970 were determined in this way.
- (4) If the distribution had more than one local minimum between two modes (as happened in most instances), we discarded the minima that had frequencies higher than either of the two modes. If we were left with only one minimum, we set the boundaries following the procedure set out above. The perimeters of the periphery for 1938 and 1948 were set in this way. If we were still left with more than one minimum, we took the two minima with the lowest frequency and defined the perimeters of the zones as consisting of all the intervals enclosed by (but excluding) the intervals corresponding to the two minima. The perimeters of the periphery for 1960, 1970, 1975, 1980, and 1983 as well as the perimeters of the core for 1938, 1948, 1975, 1980, and 1983 were determined in this way.

Having determined the boundaries between the zones, states were classified according to whether their logged GNPPC fell in one of the three zones or in one of the two perimeters. By adding up the percentage of world population accounted for by the states in each zone and in each perimeter, we determined the relative size of the three zones shown in Figure 4. In addition, this classification was used to analyze the upward and downward mobility of states discussed in Appendix III.

## Appendix III:

Procedure Followed in Classifying States  
in Tables 1, 2, and 3 and in Determining the  
“Organic” Members of Each Zone

In Appendix II we have seen how states were classified in five groups or “classes”: periphery (P), perimeter of the periphery (PP), semiperiphery (S), perimeter of the core (PC), and core (C). Notwithstanding the smoothing procedures we used and already embodied in our data base, the position of a state in any particular year is still subject to strong conjunctural and random influences (see III.2). Tables 1, 2, and 3 (and Tables 1a, 2a, 3a, below) were constructed with the purpose, one, of “averaging out” these influences over three observations (1938, 1948, and 1950; 1960, 1965, and 1970; 1975, 1980, and 1983), and, two, of comparing the “average” position in one period with the “average” position in a subsequent period.

Unfortunately, we did not have nine observations for all the countries. As shown in Tables 1a, 2a, and 3a below, for many peripheral countries we only had one or two observations for the earlier period, and in some instances we only had two observations for the later period. Fortunately, however, we had nine observations for all the states that most consistently fell in the core class and its neighborhood; for most semiperipheral states; and for most of the larger peripheral states. The reliability of the overall picture that emerges from the tables and discussed in the text can thus be considered more than satisfactory.

The position of states in each period has been determined according to the following procedure:

- (1) When three observations were available, a state was classified:
  - in the core, if the three observations were C, C, C; or C, C, Pc;
  - in the semiperiphery, if the three observations were S, S, S; or S, S, Pc; or S, S, Pp;
  - in the periphery, if the three observations were P, P, P; or P, P, Pp;

TABLE 1a  
Position of States in 1975-83 Compared to Their  
Position in 1938-50

		Position in 1938-50				
		C	PC	S	PP	P
Position in 1975-83	C	A	B	C	D	E
	PC	F	G	H	I	J
	S	K	L	M	N	O
	PP	P	Q	R	S	T
	P	U	V	W	X	Y

NOTE: Countries in Table 1a:

- A: Australia, Canada, Denmark, Germany, Netherlands, New Zealand, Norway, Sweden, Switzerland, United Kingdom, United States  
 B: Austria, Belgium, Finland, France  
 C: Italy, Japan, Libya (1)  
 D:  
 E:  
 F:  
 G: Ireland  
 H: Hong Kong (1), Israel (2), Spain, Trinidad/Tobago  
 I:  
 J:  
 K:  
 L: South Africa  
 M: Algeria (1), Argentina, Brazil, Chile, Colombia, Congo (1), Costa Rica (1), Greece, Hungary (2), Iran (1)(3), Jamaica, Malaysia (1), Mexico, Nicaragua, Panama, Romania, Syria (1), Turkey, Uruguay (2), U.S.S.R., Venezuela, Yugoslavia (2)  
 N: Dominican Republic, Ecuador, Guatemala (2), Paraguay, Peru  
 O: South Korea (1)  
 P:  
 Q:  
 R: Ivory Coast, Morocco (1)  
 S: El Salvador, Papua New Guinea (1), Zambia, Zimbabwe (2)

T: Nigeria (1), Philippines

U:

V:

W: Ghana (1)

X: Angola (1)(3), Egypt, Honduras (2), Senegal (1)

Y: Afghanistan (1), Bolivia, Burma (2), Burundi (1), Cameroun, China, Central African Republic (1), Ethiopia (1), India, Indonesia (2), Kenya (2), Madagascar (1), Malawi (1), Mali (1), Mauritania (1), Mozambique (1), Nepal (1), Pakistan (1), Rwanda (1), Somalia (1), Sri Lanka, Sudan (1), Tanzania (1), Thailand (2), Togo (1), Uganda (1), Upper Volta (1)

(1) One observation only for 1938-50.

(2) Two observations only for 1938-50.

(3) Two observations only for 1975-83.

—in the perimeter of the core, if the three observations were one of the following Pc, Pc, Pc; Pc, Pc, C; Pc, Pc, S; C, C, S; C, S, S;

—in the perimeter of the periphery, if the three observations were one of the following: Pp, Pp, Pp; Pp, Pp, P; Pp, Pp, S; S, S, P; P, P, S.

(2) When two observations were available, a state was classified:

—in the core, if the two observations were C, C;

—in the semiperiphery, if the two observations were S, S;

—in the periphery, if the two observations were P, P;

—in the perimeter of the core, if the two observations were one of the following: C, Pc; Pc, Pc; S, Pc;

—in the perimeter of the periphery, if the two observations were one of the following Pp, Pp; S, Pp; P, Pp.

(3) When only one observation was available, states were classified according to that observation.

On the basis of these tables, we proceeded to define the “organic members” of the three zones as follows:

(1) *Organic members of the core zone*: States that appear in all three tables in one of the upper left blocks

TABLE 2a  
Position of States in 1960-70 Compared to Their  
Position in 1938-50

		Position in 1938-50				
		C	PC	S	PP	P
Position in 1960-70	C	A	B	C	D	E
	PC	F	G	H	I	J
	S	K	L	M	N	O
	PP	P	Q	R	S	T
	P	U	V	W	X	Y

NOTE: Countries for Table 2a:

A: Canada, Sweden, United States

B:

C:

D:

E:

F: Australia, Denmark, Germany, New Zealand, Norway, Switzerland, United Kingdom

G:

H:

I:

J:

K:

L: Austria, Belgium, Finland, France, Ireland, Netherlands, South Africa

M: Argentina, Chile, Hungary (2), Israel (2), Italy, Jamaica, Japan, Panama, Spain, Trinidad/Tobago (1), U.S.S.R., Venezuela, Yugoslavia (2)

N:

O:

P:

Q:

R: Costa Rica (1), Greece, Hong Kong (1), Libya (1), Mexico, Turkey, Uruguay (2)

S: Peru

T:

U:

V:

W: Algeria (1), Brazil, Colombia, Congo (1), Ghana, Iran (1), Iraq (1), Ivory Coast (1), Malaysia (1), Morocco (1), Nicaragua (1), Syria (1)

X: Angola (1), Dominican Republic, Egypt, El Salvador, Equador, Guatemala, Honduras (2), Papua New Guinea (1), Paraguay, Senegal (1), Zambia, Zimbabwe (2)

Y: Afghanistan (1), Bolivia, Burma (2), Burundi (1), Cameroun (1), Central African Republic (1), China, Ethiopia (1), India, Indonesia (2), Kenya (2), Madagascar (1), Malawi (1), Mali (1), Mauritania (1), Mozambique (1), Nepal (1), Nigeria (1), Pakistan (1), Philippines, Rwanda (1), Somalia (1), South Korea (1), Sri Lanka, Sudan (1), Tanzania, Thailand (2), Togo (1), Uganda (1), Upper Volta (1)

(1) One observation only for 1938-50.

(2) Two observations only for 1938-50.

(A,B,F,G). There were 10 such states: Australia, Canada, Denmark, New Zealand, Norway, Sweden, Switzerland, U.K., U.S.A., West Germany.

(2) *Organic members of the semiperipheral zone*: States that appear in all three tables in one of the nine central blocks (G,H,I,L,M,N,Q,R,S). There were 20 such states: Argentina, Chile, (Costa Rica), Greece, (Hong Kong), Hungary, Ireland, (Israel), Jamaica, Mexico, Panama, (Portugal), Romania, S. Africa, Spain, Turkey, Uruguay, U.S.S.R., Venezuela, Yugoslavia.

(3) *Organic members of the peripheral zone*: States that appear in all three tables in one of the four lower right blocks (S, T, X, Y). There were 44 such states: (Afghanistan), (Angola), Bangladesh, (Benin), Bolivia, Burma, (Burundi), (Cameroun), (Central African Republic), (Chad), China, Egypt, El Salvador, (Ethiopia), (Guinea), (Haiti), Honduras, India, Indonesia, Kenya, (Liberia), (Madagascar), Malawi, (Mali), (Mauritania), (Mozambique), (Nepal), (Niger), (Nigeria), Pakistan, (Papua New Guinea), Philippines, (Rwanda), (Senegal), (Somalia), Sri Lanka, (Sudan), (Tanzania), Thailand, (Togo), (Uganda), (Upper Volta), Zambia, Zimbabwe.

TABLE 3a  
Position of States in 1975-83 Compared to Their  
Position in 1960-70

		Position in 1960-70				
		C	PC	S	PP	P
Position in 1975-83	C	A	B	C	D	E
	PC	F	G	H	I	J
	S	K	L	M	N	O
	PP	P	Q	R	S	T
	P	U	V	W	X	Y

NOTE: Countries in Table 3a:

A: Canada, Sweden, United States

B: Australia, Denmark, Germany, New Zealand, Norway, Switzerland,  
United Kingdom

C: Austria, Belgium, Finland, France, Italy, Japan, Netherlands

D: Libya, Saudi Arabia

E:

F:

G:

H: Ireland, Israel, Singapore, Spain, Trinidad/Tobago

I: Hong Kong

J:

K:

L:

M: Argentina, Chile, Greece, Hungary, Jamaica, Panama, Romania,  
U.S.S.R., South Africa, Venezuela, Yugoslavia

N: Costa Rica, Mexico, Peru, Portugal, Turkey, Uruguay

O: Algeria, Brazil, Colombia, Congo, Dominican Republic, Ecuador,  
Guatemala, Iran (1), Iraq (1), Malaysia, Nicaragua, Paraguay, South  
Korea, Syria, Tunisia

P:

Q:

R:

S:

T: El Salvador, Ivory Coast, Morocco, Nigeria, Papua New Guinea, Philippines, Zambia, Zimbabwe

U:

V:

W:

X:

Y: Afghanistan (1), Angola (1), Bangladesh, Benin, Bolivia, Burma, Burundi, Cameroun, Central African Republic, Chad, China, Egypt, Ethiopia, Ghana (1), Guinea, Haiti, Honduras, India, Indonesia, Kenya, Liberia, Madagascar, Malawi, Mali, Mauritania, Mozambique (1), Nepal, Niger, Pakistan, Rwanda, Senegal, Somalia, Sri Lanka, Sudan, Tanzania, Thailand, Togo, Uganda, Upper Volta (1)

(1) Two observations only for 1975-83.

These three groups constitute the constant "baskets of states" on the basis of which the indexes of Figures 5 and 6 have been constructed. In Figure 5 we have plotted the log of the GNPPC of each group as a whole, as well as the range (mean of logged GNPPC of the states in each group  $\pm$  standard deviation). The plots for 1950-83 refer to all the states listed above, while the plots for 1938-48 exclude the states shown in brackets which are not covered by the Woytinsky and Woytinsky data. The data plotted in Figure 6 are simple averages. The percentages of the labor force in industry (Figure 6 part a) have been taken from Banks (n.d.) for the period 1938-60 and from World Bank (1984) for the period 1960-80. While data from the latter source cover most of the states listed above, Bank's data cover most of the core and semiperipheral states but only a minority of the peripheral states. The percentages of GDP in manufacturing are taken from World Bank (1984, 1978-85) which provide complete series for 9 of the 10 core states, for 12 of the 20 semiperipheral states, and for 35 of the 44 peripheral states.

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