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The Origins of African Biomedicine

The popular image of Western biomedicine in Africa is that of a benevolent European gift, whose purpose—the improved health of Africans—bespeaks a spirit of unqualified generosity and kindness.¹ While directly fortifying the African body, biomedicine has also been credited with indirectly “civilizing” the African mind and spirit—introducing modern scientific principles to supplant primitive superstition and witchcraft. It follows that biomedicine is itself portrayed as a foreign (and Western) entity whose universal principles, properly understood, may be applied to equal effect across all societies and peoples. Given the force of this standard narrative, the impressive task set for those chronicling biomedicine’s great trek to Africa is to document the ensuing cultural and social transformations that have reshaped the African peoples. Indeed, snapshots of medical care from a cross-section of African villages in 1900 would offer a dramatic contrast with similar snapshots in the year 2000. Thus, it can hardly be denied that the impact of biomedicine on African societies over the past century has been significant, and this is a story that has been ably documented by several generations of talented scholars. Biomedicine’s transformation of Africa, however, is merely a partial rendering of a much larger process. Commonly

¹ Unless otherwise indicated, references to “Africa” refer specifically to Sub-Saharan Africa.

lost or diminished in these depictions, for example, are the contributions of local African societies and cultures to the development of biomedicine in Africa. Even more glaring, however, has been the near total silence with regard to the profound African transformation of biomedicine itself as a global cultural form. This silence, it is argued, is no mere oversight. Indeed, Africa's ongoing reconstitution of biomedicine has been persistently obscured by Western representations of biomedicine's African journey.

The familiar narrative of biomedicine in Africa is rather straightforward, though told from a variety of perspectives and disciplines. Critics decry the role of biomedicine as a form of "cultural imperialism" with which Europe has bombarded Africa with Western values and beliefs, which initially competed with and eventually undermined African values and beliefs. Proponents champion biomedicine as a force for positive change that has allowed Africans to enter the scientific age and, thereby, to improve their health and general well-being. Whatever the viewpoint, the introduction of biomedicine is presented as something that Europe does to Africa. Africans may respond favorably or resist biomedicine but ultimately they are the ones transformed by this encounter. Europe and biomedicine somehow remain remarkably unscathed by the entire ordeal. The story of biomedicine in Africa has typically been told through one of three basic disciplines—medical history, medical anthropology, and African political economy. Each of these disciplines provides an essential aspect of the story that differs appreciably from the others. However, each shares an underlying set of premises—focused narrowly on how biomedicine has transformed Africa—that fails to ask, and is conceptually incapable of asking, how Africa has transformed biomedicine.² This limitation follows from the manner by which each discipline conceptually frames biomedicine in Africa as a scientific, cultural, or political process.

Medical historians, for example, have produced a large and growing body of exhaustive scholarship, which details the actual arrival and development of biomedicine in Africa.³ From the early missionary campaigns and the efforts of colonial medical officers to control malaria and sleeping sickness through the development of modern urban hospital care, medical historians provide a comprehensive and invaluable account of biomedicine's dramatic impact, as a set of universal, scientific practices, on standard med-

² Those occasional exceptions to this pattern, such as medical historians documenting the Western adoption of certain African pharmacopeia or political economists describing a potential European pandemic of African origins due to patterns of global migration, retain the notion of biomedicine as a narrow subfield of Western science. This is, thus, an African "contribution" that does not in any way alter the original Western premises of biomedicine.

³ See, for example, Beck (1970, 1981), M. Gelfand (1976), and Iliffe (2002).

ical care in Africa. For medical historians, however, like the laws of physics, the basic precepts of biomedicine are not especially subject to cultural interpretation. By contrast, medical anthropology is largely predicated on the notion of Western biomedicine as a culture-bound phenomenon.⁴ Accordingly, from this perspective, when biomedicine travels to Africa the story primarily concerns how biomedicine, as a Western cultural form, transforms African society.⁵ This follows, in large part, from a disciplinary imperative that organizes anthropological research around locally bound subjects. The tendency, therefore, is to generate descriptions of outside (global) influences reshaping local cultures. The reverse would require a radically revised unit of analysis. Lastly, the vast literature of African political economy provides a well rehearsed overview of the exploitative nature of Western powers in Africa and the cynical role of biomedicine in this regard.⁶ From such depictions one generally learns a great deal regarding Western aggression and African resistance, however biomedicine itself remains a distinctly foreign entity whose adoption represents simple acquiescence to Western subjugation. Thus, we learn very little about biomedicine itself as a scientific or cultural form and certainly nothing about how Africans may have helped to reshape it.

The challenge of inverting this standard Western narrative and asking not how biomedicine has changed Africa but *how Africa has changed biomedicine* is not merely a matter of expanding or revising any one or all of these three fundamental perspectives. The problem, rather, is a function of how each discipline frames its basic analysis of biomedicine in Africa. That which is required, therefore, is a perspective that both recognizes and incorporates the insights and contributions of medical history, medical anthropology, and political economy, while strategically reconceptualizing the organizing analytical principles that define biomedicine in Africa as an object for investigation. Such an approach must provide a reflexive framework that allows biomedicine simultaneously to transform Africa as Africa transforms biomedicine. Ultimately, the challenge is to identify an approach that allows one to turn from asking what the West can learn about Africans by studying their acclimation to biomedicine and to ask what the West can learn about Western medicine by understanding the African contributions to the development of biomedicine.

⁴ See, for example, Comaroff (1993), Hahn (1995), and Kleinman (1980).

⁵ See, for example, Buckley (1985a), Chavunduka (1994), and Janzen (1978).

⁶ See, for example, Aidoo (1982), Fanon (1967, 1965), D. Ferguson (1979), and Turshen (1984).

World-Systems Analysis and Global Cultural Forms

To tell the story of biomedicine in Africa adequately, therefore, requires an analytical framework that is uniquely adept. It must allow one simultaneously to explore biomedicine as a culture-bound, historically contingent social form while also analyzing biomedicine as an instrument of Western expansion. At the same time, the analysis must be faithful to the fickle serendipity of the historical record, as opposed to allowing grand narratives to blindly shape the life story of biomedicine in Africa.⁷ One of the more fruitful approaches in this regard, perhaps surprisingly, is that of world-systems analysis. To be sure, a frequent criticism of world-systems analysis concerns a pronounced tendency to construct large-scale, bird's eye analyses, which eschew local cultures. However, as discussed below, a basic failure to extend world-systems analysis beyond its initial, limited domain of investigation—economic and political structures and processes of the world economy at a global level—has resulted more from a lack of imagination than from deficiencies of the basic framework of analysis. In defense of this proposition, it is necessary to outline briefly the basic elements of world-systems analysis that make it ideal for an analysis of biomedicine in Africa as a global cultural development. Of particular interest in this regard are the early methodological debates among proponents of world-systems analysis whose insights have too often been neglected in later research.

First emerging in the 1970s, world-systems analysis provides a historical-analytical framework for interpreting long-term, large-scale social change. This framework borrows from a range of traditions across the historical social sciences, though it has been most influenced by the French *Annales* School and the work of Fernand Braudel, in particular, and by Marx.⁸ A fundamental principle of world-systems analysis is that each historical era is distinguishable from other eras by virtue of the unique world-system that

⁷ Comaroff and Comaroff (1993) frame this dilemma of global determinism versus local autonomy quite poignantly in the context of colonial and postcolonial Africa. “How do we write a historical anthropology of world systems that is not merely *the History of the World System*? Can we take sufficient account of the worldwide facts of colonial and postcolonial coercion, violence and exploitation, yet not slight the role of parochial signs and values, local meanings and historical sensibilities? How do we read European imperialism and its aftermath without reducing it to crude equations of power, domination and alienation? (emphasis in original, p. xiii). See also Appadurai (1995) in this regard.

⁸ Marx's analysis of the accumulation of capital is an indispensable feature of world-systems analysis, explaining the expansion of the capitalist world-system (Hopkins, 1982a; Hopkins and Wallerstein, 1982). Additionally, members of the *Annales* school readily acknowledge their own debt to Marx. “The genius of Marx, the secret of his enduring power, lies in his having been the first to construct true social models, starting out from the long-term” (Braudel, 1972:39).

gives rise to it.⁹ A world-system represents a coherent and integrated organizational structure that operates across a single spatial-temporal unit, with a basic governing logic (such as capital accumulation) that defines relationships between territorial units (such as nation-states) and shapes social interaction and societal and cultural development. In the current era, the globe is dominated by the capitalist world-system, a historical world-system with its origins in the mid-16th century. As a historical world-system, the current capitalist world-system is assumed to be time-bound with a beginning and an eventual end. “The capitalist world-economy has a ‘natural history’ in a way that no state structure does. It came into existence under specific historical circumstances; it manifests specific long-term secular trends; it will most likely one day have a demise” (Hopkins, Wallerstein, et al., 1982:55).

World-systems analysis originated in the context of the modernization debates of the 1950s and 1960s. As such, global political and economic structures and processes (for example, the global division of labor or the interstate system) have been the primary subjects for research, with a notable neglect of consideration for cultural forms. At the same time, as two of the primary proponents of world-systems analysis have argued, the cultural sphere is by no means only of secondary interest. It is in fact, a “third fundamental aspect” alongside and of equal rank with the domain of political and economic structures and processes.

There is a third fundamental aspect of the modern world-system, in addition to the specifically “economic” aspect and the specifically “political” aspect. That is the broadly “cultural” aspect which needs to be mentioned even though little is systematically known about it as an integral aspect of world-historical development. Just as the world-system contains, as it were, a multiplicity of interrelated states, so too does it contain a multiplicity of interrelated cultural communities—language communities, religious communities, ethnic communities, races, status groups, class communities, scientific communities and so forth. (Hopkins, Wallerstein, et al., 1982:43)

Distinguishing themselves from other critiques of modernization (for example, Marxists, dependency theorists), Wallerstein and others argue that world-systems analysis proceeds from three conceptual premises—a single global unit of analysis, a multiplicity of social times, and a multidisciplinary perspective (Wallerstein, 2006, 1999). For those primarily concerned with

⁹The territories over which past world-systems have ruled never actually encompassed the entire globe. In this regard, the term “world-system” is a bit of a misnomer, as the first truly global world-system has been the capitalist world-system of the past century.

local- or national-level developments, it is this notion of a single global unit of analysis that evokes the strongest protest. Within world-systems analysis, the nation-state is not considered a sufficient unit of analysis for the purpose of understanding national or local developments. At the same time, a framework that offers only a global-level perspective is also inadequate. Rather, social and cultural developments at the local, national, or global level follow from the dynamic interaction of local, national, and global forces. Indeed, within this tri-level confluence, factors at the local level are generally understood to be the *most palpable and immediate* with respect to shaping people's lives and social organization. "A world-economy is defined as that kind of worldsystem in which the political and cultural 'structures' are multiple and the system-wide political and cultural structures are far less tangible and immediately constraining than more 'local' ones" (Hopkins and Wallerstein, 1987:764). Across the capitalist world-system, social space and social interaction are organized within a well-integrated zone of structures and processes, including cultural structures and processes, which reify systemic rules. One of the essential tasks of world-systems analysis has been to delineate the nature of these structures and processes in the context of the long-term, large-scale development of the capitalist world-system as it has grown over the past five centuries as a single spatial-temporal zone that cuts across political and cultural units at the local, national, and global levels.¹⁰

Two central concepts of world-systems analysis that follow from the notion of a single global unit of analysis, and with direct implications for biomedicine in Africa, are the core-periphery relationship and the process of incorporation. One of the basic social structures defining the capitalist world-system is an axial division of labor that links "core" and "peripheral" production processes in the pursuit of endless accumulation within a single expanding world-system. As a consequence, the core-periphery relationship is a fundamental organizing principle of the capitalist world-system.

There is one expanding economy. This conventionally appears to us in the form of various "national" economies related through "international" trade. This one world-scale economy, which is progressively more global in scope, has a single or axial division and integration of labor processes ("division of labor"), which is both organized and paralleled by a single set of accumulation-processes, between its always more advanced, historically enlarging and geographically shifting core and its always less advanced, disproportionally enlarging, and geographically shifting periphery. (Hopkins, 1982a:11)

¹⁰See, for example, Abu-Lughod (1989), Arrighi (1994), Chase-Dunn (1989), Tomich (1990), and Wallerstein (1974, 1980, 1989).

While there is a rough correspondence between core activities and wealthy nations and peripheral activities and poor nations, conceptually the notion of “core” nation or “peripheral” nation is mistaken. Rather, depictions of the core or periphery pertain to descriptions not of specific nation-states but of a type of relationship between zones occupied by nation-states. The concepts of core and periphery within world-systems analysis, therefore, reflect an effort to depict conditions in various parts of the capitalist world-system (such as wealth and poverty) not as descriptive categories but as expressions of dynamic, system-wide relationships and processes. Biomedicine in Africa is a manifestation of this relationship. The core-periphery construct is thus fundamentally a relational concept and great mishap results when this basic principle of analysis is neglected.

[U]nfortunately, the end-terms “core” and “periphery” all too often become themselves respective foci of attention, categories in their own right, as it were. And the relation which the joined terms designate slips into the background. When that happens the processes continually reproducing the relation, and hence the relational categories, also drop from sight, and we are left with only the categories, which, as a result, are now mere classificatory terms, neither grounded theoretically nor productive analytically. (Hopkins, 1982b:151)

World-systems analysis maintains that the basis for Western dominance is linked to its strategic position within an exploitive capitalist world-system, driven by the requirements of endless accumulation.¹¹ As a consequence, a central feature of the capitalist world-system over its five hundred-year history has been its periodic territorial expansion and the incorporation¹² of peoples and societies previously outside its system-wide, axial division of labor.¹³ This represents the peripheralization of such peoples and societies, as they become increasingly ensnared in the structures and processes of production and consumption within the capitalist world-system. While whole societies are incorporated, this does not suggest that all persons and processes become direct participants within peripheral production. Rather, certain key

¹¹ See Amin (1974), Gunder Frank (1978), and Wallerstein (1974).

¹² For an extended treatment of the concept of incorporation as a historical process see the 1987 special issue of *Review—Fernand Braudel Center for the Study of Economies, Historical Systems and Civilizations* (Vol. X, Nos. 5/6, Summer/Fall, 1987).

¹³ World-systems analysis draws a technical distinction here between the capitalist world-system and the world-economy. The expansion of the capitalist world-system, via the incorporation of new territories, is in fact precipitated by a cyclical period of contraction across the world-economy (Hopkins and Wallerstein, 1982; 1987).

export-oriented industries (such as mining or agriculture) are organized to meet the needs of core production, while others' activities are re-fashioned to support these expanding industries. Political and cultural institutions and practices are thereby transformed, as the newly peripheralized territory both resists and succumbs to core pressures. While guns and warships are the major tools of initial conquest in this period of incorporation, a broad phalanx of less lethal instruments secure subjugation (that is, missionaries, doctors, and teachers). Among these less lethal instruments in Africa, the introduction of Western biomedicine was an essential element. Both an ideological ramrod and a tangible social benefit, Western biomedicine effectively contributed more generally to the conditions for Western influence.

The second premise of world-systems analysis concerns the role of time (or temporal frames) as an organizing principle for social analysis. At the heart of world-systems analysis is a concerted effort to grapple with the challenge of including a multiplicity of social times as a feature of social development (Wallerstein, 1993). The underlying theoretical notion of a multiplicity of social times originated with the French *Annales* School and Braudel.¹⁴ “Whether we are dealing with the past or present, a clear awareness of the plurality of social time is indispensable to a common methodology of the social sciences” (Braudel, 1972:13). The “plurality of social time” emerged by way of a critique of traditional historiographic work, which tends to emphasize one of two temporal extremes. On the one hand, there are those historical accounts that revolve around specific moments or events of great importance, such as a revolution or war. Such history offers fantastic descriptions of dramatic battles or colorful personalities but generally lacks a broader context or perspective for analyzing the events in question. At the other extreme, there are those nomothetic social scientists who treat their findings as timeless and universal—hence, subject to no temporal boundaries. Accordingly, Braudel depicts the nomothetic social sciences as the province of unexamined, ahistorical distortion.

[T]he researcher into the world of today arrives at the finer components of structures only if he too “reconstructs,” i.e., puts forward hypotheses and explanations, rejects reality in the crude form presented to him, cuts it up and goes beyond it—processes all entailing reconstruction, which lets us escape from the given pattern and re-arrange it. I doubt whether the sociological record of the present is any “truer” than the historical picture of the past; and the further it tries to place itself from the “reconstruction,” the less “true” it is. (Braudel, 1972:23)

¹⁴ See Braudel's (1972) seminal essay regarding social time and the historical social sciences.

Braudel sought to analyze history with the aid of two temporal measures found between these two extremes. The first he referred to as structural time, or the *longue durée*. The *longue durée* captures the life history of a particular historical world-system, such as the capitalist world-system. Structural time can, therefore, cover vast stretches of time—five hundred years plus—and over this period a great many structures and processes internal to a world-system are themselves subject to distinct temporal durations vis-à-vis the history of the system as a whole. An example would be the era of mercantile capitalist trade or of the Atlantic slave trade economy. The second temporal measure concerns midrange cycles, or the “conjuncture.” These are medium-length, repeating periods (twenty- to fifty-year episodes) that mark the cyclical patterns of development of a particular world-system. For example, within the capitalist world-system this temporal measure may refer to routine business cycles or to those regular periods of expansion or contraction of the world-economy. New areas, such as Africa, are generally incorporated into the capitalist world-system during periods of cyclical contraction. The challenge is to frame specific and multiple structures and processes within a combination of overlapping, temporal frames to analyze simultaneously short-term or middle-range developments while chronicling the life narrative of a historical world-system—the *longue durée*—without reducing the former to the latter nor neglecting the latter for the former.

[G]etting a grasp of what the world is about means defining a hierarchy of forces, currents and individual movements, and refashioning the pattern of their totality. At each moment in the search, distinctions will have to be made between long-term movements and sudden growths, the latter being related to their immediate sources, the former to the long-term span. . . . The long-term, the “conjuncture” and the event fit together easily because they can all be measured on the same scale. (Braudel, 1972:21, 36)

Importantly, while the present analysis of biomedicine in Africa borrows Braudel’s notion of social times largely intact, there is one significant modification. The term “middle-range episode” replaces “conjuncture” to better capture those noncyclical developments (colonial rule, mercantilism) that persist for many decades and that possess qualities (including racial ideologies) that endure beyond their decline. The export of biomedicine to Africa trespasses any number of overlapping social times that correspond with various historical structures and processes that give shape to the capitalist world-system. The colonial era, African incorporation, the narrative of Western scientific discovery, and the age of European imperialism are, for example, each periods of momentous import by themselves. However as integrated

structures and processes within the development of the capitalist world-system—an angle of vision made stark by a world-systems analysis of the processes associated with the introduction of biomedicine into Africa—these developments both account for biomedicine in Africa and are themselves shaped by biomedicine in Africa. Hence, the narrative of biomedicine in Africa, comprising a distinct social time, must be located within the longer train of historical development, in part to place it in broader perspective and, in part, to tell the story of the capitalist world-system more completely. With respect to economic or political structures and processes (such as Korean industrialization or the Soviet Union's rise and fall) this may seem self-evident. It is argued here, however, that conceptually within world-systems analysis the inclusion of cultural developments, such as biomedicine in Africa, provide no less insight regarding the capitalist world-system and are no less essential for its complete depiction.

The third premise of world-systems analysis concerns the notion of unidisciplinary research. It is argued that world-systems analysis requires a unified notion of the historical social sciences to analyze properly “total social systems over the *longue durée*.”¹⁵ Unidisciplinary research differs conceptually from the conventional interdisciplinary course of investigation. Interdisciplinary work implies a type of cooperation between individuals from separate and distinct scholarly spheres all of whom retain privileged expertise in their unique fields. Such orchestrated cooperation, in fact, reinforces division. Unidisciplinary work rejects the traditional apartheid structure of academia and advocates creating nonsectarian disciplines, which borrow from a range of fields, free of professionalized turf battles. Such work obviously clashes with the established academic norms of separation. In the present study, for example, among the disparate and overlapping professional fields are those of medical anthropology, medical sociology, medical history, African studies, political economy, and colonial/postcolonial studies—to name the most obvious. Lamentably, the reception for unidisciplinary research from disciplinary specialists often fluctuates between tepid indifference and outright hostility.

Finally, world-systems analysis raises unique methodological challenges for analyzing a historical world-system whose development results from the dialectical interaction of local, national, and global structures and processes over long stretches of time.¹⁶ The development of biomedicine in Africa as a feature of the capitalist world-system presents a case in point. Biomedicine in African did not develop as a spontaneous and isolated cultural form. Nor was

¹⁵ See Hopkins (1982b), Wallerstein (2001), and Wallerstein et al. (1996).

¹⁶ See Bach (1982), Hopkins (1982a, 1982b), McMichael (1990), and Tomich (1994, 1997).

it the case that even the most detailed knowledge of the capitalist world-system would have allowed one to anticipate the unique patterns of biomedicine's local manifestations across Africa. World-systems analysis asks us to capture faithfully, somehow, the manifold history of biomedicine in Africa while simultaneously placing these developments within the flow of historical structures and processes that constitute the capitalist world-system across a single global unit of analysis, comprising a multiplicity of social times. Such work suggests a number of methodological challenges of considerable complexity.

By way of entry into such matters, a brief comment regarding the use of language is in order. At times, the terminology of world-systems analysis may appear to lack a degree of precision—especially from the perspective of analytical philosophy. Indeed, the use of language often lies closer to the metaphoric allusions of Nietzsche than to the strict correspondence rules of the Vienna Circle. As explored below, from the perspective of world-systems analysis, the difficulty of language follows, primarily, from the issue of concept-formation and from an investigative procedure that emphasizes the relationships between social phenomena rather than a given phenomenon's discrete properties. In general, this seeming lack of linguistic rigor is tempered by the rich details of the historical narratives that comprise much of the literature of world-systems analysis. At other times, however, such as when introducing a novel conceptual construction, this looseness of language presents certain difficulties. Here, for example, the task will be to consider “historical-cultural formations” (such as biomedicine in Africa) in a fashion that is parallel to analyses of the economic and political structures and processes that comprise the capitalist world-system.¹⁷

To begin, therefore, it is necessary to establish the proper conceptual language and corresponding methodological procedures for an investigation of a historical world-system—and specifically the capitalist world-system. Methodological considerations within world-systems analysis can be seen, in fact, as interventions in an ancient debate concerning parts/whole constructions applied to historical social analysis and laden with a terminology heavily influenced by Marx. In the language of such debates, a historical world-system represents a concrete whole, which is comprised of combinations of interrelated structures and processes. In isolation, each structure or process is an abstraction

¹⁷ As understood in the present analysis, the term “structure” suggests orderly and regular patterns of social organization that direct and govern social interaction. The term “process” refers to a collection of linked social phenomena with expanding and contracting entanglements that develop across space and time. The economic and political entities that comprise the capitalist world-system, such as the division of labor or the interstate system, represent both structures and processes simultaneously. This is no less true for historical-cultural formations (e.g., biomedicine). Thus, the term “historical-cultural formation” refers to an entity comprised of structures and processes that are constituent elements of the capitalist world-system.

and cannot be meaningfully analyzed as such. It is only in relation to the concrete whole (the capitalist world-system) that these abstract elements are defined and made substantive. Analysis of the concrete whole, therefore, requires consideration of its structures and processes and the relations between them. Indeed, it is the relationships between structures and processes that constitute the capitalist world-system. Importantly, because these structures and processes are analyzed across a single spatial-temporal unit, they are “singular” structures and processes. This signals an important break from conventional, analytical-comparative methods which generally do not incorporate the contingency of historical time as an element of inquiry itself. “Long held strategies of concept formation and comparative analysis are challenged by the insistence upon singular processes as the starting point for inquiry. Perhaps the clearest impact is on the necessity to pursue the construction of structures in their time-place coordinates and in relation to the construction of structures elsewhere” (Bach, 1982:167).

The analysis of any historical development, such as biomedicine in Africa, emerges from an analysis of that development as a singular (and abstract) structure or process—the common starting point for inquiry in world-systems analysis. If biomedicine in Africa is conceptualized as a “singular process,” then what distinguishes it is not its external properties but its relationships to other structures and processes that comprise the capitalist world-system (for example, colonialism in Africa). At the same time, world-systems analysis rejects reductionist notions whereby structures and processes are mechanically determined by their position within the capitalist world-system. Thus, one does not identify a singular structure or process and try to fit it into a pre-existing world-system (or concrete whole). Rather, in dialectical fashion, structures and processes determine (constitute the conditions for) a world-system. The capitalist world-system and its constituent elements are mutually conditioning.

For the world-system perspective, then, the whole consists of singular processes which *form* and *reform* the relations that express patterns or structures. Parts are “pieces” of a process, not independent of the remainder of the process but located within a specific time-place coordinate. To “sum” the parts means to bring them together successively as each produces the particular time- and place-bound relations and traits. (emphasis in original, Bach, 1982:166)

As follows from this basic formulation, world-systems analysis rejects the conventional analytical-comparative methodology, which assumes a world of discrete “cases” (such as nations, ethnic/religious groups) that vary according to select properties. Such comparisons pay too little heed to the relationships

between cases. Instead, world-systems analysis emphasizes the investigation of historical developments as elements within a set of interrelated structures and processes that, through their combination, form a single concrete whole.¹⁸ The analysis takes the form of a continual juxtaposition between historically connected structures and processes rather than direct comparisons. Procedurally, this entails an initial movement from more immediate abstract elements to the concrete whole (the capitalist world-system).¹⁹

The part-whole directive . . . says to keep moving out by successive determinations, bringing in successive parts—themselves abstract processes—in continuing juxtaposition and in this way form the whole which you need for interpreting and explaining the historical changes or conditions under examination. . . . [I]n the fullness of the whole so formed, one “interprets” observational statements; or, alternatively, one “measures” selected and partial “outcomes” of the complex processes. (Hopkins, 1982b:147)

Thus, in relation to the capitalist world-system (a concrete whole), various historical-cultural formations—such as biomedicine in Africa—represent singular, abstract structures and processes. Further, the term “historical-cultural” denotes a cultural formation that is dynamic, ever-developing, and thus subject to change. Methodologically, one would be in error to treat these historical-cultural formations as discrete phenomena comprised of unique properties, such as the scientific method or germ theory, in an effort to draw comparisons with other historical-cultural formations (for example, African pluralistic medicine). Historical-cultural formations found among societies across the capitalist world-system represent constituent elements of the capitalist world-system itself. Outside this relationship to the whole they are distorted abstractions. Thus, a historical-cultural formation’s relation to the whole (its role as a constituent element)—as well as its relation to other historical-cultural formations—simultaneously defines that historical-cultural formation and further develops the capitalist world-system as a concrete whole. This would suggest that it is necessary to construct biomedicine in Africa, as a historical-cultural formation (1) in relation to the self-expanding capitalist world-system and (2) in relation to the ongoing structures and

¹⁸ McMichael (1990) provides an example of this from the perspective of world-systems analysis through his use of the concept of “incorporated comparisons.”

¹⁹ This formulation, of course, mirrors that described briefly by Marx in his passage from *Grundrisse* on “Method of Political Economy.” Additionally, though developed in a different context, this emphasis on abstract parts in relation to a concrete whole is clearly influenced by the analyses of Kosik (1976), Lefebvre (1968), and Lukacs (1971).

processes of Western expansion in Africa. Similarly, one must not view biomedicine in Africa, Western expansion, or the capitalist world-system as complete or fully constituted absent these relationships. In this respect, consideration of historical-cultural formations is similar to that of economic and political structures and processes.

With respect to biomedicine in Africa, world-systems analysis, therefore, presents a basic dilemma. On the one hand, world-systems analysis offers a decidedly compelling account of long-term, large-scale social development with respect to the political and economic structures and processes that comprise the capitalist world-system. On the other hand, world-systems analysis makes little, if any, effort to incorporate historical-cultural formations as integral (and indispensable) features of these long-term, large-scale developments. Two options emerge. One can simply abandon world-systems analysis and thereby sacrifice the robust potential of its basic framework. Or, working within this framework, one can attempt to broaden its conceptually sound though incomplete precepts to schematically include historical-cultural formations as essential features of the capitalist world-system. Opting for the latter, it is our intent to extend world-systems analysis in a fashion that treats biomedicine as a core-based, singular historical-cultural formation whose introduction to Africa has been integral to the expansion of the capitalist world-system and to the further development of biomedicine itself. As such, this framework will allow one to analyze how biomedicine has transformed Africa as well as how Africa has transformed biomedicine.

The Empirical, Conceptual, and Interpretive Realms of Historical-Cultural Formations

One of the most basic distinctions between historical-cultural formations and other elements of the capitalist world-system concerns their ontological status. As discussed above, economic and political structures and processes are abstract expressions of the capitalist world-system whose analysis is, in part, an empirical question and, in part, a conceptual question. Consider, for example, the division of labor. Its relation to the capitalist world-system and its simultaneous reflection of local social conditions is both a matter of empirical investigation and the result of conceptual analysis. For a variety of programmatic reasons, world-systems analysis has largely limited its research to economic and political structures and processes for which the empirical-conceptual methodological strategies described above largely suffice (Hopkins, Wallerstein, et al., 1982). Biomedicine is a historical-cultural formation whose structures and processes, from one angle of vision, are also abstract expressions of the capitalist world-system. More immediately, however, biomedicine is an expression of collective social meaning. The study of

historical-cultural formations differs for this reason from most of the work of world-systems analysis and suggests the need for additional analytical strategies—beyond the empirical and conceptual—that permit interpretive methodological procedures.

As expressions of collective social meaning, the analysis of historical-cultural formations as constituent elements of the capitalist world-system introduces an ontological line of inquiry. Within world-systems analysis, the ontology of the division of labor (that which can be known about it) is essentially limited to the empirical-conceptual realm. As a historical-cultural formation, the ontology of biomedicine necessarily extends beyond the empirical-conceptual realm and includes the social worlds of interpretive communities.²⁰ Indeed, as it develops, not only do biomedicine's empirical forms and conceptual roles within the capitalist world-system change, so too do its social meanings. Biomedicine, therefore, is comprised of multiple ontological spheres across empirical, conceptual, and interpretive realms. But what types of phenomena, forms, and categories constitute biomedicine as a subject for investigation across these ontological spheres? From an empirical perspective, biomedicine consists of concrete facts (truths) and objects that are subject to observation and measurement. From a conceptual perspective, biomedicine represents a social relation, a form of social organization that is itself a historical abstraction (an expression of underlying social power relations). From an interpretive perspective, biomedicine is a symbolic-cultural expression that serves as a social representation whose meanings reify collective values and beliefs.

Each sphere signals a unique set of ontological phenomena. Each reveals a particular facet of biomedicine and thus all are necessary for its full understanding. Privileging one facet above another would distort one's view and replace biomedicine, as a product of the dynamic interaction (and creative tension) between multiple ontological spheres, with a flat, three-sided figure—a figure comprised of three discrete sides, versus a figure constituted by the ongoing articulation of its manifold forms. Integrating these three ontological spheres necessarily results in a conceptual representation that sustains internal contradictions as a premise of its being. Thus, understood as an ontological whole, biomedicine is the product of multiple ontological spheres. Representations of biomedicine neglecting any one of these spheres will be distorted and one sided. Representations incorporating all of these spheres will be contradictory and subject to constant revision. The task, therefore, is not to unite or reconcile these three spheres—biomedicine as an empirical object and biomedicine as a symbolic-cultural expression, for example, suggest

²⁰The same could technically be said for economic and political structures and processes, such as the division of labor, and this remains a fertile area of investigation open to further inquiry.

alternative logics of inquiry. Rather, the task is to develop all of these spheres simultaneously as interdependent reflections of the multifaceted nature of biomedicine, as a historical-cultural formation comprised of multiple ontological spheres.

A further complication surfaces when one begins to analyze any one of these ontological spheres. Biomedicine remains in motion across both space and time vis-à-vis the capitalist world-system, and its analysis as an ontological form must reflect this. Consequently, it follows that each sphere is itself comprised of varying levels of abstraction depending upon one's spatial-temporal location across a single global unit of analysis with multiple social times. As noted, these levels of abstraction correspond with the *longue durée* at the level of the capitalist world-system, with middle-range episodes that encompass the development of the structures and processes that comprise the capitalist world-system, and with short-term events that punctuate and dramatize the life and times of middle-range episodes. For example, when analyzed across the capitalist world-system, biomedicine as a symbolic-cultural expression reflects interpretive meanings at the level of the concrete whole across the *longue durée*. However, when analyzed as a moment in Africa's incorporation, biomedicine is a symbolic-cultural expression of the structures and processes at the level of a middle-range episode. Lastly, when presented through the prism of a specific medical campaign to eradicate sleeping sickness, biomedicine takes on the appearance of a short-term event. Each of these sets of interpretive meanings is an equally integral aspect of biomedicine as a symbolic-cultural expression. Furthermore, that which is true for biomedicine as a symbolic-cultural expression holds equally for biomedicine as an empirical object or biomedicine as a social relation. Thus, each ontological sphere contains its own set of embedded levels of abstraction, corresponding to varying spatial-temporal locations across the capitalist world-system.

The extension of world-systems analysis to incorporate historical-cultural formations as integral features of the capitalist world-system, therefore, begins with an ontological dissection. The first step is to distinguish the multiple ontological spheres—empirical, conceptual, and interpretive—that comprise biomedicine and to sketch the relationships between them. The second and simultaneous step is to distinguish between the multiple levels of abstraction that comprise each ontological sphere and that correspond with varying spatial-temporal locations across the capitalist world-system. Importantly, just as the structures and processes that comprise the capitalist world-system stand in a relation of mutual conditioning to that world-system, the multiple levels of abstraction constituting each ontological sphere are also mutually conditioning. In other words, just as no single ontological sphere—empirical, conceptual, or interpretive—is primary, there is no single level of abstraction that *determines* the others. Alas, the search for a single governing logic at the

“highest” level of the concrete whole (that is, *Geist*) resolves itself as pure illusion. Ultimately, the relationships between ontological spheres, as well as the relationships between each ontological sphere’s levels of abstraction, determine the development of biomedicine as an ontological whole. The analysis of biomedicine in Africa as a feature of the capitalist world-system, therefore, begins with an ontological unpacking of biomedicine, itself a historical-cultural formation comprised of multiple, embedded ontologies.

Medical Systems, Western Expansion, and “Syncretic” Worldviews

As the expanding capitalist world-system incorporates and transforms more and more societies around the globe, deeply embedded sociocultural values, beliefs, and practices are reshaped in broad conformity with patterns of capital accumulation and the agenda of the Western powers. It is argued here that a medical system embodies a type of historical-cultural formation that is uniquely suited for the purpose of tracing these transformations of local sociocultural values, beliefs, and practices in the context of a society’s incorporation into the expanding capitalist world-system. This approach locates such historical-cultural formations (and their inherent internal contradictions) at the nexus of a dynamic tension between the transformative pressures exerted by structures and processes at the level of the capitalist world-system and local forms of collective social expression (and resistance), which shape and define these historical-cultural formations. Furthermore, as symbolic-cultural expressions, a principle feature of historical-cultural formations is that they convey collective worldviews that are actualized through social praxis and interaction. In this sense, a worldview provides a representation of how societies interpret the meaning of its members’ lived experiences, including of course, those foreign encounters precipitating dramatic social change. Importantly, historical-cultural formations are only one of the many sociocultural influences shaping collective worldviews. It merely happens that historical-cultural formations, such as biomedicine, provide an especially rich and detailed window into these.

By the late 19th century, biomedicine had begun its reign as the predominant form of healing in the core region of the capitalist world-system. Indeed, alongside the Bible and the gunship, it was the syringe that greatly hastened Europe’s global ascendancy. As a practical matter, the Scramble for Africa would have met with far less success had it not been for the advent of “tropical medicine” (see Chapter 3), which granted the European soldier the requisite fortitude to survive conquest. Therefore, in concert with the 19th-century incorporation of Africa, the Western powers propagated a specific medical system, biomedicine, whose associated health beliefs and practices embodied a

unique approach to medicine and healing. A potent agent of colonization, biomedicine provided the West with a powerful tool for “civilizing” Africans via the introduction of values and beliefs that challenged established African values and beliefs. The Europeans ultimately brought biomedicine to Africa as both a gift and a weapon.

The role of biomedicine as a strategic counterpoint to Africa’s “primitive” and “brutish” cultural values and beliefs underscores the importance of biomedicine as a form of symbolic-cultural expression. Indeed, as a reflection of a society’s health beliefs and practices, medical systems offer a particularly valuable perspective with respect to a society’s collective worldviews. Health beliefs and practices reflect a fundamental understanding of how societies view an individual’s and a community’s place within the world and how societies interpret an individual’s and a community’s relation to the natural, supernatural, and social worlds. The worldview embraced by biomedicine limits health-related phenomena almost exclusively to the natural world. By contrast, the worldviews expressed by the pluralistic-medical systems, which predominated across Africa prior to biomedicine, generally associated health-related phenomena with a broad spectrum of overlapping forces that intersect the natural, supernatural, and social worlds. Consequently, the introduction of biomedical beliefs and practices can present significant challenges to a society’s established worldviews. The result has been the emergence of a mix of syncretic health beliefs and practices across Africa that combine biomedical and pluralistic-medical elements. Over time, these evolving syncretic health beliefs and practices have the potential to reshape and reconstitute a society’s worldviews radically with respect to how people understand and interpret their place within the natural, supernatural, and social worlds. At the same time, as is asserted here, through these same syncretic health beliefs and practices Africans have the potential to expand and reshape biomedicine itself as a “singular” historical-cultural formation.

This latter potential turns, in part, on how one conceptualizes African syncretic-medical systems in the context of the capitalist world-system. To begin with, the notion of an African pluralistic-medical system does not imply a medical system that is somehow frozen in time, embracing an ancient and primordial set of health beliefs and practices. Rather, African pluralistic-medical systems are dynamic, evolving medical systems that combine a wide variety of traditions, values, and cultural influences. In this sense, it can be argued that, even absent biomedicine, African pluralistic-medical systems are themselves syncretic insofar as they comprise a mix of medical systems. It is merely for clarity of presentation, therefore, that only medical systems that commingle aspects of biomedicine and aspects of African pluralistic medi-

cine are referred to here as syncretic. African syncretic-medical systems are thus no less “African” than African pluralistic-medical systems. This, however, begs an obvious question. Why is it that when biomedicine travels to different regions of Europe or North America and the resulting medical systems represent a number of common health beliefs and practices as well as the influence of distinct local cultural traditions (see Chapter 2) it is labeled biomedicine, but when the same process occurs on the continent of Africa it is labeled African syncretic medicine? The distinction betrays a basic Western ignorance both of Africa and of biomedicine.

The ignorance of Africa concerns an alleged clash of conflicting worldviews that first originated with colonial rule. That which distinguishes biomedicine from African pluralistic medicine in the Western mind is the role of science. As detailed below, however, in actual practice there is little justification for labeling biomedicine “scientific” and African pluralistic medicine “unscientific.” It is true that African pluralistic medicine often incorporates elements of the supernatural and social worlds (such as witchcraft and divination) that are very much at odds with the cultural beliefs and practices of Western biomedicine. However, it is also true that scores of pluralistic-medical practitioners rely on the same so-called scientific procedures associated with biomedicine, such as empirical observation and trial-and-error testing. Thus, in actual practice, African pluralistic medicine reflects a mindset that is no less grounded in science.

The ignorance of biomedicine concerns a mistaken notion of biomedicine as a medical system that is frozen in time, embracing an ancient and primordial set of beliefs and practices narrowly construed as a scientific enterprise. Medical knowledge and technology may change but the fundamental framework of biomedicine is considered eternal. In fact, as a singular historical-cultural formation, biomedicine is subject to continual transformation and renewal. As biomedicine infects different medical systems around the world, these medical systems are transformed. However, the resulting “syncretic” medical systems are merely the most recent and most up-to-date incarnations of biomedicine as a singular historical-cultural formation. These new incarnations of biomedicine, in turn, hasten the formation of new collective worldviews (grounded in praxis) that are both in harmony with and in opposition to the prevailing structures and processes that comprise the capitalist world-system. It is for these reasons that tracing the development of syncretic-medical systems in peripheralized regions of Africa after the introduction of biomedicine provides insight into how historical-cultural formations are transformed and, in turn, how these formations then transform the capitalist world-system.

Biomedicine in Africa: An African Appropriation

To unravel the genesis of African biomedicine, one must grapple with three distinct aspects of biomedicine before and after its Africa sojourn. There is first the matter of biomedicine itself. Like other historical-cultural formations, biomedicine represents an ontological whole that is comprised of multiple, mutually interdependent ontological spheres. The interrelated nature of these spheres indicates that biomedicine, far from embodying a fixed and universal set of scientific truths, is in fact a dynamic medical system, which is subject to ongoing change and development. Biomedicine framed as an ontological whole, therefore, is a basic prerequisite for the 20th-century emergence of African biomedicine. The journey of biomedicine to Africa is a second consideration. This journey served as an extension of European conquest and colonial rule over the African continent. More generally, however, it also signaled a moment in the incorporation of Africa into the capitalist world-system. After reaching the African shore, biomedicine emerged quite clearly as a singular historical-cultural formation. As such, biomedicine invariably pulled Africa more and more tightly into the orbit of those economic, political, and historical-cultural structures and processes that comprise the capitalist world-system. The basic features of African pluralistic-medical systems represent a third aspect of biomedicine in Africa. Upon arrival, biomedicine encountered a heterogeneous patchwork of African pluralistic-medical systems across the continent. The rich diversity of these pluralistic-medical systems notwithstanding, a fair number of common elements could be distinguished. Many of these elements, such as holistic interpretations of illness and pragmatic attitudes toward other medical systems, have facilitated the adoption of certain aspects of biomedicine without sacrificing the cardinal values and beliefs of African pluralistic medicine. The result has been African biomedicine, a unique African contribution to the development of biomedicine as a singular historical-cultural formation and constituent element of the capitalist world-system.

Biomedicine as an Ontological Whole

Before biomedicine could serve as a tool of colonization in Africa, it first had to establish its domination over Europe. Detailing the manner by which biomedicine came to monopolize health and medicine in the West from the 18th century through the early 20th century begins with an ontological interrogation of biomedicine itself—its empirical, conceptual, and interpretive spheres. The multiple ontological spheres that comprise biomedicine each frame biomedicine as a distinct subject of investigation. From an empirical

perspective, biomedicine takes on the appearance of a scientific enterprise and is defined as a derivative category of Western science more generally. As a scientific enterprise, biomedicine represents a combination of specialized knowledge, complex technology, and scientific rigor and is subject to the critical scrutiny of like-trained peer scientists. From an interpretive perspective, biomedicine represents a symbolic-cultural expression whose avowed adherence to the principles of scientific objectivity conceals an ideological agenda. As a symbolic-cultural expression, biomedicine propagates a set of values and beliefs that reify a narrow and distorted (mis)understanding of health and medicine that attributes illness to “natural” conditions and, thereby, absolves the toxic social environment. From a conceptual perspective, biomedicine represents an expression of social power that reflects structures of class-based divisions in capitalist society. As an expression of social power, biomedicine is a type of social relation that links the parallel processes of the commodification of medicine and the concentration of power among biomedical practitioners with the historical structures and processes of capital accumulation that comprise the capitalist world-system.

The image of biomedicine as a scientific enterprise is today ubiquitous. Most commonly, the life story of biomedicine is placed within the narrative of modern Western science, dating from the 16th century and roughly paralleling the duration of the capitalist world-system. Indeed, while many of its applications would need to await the industrial-technological advancements of the 19th century, biomedicine’s fundamental ethos and approach to health as a matter of applied scientific principles originated with the dawn of modern science and the heroic “objectivity” of Bacon, Locke, Galileo and Newton. Science equaled truth and medical science equaled the true understanding of health and illness. Over the centuries, biomedicine’s development has at times been slow and at other times more rapid. Ultimately, however, it has been a linear and cumulative process, building at each new stage upon the lessons of the past. Ancient superstitions, such as humoral theories of disease, were put to the test and vanquished. As an ontological sphere, therefore, biomedicine as a scientific enterprise details a rich world of complex medical-scientific paraphernalia organized by the logic and rigor of a scientific-technical expertise. This would be a most welcome gift for Africa, no doubt.

Further analysis of biomedicine as a scientific enterprise reveals that this ontological sphere combines multiple integrated levels of abstraction pertaining to three spatial-temporal locations across the capitalist world-system. At the level of the capitalist world-system and corresponding with the *longue durée*, biomedicine exemplifies the proud narrative of scientific progress. In this sense, its development parallels advances in the forces of production, to borrow from Marx, and is integral to the accumulation of capital. At the level of the core region of the capitalist world-economy and corresponding with a

middle-range episode, biomedicine is linked to distinct biomedical-scientific eras of discovery. The era of pathological anatomy in the early 19th century, for example, provided a better understanding of mortality patterns during a period of rapid industrialization linked to deteriorating urban centers. At the level of a local development within the capitalist world-system and corresponding with short-term events, biomedicine parades triumphantly in the guise of a pioneering, new advance. The establishment of the Paris School at the turn of the 19th century, for example, proved an innovative organizational structure for enhancing medical treatment and research. This organizational structure was later generalized to create the modern research hospital. Each of these features of biomedicine as a scientific enterprise—the narrative of scientific progress, advances in pathological anatomy, and the Paris School—is shaped by, and in turn helps to shape, the other two. The organization of the Paris School, for example, as a laboratory that gathered large samples of patients, directly aided scientific progress and provided the basic data for pathological anatomy. Likewise, the spirit of scientific progress inspired the Paris School, and the field of pathological anatomy validated their efforts.

A second ontological sphere, biomedicine as a symbolic-cultural expression, stands in opposition to the first ontological sphere. On the one hand, it rejects the empirical-objectivist premises of biomedicine as a scientific enterprise. Where the latter sees scientific categories built on careful observation and analysis, the second ontological sphere sees crude ideological constructions that reflect vested social interests. Consequently, whereas biomedicine as a scientific enterprise prefers methods of inquiry that follow the sound, positivist principles of experimental science, the methods of inquiry informing biomedicine as a symbolic-cultural expression involve interpretive procedures designed to understand biomedicine as a constructed world of meaningful items. The standard portrayal of biomedicine as a detached and objective science, for example, conceals how stoic indifference turns social problems into technical problems via ideological subterfuge. “The new scientific medicine tended to place the focus of research on the individual and especially the sub-individual (cell or organ). This not only helped to mask the reaction of the external environment to disease but also tended to focus curative and preventive research on the individual rather than the collectivity. This had the effect of making the individual responsible for his or her own health, and, in effect, of taking this responsibility away from society” (Berliner, 1975:577). That which distinguishes the second ontological sphere, therefore, is the shift from formal techniques promoting empirical explanations to a critique of biomedicine (and of science) that results in a process of inquiry grounded in interpretive understanding.

Like the previous ontological sphere, biomedicine as a symbolic-cultural expression is comprised of three integrated levels of abstraction. At the level

of the capitalist world-system and corresponding with the *longue durée*, biomedicine exudes the ideology of scientific-technical knowledge and the accompanying cult of objectivity. This is in conformity with the scientific-cultural norms and values of core-based societies from the 16th century forward. At the level of select regions across the capitalist world-system and corresponding with a middle-range episode, biomedicine is linked to periods of deepening social consensus based on technology-driven invention and advancement. The mid-19th century, for example, saw a spate of technological breakthroughs permitting more precise observations of the human body (such as the ophthalmoscope and otoscope in the 1850s, the sphygmograph in 1860, and the electrometer in 1872). Such devices were critical for the cultural popularization of biomedicine both by linking it to the imagery of scientific progress and by offering people tangible evidence of its scientific content. At the level of a local development within the capitalist world-system and corresponding with short-term events, biomedicine celebrates the periodic, science-affirming medical breakthrough. Louis Pasteur and Robert Koch's simultaneous discoveries of *anthrax bacillus* as the cause of anthrax in animals in 1876 is a case in point. The scientific rationale behind this discovery, the germ theory of disease, resulted in a popular understanding of biomedicine, which focused narrowly on physical phenomena as the cause of illness. Each of these levels of abstractions interacts with and shapes the others. The discovery of *anthrax bacillus* (and its attendant social meanings), for example, followed from a collective social abeyance to a deified scientific-technical knowledge and the general public's reception for Koch and Pasteur's findings was prepared, in part, by the mid-19th century period of celebrated medical inventions. In turn, the ideological grip of scientific-technical knowledge was furthered by this discovery and the cultural impact of these medical inventions was realized.

A third ontological sphere, biomedicine as an expression of social power, reveals a further essential aspect of biomedicine. The links between biomedicine, as a social relation, and structures of power within capitalist society take several forms. On the one hand, the ongoing commodification of medical care beginning in the mid-19th century has today generated a large, U.S. biomedical-industrial complex, a sprawling conglomerate of private physician groups, government agencies, state and private universities, corporate foundations, research and teaching hospitals, biotech firms, transnational pharmaceutical corporations, and the insurance industry (Clarke et al., 2003).²¹ Indeed, in practice in the West, biomedicine is largely predicated on the

²¹ By the 1950s, most of Europe had removed patient care from the marketplace and provided national healthcare. Nonetheless, much of the basic infrastructure of biomedicine—e.g., the biotechnology and pharmaceutical industries—remains in private hands.

marketplace as the primary site of care and as a distribution center for its products. The premise of medical care as an item of exchange is not unique to biomedicine. However, the combination of biomedicine's commodity form and advanced capitalist society have created unique conditions for intensifying this process, especially in the United States. Thus, one of the major tasks of biomedicine in the West has been the methodical elimination of its competition and the resulting concentration of power. The concerted efforts of biomedical proponents (a combination of elite biomedical practitioners and leading industrialists) to establish exclusive controls over the education and licensing of medical practitioners has created a medical system thoroughly monopolized by an ever-expanding biomedical-industrial complex. This third ontological sphere, therefore, concerns biomedicine's imbricated social relations and details both its rampant commodification and its calculated self-positioning vis-à-vis the realms of social power.

Biomedicine's third ontological sphere is again comprised of three integrated levels of abstraction. At the level of the capitalist world-system and corresponding with the *longue durée*, biomedicine provides direct ties to the accumulation of capital via the commodification of medical care. Given biomedicine's development into a multibranch, medical-industrial complex, medical care today is as much a source of investor profit as it is a source of healing. No depiction of biomedicine, therefore, is complete without due attention to its bottom line. At the level of territorial governance (national or state/provincial levels) across the capitalist world-economy and corresponding with middle-range episodes, the systematic elimination of biomedicine's competition proved essential to its dominance. In the United States in the early 20th century, a variety of nonbiomedical practitioners (for example, homeopaths, eclectics, Thomsonians) provided medical care in competition with biomedical practitioners. Equally troubling, the actual population of self-proclaimed biomedical practitioners was growing unchecked and largely unregulated. Over the course of several decades, working primarily at the level of individual states, biomedical proponents were able both to marginalize nonbiomedical practitioners (barring them, for instance, from hospital practices) and simultaneously to winnow down the number of "legitimate" biomedical practitioners by controlling medical education and licensing. At the level of a local development within the capitalist world-system and corresponding with short-term events, biomedicine's rise was punctuated by the publication of the Flexner Report in 1910, sponsored by the Carnegie Foundation. The report served as a scathing indictment of the state of U.S. medical education and sounded a clarion call for radical reform, which, just coincidentally, placed biomedical proponents at the helm of creating the new criteria for U.S. medical schools. Again, each of these levels of abstraction interacts with and shapes the others. The Flexner Report, for example, directly contributed to the fur-

ther commodification of medical care and the marginalization of nonbio-medical practitioners. At the same time, in advancing the establishment of an industrial-medical complex linked to patterns of capital accumulation, the Flexner Report was manipulated as a strategic tool by representatives of bio-medical interests seeking to eliminate their competition.

Biomedicine, therefore, framed as a historical-cultural formation and a constituent element of the capitalist world-system, is comprised of three ontological spheres. As an ontological whole, biomedicine is simultaneously a scientific enterprise, a symbolic-cultural expression, and an expression of social power. Each sphere is distinct from yet inseparable from the other two. At the same time, each ontological sphere is itself comprised of varying levels of abstraction depending upon one's spatial-temporal location within the capitalist world-system. It is the dynamic interactions between these levels that defines each sphere. Capturing biomedicine as an ontological whole results from efforts to chart the ongoing interactions both between individual spheres and between the varying levels of abstraction that comprise each sphere. The story of biomedicine in Africa must, therefore, proceed with an understanding that it is these three spheres in unison that made the journey. To lay too great an emphasis on any one ontological sphere to the neglect of the others would be to distort biomedicine's development as a singular historical-cultural formation and to obscure Africa's unique contributions to this process.

Biomedicine's Africa Journey

As biomedicine approached the African shore, the complexity of its arrival and greeting remained hidden beneath layers of ideological rationalizations. The three ontological spheres of biomedicine were equally present. However, the visible face of biomedicine revealed only those select aspects of each sphere as suited the conqueror's purpose. From an African perspective, this may have been confusing but it could not have been especially surprising given a relationship built from its inception on deceit and exploitation. It would appear, however, that Europe's calculated distortion of biomedicine in Africa was not only missed by Western scholars, but that, given the contemporary academic division of labor, which mirrors these distortions, its ideological premises have helped shape the actual representation of biomedicine in Africa. The primary academic fields responsible for the West's portrayal of biomedicine in Africa (such as medical history, medical anthropology) remain specialized disciplines with links to different aspects of Western conquest. This both reifies the original Western distortions and generates a scholarship that is ontologically incomplete. For purposes of professional self-identity each discipline retains its own autonomous intellectual sphere—protected by a time-honored system of apartheid, which separates journals, professional associations, and

academic departments. Consequently, any description of biomedicine as an ontological whole, that is, one that is blind to these faux disciplinary boundaries, is fraught with peril. Efforts to capture the complexity of forcing biomedicine, as an ontological whole, upon non-Western subjects are thus especially difficult. Reinterpreting the introduction of biomedicine into Africa from a unidisciplinary perspective, which depicts this historical-cultural formation as an integral feature of Africa's incorporation into the expanding capitalist world-system, is a first step in re-framing the prevailing, distorted image of biomedicine's arrival from an African perspective. This begins by locating biomedicine in Africa within a unique episode in the life history of the capitalist world system.

The circumstances of biomedicine's arrival in Africa provide the bases for its analysis. The period of the late 19th and early 20th century, the so-called age of imperialism, signals a dramatic period of territorial expansion for the capitalist world-system. This period encompassed a series of expansionist territorial campaigns by Western powers, including the Scramble for Africa, the Open Door Policy, the Spanish-American War, and assorted land grabs from the remains of a dying Ottoman Empire. These were the caravan of events that prepared the path for biomedicine's African arrival. As such, the origins of biomedicine in Africa are found on three spatial-temporal levels across a single global unit of analysis. At the level of the capitalist world-system and the *longue durée*, biomedicine in Africa marked a transformation of collective worldviews in concert with participation in the global division of labor and processes of capital accumulation. At the level of newly incorporated African territories and a middle-range episode, biomedicine was a vital weapon against illness during conquest (for example, "tropical medicine") as well as a putative ideological rationale for domination. At the level of the village and the short-term event, biomedicine provided colonial authorities with pragmatic solutions to a variety of dire health crises. It is precisely because biomedicine's arrival in Africa took place across a single unit of analysis comprised of multiple social times that it must be treated as a singular historical-cultural formation whose development had implications at all three levels such that biomedicine transformed Africans as Africans transformed biomedicine.

The need for a unidisciplinary approach to capture these overlapping processes follows, in part, from a consideration of how each of the three ontological spheres of biomedicine contributed to social transformation in Africa during the period of colonial rule and how these spheres shaped the structure of the literature on biomedicine in Africa as a reification of each of these spheres. Biomedicine as a scientific enterprise is the province of medical historians and their depictions of biomedicine in Africa. Biomedicine as a symbolic-cultural expression falls within the domain of medical anthropol-

ogy, and biomedicine as an expression of social power has been the purview of works in political economy. The contributions of each are essential. The contributions of none are sufficient. Nonetheless, even the most rudimentary review of the scholarship pertaining to biomedicine in Africa reveals three distinct camps, largely content to converse with and cite one another. It is not that the accounts provided by any one camp remain narrowly provincial. It is just that when medical historians or any of the others do venture beyond their preferred ontological sphere they rarely reflect on how perspectives from another ontological vantage point might reshape the interpretations of biomedicine in Africa from the perspective of their primary ontological orientation.

Much of the work of medical historians in Africa has been rich, detailed, and often brilliant in scope. The story of biomedicine in Africa from this perspective begins with the advent of “tropical medicine” and the establishment of makeshift African medical clinics across the nascent colonial landscape. Because Western scientific medicine was understood as the one “true” form of medicine, it was not so much a question of *replacing* African medical systems with superior medical systems. Rather, it was a question of explaining to the ignorant African masses that the enlightened European was bringing them a radical, foreign concept referred to simply as medicine. The primitive “medical” practices of the Africans that were observed and documented by the European were in no sense to be thought of as even in the same conceptual category as biomedicine. Consequently, medical historians have written stunning and often highly critical accounts of the development of biomedical systems under the auspices of colonial authorities alongside efforts to curb African pluralistic medicine by belittling and demonizing popular beliefs and practices.²² The analysis of this ontological sphere of biomedicine in Africa, therefore, is well represented by medical historians and joins the longer narrative of Western efforts to promote scientific progress and the ideals of the enlightenment—hence the emphasis on how biomedicine changed Africa and not vice versa.

Medical anthropology joins the story of biomedicine in Africa, emphasizing a second angle of vision, and biomedicine as a symbolic-cultural expression is brought into view. The scholarly output of medical anthropology with respect to biomedicine in Africa easily matches that of the other two camps combined, and the contributions of medical anthropology in this regard have been far-sweeping and tremendously influential. For this reason, many aspects of their account have dominated the Western understanding of biomedicine in Africa. Foremost in this respect is the localized analysis of the cultural transformation of popular medical beliefs and practices. Medical

²² See, for example, Aidoo (1982), Beck (1970, 1981), C. Good (1991), Hopwood (1980), and Lasker (1977).

anthropology offers spectacular accounts of the Africans' encounters with biomedicine—tales of skillful adaptations alongside ardent resistance—and how these encounters have transformed African life and society at times for the better and, at times, for the worse.²³ Given the great attention paid to local, community-level, ethnographic detail, the profound nature of biomedicine's transformation of African cultures has been especially well documented. In part, due to the powerful imagery of these compelling and often moving accounts of social disruption, the focus on biomedicine's impact on Africa has largely muted the story of Africans' impact on biomedicine. Indeed, in light of the volume of materials produced by medical anthropology, this ontological sphere has tended to cast the longest shadow across the Western imagination with respect to biomedicine in Africa.

In comparison with the first two ontological spheres, biomedicine as an expression of social power has received only modest attention. Those writing from the perspective of political economy tend to present biomedicine in Africa as secondary to the analysis of Western imperialism or of capitalism in African. As such, biomedicine frequently appears more as a bit player in a larger geopolitical drama, than as the central character. Consequently, analyses of biomedicine (and medical care in general) serve the purpose either of revealing the great depths of social poverty across Africa or of providing a proxy for the maldistribution of social resources. Given the breadth of approaches informing international political economy, those describing biomedicine in Africa from this perspective represent a wide variety of views.²⁴ Depictions of biomedicine's third ontological sphere generally provide glimpses of biomedicine in Africa as an extension of colonial rule and a multipronged point of contact between the African and European. There is a tendency within this literature, however, to frame African health and medicine as a direct function of social inequality and Western exploitation. It follows that it is primarily the lack of sufficient biomedical resources and not any attendant patterns of cultural disruptions that are viewed as the major catastrophe for Africa. The contemporary AIDS epidemic is a case in point. The underlying rationale of this perspective, therefore, shares certain ideological beliefs with the medical historians' camp regarding the virtues of scientific progress as a one-way transaction from the West to Africa and offers few insights regarding Africa's impact on biomedicine.

A common feature of Western depictions of biomedicine's introduction to Africa, addressed in varying fashion by all three camps, are the "African medical campaigns"—those heroic Western efforts to combat long-standing

²³ See, for example, Comaroff (1993), Evans-Pritchard (1937), Janzen (1978), Ranger (1988), and Vaughan (1994).

²⁴ See, for example, D. Ferguson (1979), Lyons (1988a), Marks (1996), and Turshen (1984).

African plagues such as malaria, yaws, or sleeping sickness. The African medical campaign presents biomedicine as an ideological metaphor for the benevolent, developmental colonial intentions of the West. Indeed, African medical campaigns are strategically situated at the center of explicit efforts to advance medical science, improve the general health of Europe's colonial subjects, and reshape African worldviews. Efforts to treat yaws in East Africa are a case in point. The 1920s yaws eradication campaign was unique among African medical campaigns both for the attention given to a disease that tended only to impact Africans and for the campaign's rapid medical successes. Over the course of a decade, a vast assembly of medical missions and satellite government dispensaries was able to reach well over seven hundred thousand persons in Kenya alone (Dawson, 1987a:425). The scale of the campaign's success, along with the novel use of syringes, offered opportunities for the popularization of biomedicine. As a means of cultural conversion, however, the yaws campaign ultimately proved less than overwhelming.²⁵ Nonetheless, the campaign advanced a vital ideological interest of the British by positioning them as champions of science-based medicine and as kind and compassionate overlords who strove mightily to improve the health of their African subjects. This ideological interest, in fact, explains why such tales of valiant medical campaigns, from Dr. Livingston forward, occupy so central a role in standard Western narratives of biomedicine in Africa.

The complexities of depicting biomedicine's introduction to Africa, therefore, reflect the need, on the one hand, to capture biomedicine as an ontological whole and, on the other hand, to detail its journey to Africa on three spatial-temporal levels across a single global unit of analysis. To do all this, however, still leaves us with a story that is fundamentally flawed. From an African perspective, after all, the story of biomedicine in Africa concerns how Africans borrowed select elements from a provincial European medical system, which allowed them, thereby, to deepen and further develop their own African medical systems. For Africa, it was not a matter of the universalization of biomedicine at the expense of African medicine. It was a matter of "particularizing" biomedicine to permit its appropriation by Africans. Detailing this perspective allows one better to appreciate how Africa transformed biomedicine.

Africa's Appropriation of European Medicine

Contemporary African syncretic-medical systems are the products of ongoing historical-cultural exchanges between Western biomedicine and African

²⁵ See Clyde (1980), Dawson (1987a), and Ranger (1981).

pluralistic medicine, as shaped by the development of the historical structures and processes that comprise the capitalist world-system. The distinct collective worldviews reflected by these African syncretic-medical systems reinforce the prominence of local influences over global influences in shaping medical systems. These worldviews also represent Africa's reinterpretation and enduring transformation of biomedicine as a historical-cultural formation at the global level. With respect to collective worldviews, the actual African syncretic-medical systems that resulted from Africa's encounter with biomedicine reflect many more African elements derived from African pluralistic medicine and far fewer elements of Western biomedicine than may appear to be the case at first glance. This follows primarily from two basic circumstances. First, prior to biomedicine, African pluralistic-medical systems already featured many of the fundamental organizing principles of biomedicine. Second, given the far more narrow worldview reflected in Western biomedicine, it only stood to reason that biomedicine would be absorbed into African pluralistic medicine rather than vice versa. This is made most apparent via a brief inventory of the common elements that inform the collective worldviews of African pluralistic medicine, absent biomedicine's influence, and that are no less relevant for African syncretic medicine *after* biomedicine's influence.

One of the principle distinctions between biomedicine and African pluralistic medicine—and the basis for claims of an African/Western cultural dualism—are contrasting notions of disease etiology.²⁶ Whereas biomedicine restricts explanations of disease to the natural world of physical phenomena, African pluralistic medicine generally frames disease within the broader category of personal or collective misfortune and attributes causes in holistic fashion across the natural, supernatural, and social worlds. In other words, from an African perspective, biomedical etiology is largely compatible with the precepts of African pluralistic medicine. It follows that from an African perspective, notwithstanding a broader cosmological sensibility, most of the etiological precepts of biomedicine are already present in African pluralistic medicine. Indeed, as detailed by Evans-Pritchard and others (see Chapter 4), explanations of disease attributed to the natural world are frequently the first and only cause of illness treated by African pluralistic-medical practitioners who routinely adhere to the basic principles of empirical-rational investigation. However, because disease is inseparable from the larger category of misfortune, it is often the case that African pluralistic-medical practitioners combine the diagnosis of a natural cause with a supernatural or social explanation to identify the underlying malevolent forces that brought on the

²⁶ See, for example, Horton (1967), Mbiti (1970), and Mburu (1977).

natural cause. Consequently, the vast literature on witchcraft, magic, and sorcery in Africa has significantly distorted the West's understanding of African pluralistic medicine, emphasizing that which dramatically distinguishes it from biomedicine and minimizing that which complements biomedicine. From an African perspective, therefore, there is very little about the etiology of biomedicine—save for its oddly narrow perspective—that is foreign or incompatible with the more holistic approach of African pluralistic medicine.

A second feature of African pluralistic medicine with respect to its incorporation of biomedicine concerns its pragmatic attitude toward “foreign” medical systems. African pluralistic-medical systems are the result of an ongoing historical-cultural exchange of values, beliefs, and practices across peoples which freely mixes and combines elements from the medical system of one ethnic group with those of another. It is for this reason that the idyllic notion of discovering a pure and unadulterated African medical system is so untenable. Through the centuries, prior to biomedicine's arrival, the primary sources of such influence were neighboring African medical systems and, in certain regions such as East Africa, the regular contact with Arab traders. Over time, such exchanges have not resulted in a uniform or universal set of African pluralistic-medical systems, but a collection of medical systems that reflect at a general level certain common elements. Thus, not only were biomedicine's natural explanations of disease compatible with the belief system of African pluralistic medicine, in addition it was a long-established practice to borrow liberally from other medical systems. As a consequence, though the harsh colonial context of biomedicine's imposition significantly clouded its greeting, it would not have been inconsistent with African past practice to try to learn from and incorporate key aspects of biomedicine with their own medical systems.

An additional characteristic of African pluralistic medicine that caused it both to mesh and conflict with biomedicine concerned the conceptualization of medical care as both a valuable item of exchange and as a form of social obligation. While not a point of major emphasis in the vast library of Western ethnographies on African pluralistic medicine, this literature is nonetheless notably replete with examples of practitioners across African pluralistic-medical systems who provide services either on the condition of compensation (with fees ranging from modest to exorbitant) or in fulfillment of communal services linked to ancestral obligations. Prior to any contact with biomedicine, therefore, the commodity form of African pluralistic medicine was well established. The social attitudes and values reflected in the practice of individuals using their specialized healing knowledge either for personal gain or to fulfill communal obligations was, in fact, directly challenged by the outwardly munificent and selfless initial overtures

of biomedicine. The earliest African contact with biomedicine, offered through missionaries and through colonial government dispensaries, ran very much counter to established African values and practices. In these cases, services were invariably free, suggesting biomedicine entailed little or no exchange value. (To this day, routine care through biomedical clinics is commonly less expensive than the care of African pluralistic-medical practitioners.) At the same time, given their foreign status, the provision of biomedicine could not be tied to any communal obligations of the European to the African. Operating well outside the norms of African pluralistic medicine, the European claimed to want nothing in return but the good health and possible goodwill of Africans. Alongside the more destructive and exploitive colonial practices, this offer no doubt must have seemed less than convincing.

The introduction of biomedicine thus precipitated a protracted process of historical-cultural transition from African pluralistic medicine to African syncretic medicine. In the context of colonial rule, this was certainly at times a violent and bloody affair. From the perspective of shifting worldviews, however, the transition was significantly less contentious. This was because, while colonial proponents of biomedicine may have rejected many features of African pluralistic medicine, Africans found many core features of biomedicine itself to be quite compatible with the health beliefs and practices of African pluralistic medicine. Indeed, those syncretic medical systems that have emerged across Africa are but among the latest incarnations of biomedicine, as a historical-cultural formation, to result from the combination of local medical beliefs and practices in peripheralized societies and the beliefs and practices of core-based biomedicine. That is why the notion of “African syncretic medicine” is, in fact, a misnomer. More accurately, it is simply African biomedicine.

Capturing local social change in the context of but not reduced to global forces, while simultaneously recognizing that the global system is itself subject to the influences of local peoples and societies, remains an analytical challenge of the first order. For the reasons discussed above, it is believed that an expanded treatment of world-systems analysis will accomplish this. The analysis of biomedicine in Africa that follows is an attempt to validate this claim as well as to re-position Africans at the center of their own history and athwart the gathering winds of world-historical transformation.