



# GLOBAL MAGIC

Technologies of Appropriation from  
Ancient Rome to Wall Street

ALF HORNBERG

PALGRAVE STUDIES  
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OF SUSTAINABILITY



# Global Magic

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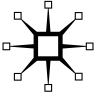
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by Alf Hornborg

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Ancient Rome to Wall Street

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GLOBAL MAGIC

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To Anne-Christine



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Yxnevik in September 2015  
Alf Hornborg

# Introduction

In 1914, on the island of Saibai in the Torres Strait of southern Melanesia, local people prophesied that a steamship would soon arrive from beyond the horizon bringing the spirits of dead ancestors and great quantities of desirable cargo to the natives and thus transforming the increasingly unequal relation between European colonizers and colonized Melanesians. For several decades, such “cargo cults” stirred throughout Melanesia. Similar ideas can be traced back to the 1880s, but they became particularly prominent in the decade following the Second World War, after which the anticipated ships were often replaced by airplanes. The coveted goods, including everything from tinned food to flashlights, rifles, refrigerators, and automobiles, were held to be manufactured by dead ancestors. To prepare for their arrival, Melanesians constructed superficial copies of docks, airstrips, warehouses, and radio masts using whatever materials they could muster.

Such local interpretations of the material affluence of European colonizers are not difficult to understand. As Peter Worsley (1970 [1957]: 107) explains,

As far as the natives were concerned, the Whites received the goods by steamer from unknown parts; they did not manufacture them, and merely sent pieces of paper back. They did no apparent work themselves, yet refused to share their fortune, forcing the natives to work long and hard for a return of a small proportion of the goods they themselves obtained with such ease and in such profusion. Who made these goods, how and where, were mysteries—it could hardly be the idle White men. It was the natives who did all the manual work. If the goods were made in some unknown land, they must, then, be made by the spirits of the dead.

Worsley concludes that the cargo cults are not to be seen “as an irrational flight from reality or a regression from the present into the past but as a quite logical interpretation and criticism of a European-controlled order that itself is full of contradictions which seem inexplicable in rational terms to the natives” (250). Although the beliefs and practices of these nonmodern Melanesians have generally struck modern Europeans as magical, pathetic,

and ridiculous, Worsley underscores that “the failure of magical action is . . . a function of limitations of knowledge which are socially conditioned, not a failure to use rational procedures” (277).

Contemporary anthropology tends to agree that it would be inaccurate to characterize the adherents of cargo cults as “irrational,” but there seems to be a consensus that their behavior was the result of an inadequate familiarity with the operation of the modern world economy. For instance, Marvin Harris (1971: 567) asserts that “the confusion of the Melanesian revitalization prophets is a confusion about the workings of sociocultural systems. They do not understand how the productive and distributive functions of modern industrial society are organized.” The cosmology underlying the cargo cults, in this view, was a local perspective constrained by the limited horizons of indigenous people insufficiently incorporated in the global economy—the world viewed from premodern Melanesia. The implicit corollary is that a correct understanding of the operation of modern industrial society is the prerogative of modern people inhabiting the “developed” countries at the core of the world-system.

This book challenges such assumptions. It argues that the worldview established in nineteenth-century Europe is as constrained by cultural categories and limited horizons as that of premodern Melanesia. Although there can be no question that Europeans have been in a vastly better position to strategically utilize and control industrialism and the world economy than the indigenous peoples whom they have conquered on other continents, this is not equivalent to saying that the predominant European understanding of the operation of the industrial world order is complete or accurate. To be the promoters and beneficiaries of industrialization is not necessarily to be aware of its global prerequisites. The categories and models of mainstream economics are as cultural as the premodern worldviews which they have displaced (Gudeman 1986)—they represent the world viewed from nineteenth-century Europe. The provisional efficacy of a given worldview—whether geared to slavery, the pursuit of bullion, or the combustion of fossil fuels—is not tantamount to its verification as a robust representation of the conditions of economic expansion.

For many anthropologists, such insights are the ultimate *raison d'être* of their discipline. To turn the anthropological gaze back at the society from which it came, identifying its cultural assumptions, idiosyncrasies, and blind spots, is a potent form of political critique (Marcus and Fischer 1986). Unless we subscribe to some version of full-fledged cultural relativism, it makes it possible for us to reveal materially significant but culturally invisible aspects of the social systems of which we are a part. The readiness to accept that our own established modes of thought may repress or mystify circumstances that

impinge on our lives is an inescapable implication of anthropology. To expose such culturally invisible conditions of our existence is much facilitated by juxtaposing our own conceptions with those recorded in very different cultural contexts. Of particular interest in this book is the great cross-cultural variation in how economic and human–environmental relations are conceived.

From the Mexican village of Tzintzuntzan, anthropologist George Foster (1965) reported a belief, widely held among people in peasant societies throughout the world, positing that any affluence enjoyed by one person inevitably comes at the expense of someone else. This zero-sum view of the world was labeled “the image of limited good” and regarded by most modernists at the time as a cultural misconception standing in the way of development. Today, increasing economic polarization, resource exhaustion, and climate change appear to be vindicating the intuitions of those peasant populations, but now transposed from the village to the global scale. In accordance with the anthropological approach sketched above, we should now be as ready to scrutinize and query the mainstream “image of *unlimited* good” (Hornborg 1992; Trawick and Hornborg 2015) as a remarkable and misguided cultural feature.

It should be evident, however, that such a “symmetric anthropology” (Latour 1993) must remain very far from symmetric in political terms. To depict nonmodern Melanesians or Mexican villagers as culturally confused is a very different project from subjecting mainstream economics to the same treatment. Applying the tools of cultural analysis to established Western cosmology is to challenge the conceptions which reproduce contemporary power structures. It would be naïve to suggest that cultural analysis alone could subvert those structures. However, as the world order that baffled the Melanesians and today vindicates the Mexican villagers seems in line for crises of several kinds, we may soon find ourselves in need of revised understandings of the conditions of that world order. Over the next few decades, rising concerns with sustainability, energy, climate, and financial solvency may provide a crucial role for cultural analysis in delivering adequate new understandings of the world order that solidified in the nineteenth century. Before too long, such new understandings may be in high demand among politicians and ordinary citizens alike.

We have good reasons to scrutinize mainstream Western cosmology as a cultural system. Cosmologies tend to rationalize the shortcomings of the social order. Among the most obvious shortcomings of the current world order is its inclination to generate abysmal inequalities and ecologically disastrous patterns of consumption and resource use, and yet our mainstream discourse tends to represent these conditions merely as the deplorable but unavoidable side effects of progress. As we look back at the systems of slavery

and colonialism that propelled European expansion in the nineteenth century, it is evident to us that racism at the time was a cultural and ideological rationalization of the exploitation of non-European peoples. At the level of conventional public discourse, at least, it is no longer politically correct to regard non-European peoples as intrinsically inferior. Yet exploitation and global inequalities have continued in new forms and increased tremendously since the abolishment of slavery and the liberation of former colonies. Apparently there is something about our current world order that not only continues to generate rising inequalities but also rationalizes them as normal, expectable, and natural consequences of the operation of the world economy. But ideologies that buttress power structures are able to serve such functions precisely by presenting themselves as unquestionable knowledge. Only retrospectively do these functions protrude as evident. If hindsight tells us that racism was an ideology that rationalized slavery and colonialism in the nineteenth century, it seems difficult to accept that the aggravated inequalities of today's world are objectively accounted for by the economic cosmology of our time. In the same way that racism can today be exposed as the cultural prop for slavery and colonialism, we have good reasons to critically scrutinize the cultural assumptions of mainstream economics as rationalizations of global inequalities and ecological degradation.

To people persuaded by our conventional worldview that human history, by and large, is a story of progress, it may seem unwarranted to expect that same worldview to mystify or justify environmental destruction and human impoverishment. At first glance, it does seem unreasonable to deny that the quality of life of most humans has improved over the past few millennia, at least in material terms. It is thus not difficult to view the forces that propel the development of global human society as fundamentally benevolent and to question the urge to expose the occurrence of ulterior motives, hidden agendas, and denied adversities. But quality of life, including environmental quality, is very unevenly distributed among the seven billion people on Earth. The most affluent populations of the world, who can often trace their affluence historically to European expansion in the nineteenth century, are generally able to keep the adverse aspects of world society outside their immediate field of vision. Nevertheless, poverty, malnutrition, illness, violence, repression, and environmental degradation in other sectors of society are as much the adverse side of their modern affluence as their own diffuse feelings of alienation and disorientation. The extent to which material progress is a local experience, contingent on the zero-sum logic of more extensive social systems, is a matter that can be investigated through transdisciplinary research combining social-science understandings of power, exchange, and ideology with natural-science methods for tracing asymmetric resource flows and the uneven

distribution of ecological degradation. The very feasibility of displacing work and environmental loads to other populations is a consequence of the human use of symbols and artifacts, as discussed in chapters 1 and 2. Such perspectives on progress can be applied to any supralocal system of exchange, from the aggrandizement of ancient emperors to capital accumulation among merchants, industrialists, and financial speculators. This book seeks to show that what these systems of exchange have in common is precisely the urge to displace work and environmental loads to other populations. In this sense, they are all modes of *appropriation*. They are all founded on the appropriation of human labor and the products of natural space elsewhere.

This conclusion naturally prompts us to reassess the conventional notion of progress. But rather than attempt to detail what a more egalitarian and sustainable notion of progress might entail, the primary objective in this book is to dissolve the illusory boundary between culture and science. The European narrative of the Enlightenment has served to distinguish between nonmodern cosmologies constrained by false assumptions and thus amenable to cultural analysis, on the one hand, and modern accounts of the world systematically pursuing the truth, on the other. Much as Karl Marx understood the operation of ideology, however, anthropology is able to show that the modern discipline of economics appears to be systematically *obscuring* the truth. This is not to attribute malicious, conspiratorial intentions to economists but merely to note how discourses tend to exclude or suppress perspectives that would undermine the professional efficacy and self-esteem of specific categories of practitioners.

Moreover, as we shall explore particularly in chapter 5, even the most critical alternatives to mainstream understandings of industrial society, such as Marxism, risk being constrained by concepts and implicit assumptions shared with conventional approaches. A particularly important source of confusion in these discussions has been the relation between material parameters such as energy, on the one hand, and notions of economic value, on the other. Underlying much of the classical Marxist theories of surplus value and declining rates of profit, I shall argue, is a compelling but largely intuitive concern with embodied energy and diminishing returns.

A significant aspect of conducting a cultural analysis of modern industrial capitalism is to abandon assumptions about a dichotomy between “our” rationality and “their” magic. As we saw regarding the cargo cults, magic can be rational and vice versa. The failure of cargo magic was a consequence of limited knowledge about the conditions which made a certain social order possible. But lack of sufficient knowledge is a recurrent state of affairs in human history and ubiquitous in societies facing collapse. It is thus essential to begin by delineating a definition of “magic” that makes the concept more



useful than simply a category for condescendingly dismissing forms of rationality that, to modern people, seem uninformed. Magic is not merely a practice constrained by the absence of objectively efficacious knowledge but a particular kind of social strategy for achieving specific ends. As defined here, magic hinges on the attribution to certain objects of an agency that is actually contingent on human perceptions rather than on the physical properties of the objects themselves, but that to humans *appears* to be independent of their perceptions. This understanding of magic accommodates not only our ordinary image of the magician's art but also the sense in which Marx revealed the role of money in modern society by characterizing it as an example of "fetishism." When Michael Taussig (1980) reports how nonmodern people in Colombia resort to magical rites such as baptizing money in an effort to increase their income, he illustrates the irony of applying an inadequate kind of magic to an artifact which is itself magical, but the secret control of which is beyond their reach. Throughout this book, and most explicitly in chapter 6, the point I ultimately want to make is that the globalized technologies that began to organize world society in the late eighteenth century can be reconceptualized as a form of magic.

The history of the anthropological notion of magic has been traced elsewhere (for instance, Tambiah 1990) and shall not detain us here. This notion has often served as a contrast to science, illustrating the European distinction between premodern superstition and the modern pursuit of truth. For some anthropologists, notably Bronislaw Malinowski (1954), it signifies a mode of thought and practice that all people are prone to adopt under particular psychological circumstances. Such considerations, however, are not addressed in this book. Here the notion of magic is used in contrast to our conventional concept of technology, as one of two diametrically opposite ways of using artifacts. In both cases, artifacts are believed to have agency—that is, to be able to act so as to achieve a purpose of some kind. The difference between magic and technology has been obvious to most Europeans since the eighteenth century—whereas magic falsely attributes agency to objects on the basis of misguided assumptions, technology accurately acknowledges the capacities of objects to achieve given purposes based on their inherent physical properties. The distinction was a central aspect of the Enlightenment and the Industrial Revolution. From now on, the agency of objects was understood to be contingent only on the design of their physical constitution, rather than on the perceptions or conceptions of humans. Nineteenth-century Europeans frequently ridiculed nonmodern peoples in the colonies for mistaking their superior technologies for magic, that is, for not understanding the difference.

Although not applied to technology, Marx's concept of fetishism illuminates a habit of thought that became entrenched through the Enlightenment and Industrial Revolution. We may refer to it as the abandonment of relationism. As explained in chapter 1, the concept of relationism here denotes the acknowledgment that seemingly bounded material objects should be understood as the products of wider and intangible fields of relations. Among nonmodern, indigenous peoples throughout the world, it is generally recognized that a human or nonhuman organism is a manifestation of the webs of semiotic and material flows that constitute societies and ecosystems. Eighteenth- and nineteenth-century Europeans, however, became obsessed with the *internal* constitution of objects such as organisms and machines. To trace the anatomy of the organism and the blueprint of the machine was regarded as a sufficient account of their operation, to the exclusion of the external flows that are as incontrovertibly necessary for their existence. The Enlightenment illuminated the internal constitution of living and nonliving things, but obscured the significance of their external relations. In the most general sense, this explains how one of the most pervasive features of modernity is the alienation of the human individual from the environment. But it also explains why modern technology is perceived as independent from the global resource flows that sustain it, which ultimately means that it is perceived as independent of the world economy. The science of ecology and the environmental movement have struggled to resurrect the insight that humans cannot be understood as separate from their environment, and similar observations have been made regarding the resource requirements and ecological impacts of hazardous technologies. However, the illusion that technological progress is propelled primarily by ingenuity, independent of prevailing exchange rates on the world market, tends to persist. This illusion, which can be referred to as technofetishism, disregards the extent to which the agency of technological objects is ultimately contingent on the perceptions and strategies of human market actors. In other words, it disregards how, at the global level, the distinction between technology and magic dissolves. Locally, it may seem perfectly adequate to account for a machine by referring to its design, but from a global perspective, such an account is as insufficient as it would be to explain what keeps an organism alive by referring only to its anatomy.

I am well aware that the topics and perspectives dealt with in this book may seem diverse and disparate, ranging from economic anthropology, archaeology, history, and ethnography to thermodynamics, systems theory, financialization, Marxism, Actor-Network Theory (ANT), magic, semiotics, resilience theory, photovoltaic energy, and complementary currencies. Instead of apologizing I underscore the importance of developing transdisciplinary perspectives

on the global human predicament. For decades I have deplored how, in pursuing conventional intradisciplinary careers, researchers run a serious risk of succumbing to disciplinary myopia. Doctoral students are rapidly “disciplined” into applying specialized discourses, terminologies, and methodologies that constrain their ability to retain the holistic perspectives with which they may have begun their studies. The sheer quantity of specific concerns that have been explored *within* each discipline is enough to discourage transdisciplinary excursions. To try to develop the kind of integrated worldviews that we can detect among classical and Renaissance philosophers would today risk either being dismissed as superficiality or leading to information overload. The result is that academic knowledge production selects for very specialized concerns, largely disconnected from overarching questions about the prospects of humankind which I believe people in general want to see answered. There are tens of thousands of researchers worldwide who consider themselves committed to understanding the challenges of sustainability, yet few of them are prompted to develop an understanding of the general problems facing an expanding and polarizing global economy confronted with a finite biosphere. Like the blind men exploring different parts of the elephant, none of them is in touch with more than a very limited aspect of the total phenomenon generating the category of data they are equipped to register.

This fragmentation of knowledge production should not be interpreted as a consequence of some kind of intentional conspiracy, but simply as the inexorable result of intradisciplinary selection processes encouraging specialization and the narrowing of questions asked. Yet the unfortunate implication of this logic is that unsustainable and inequitable structures and practices are largely left intact, illustrating the kind of subtle relations between knowledge and power that were identified by Michel Foucault. There are literally unlimited quantities of topics to which a doctoral thesis can be devoted, and all too often even senior researchers tend to continue to stick to the narrow questions to which they were advised to confine their thesis. The proliferation of specialists thus increases exponentially, and genuinely novel perspectives risk drowning in a flood of publications which no one has time to survey. The only possible way of countering such *dis*integration of knowledge is to consciously promote and engage in transdisciplinary research which aspires to integrate perspectives from different disciplines and reassemble overarching concerns with sustainability and justice. I believe that anthropology can serve as an excellent point of departure for such integration, but we must exert ourselves to extend the relevance of our concerns far beyond the boundaries of conventional anthropology. The diversity of disciplinary discourses suggests a confusion of tongues reminiscent of ancient Babel, but as I argue particularly in chapter 6, rather than succumb entirely to the linguistic turn we must keep in mind that all these voices refer to a single and common world.

## CHAPTER 1

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# The Ecology of Things: Artifacts as Embodied Relations

In the fifteenth century BC, queen Hatshepsut of Egypt had two huge granite obelisks carved in honor of her divine father, which were transported from Aswan to Karnak. Stone reliefs at Hatshepsut's mortuary temple Deir el-Bahri show the obelisks being conveyed by ships along the Nile. One of the obelisks stands 30 meters high and is estimated to weigh around 320 tons. The reliefs are strikingly similar to modern blueprints. They represent in informative detail the ancient technology of moving obelisks, complete with pulleys, ropes, and great numbers of rowers. The 3,500-year-old images can help us distinguish analytically between engineering and energy sources. It is evident that the technology of monumental architecture three-and-a-half millennia ago required specialized technical knowledge. Although adapted to the practicalities of harnessing slave labor, ancient Egyptian engineering is as analytically distinguishable from slavery as modern engineering knowledge is distinguishable from economic access to fossil fuels. "Technology" in the sense of expert knowledge is as much a necessary condition for transporting ancient obelisks as it is for modern air travel, but in neither case is it a sufficient condition. Without fossil fuels, our technological knowledge would be as powerless as queen Hatshepsut would have been without slaves.

Technologies, in other words, have two aspects. One is the ingenuity underlying technical design and generally celebrated as the primary source of technological progress. The other is the societal arrangement through which that design can be applied so as to harness a particular source of energy. The two aspects constitute and reinforce each other. Just as technical knowledge defines what can be utilized as an energy source, energy sources define what can serve as technical knowledge. But energy sources are not just out there, waiting to be exploited. In order for slaves or fossil fuels to serve as an energy

source for someone, they have to be made available for him or her to exploit. The societal arrangements by which energy sources are made available to different individuals or groups are what we conventionally refer to as the economy. Economies can be defined as modes of distributing resources and risks in human populations. They are universally legitimized by cosmological systems justifying particular patterns of distribution by reference to moral principles. In this abstract sense, the societal function of modern economics is equivalent to the ideology accompanying ancient Egyptian slavery. If a reader should find the comparison objectionable, we might respond by observing that the global inequalities organized by modern economics are considerably more severe than those of ancient Egypt. But the main point to be made here is that “economies” are generally excluded from the definition of “technologies,” even though the former are crucial conditions for the existence of the latter.

If we consider other animal species, we can nowhere find intraspecific inequalities even remotely similar to those generated within human societies. This unique inclination of human populations toward complex structures of inequality is closely connected to another uniquely human feature: the anchoring of social relations to extrasomatic points of reference such as language, symbols, and artifacts. Collaborating with primatologist Shirley Strum in a study of baboon behavior, Bruno Latour noted long ago that this is the fundamental difference between the social life of baboons and that of humans (Strum and Latour 1987). Latour went on to theorize the role of artifacts in organizing human social relations, asserting that the things we engage with tend to shape our relations and our modes of thinking about the world. His so-called Actor-Network Theory recognizes artifacts as “actants” that possess autonomous agency just as humans do. Certainly, language, symbols, and artifacts help to organize and buttress social structures, but they will be treated here as props employed in the service of human intentions and strategies, rather than as autonomous agents. A significant perspective contributed by Latour, however, is the understanding of technologies as systems of artifacts that contribute to the organization of human social relations. As technologies are always embedded in economies, Latour’s perspective should apply no less to systems of exchange. Beyond the organizing power of language, artifacts such as monetary tokens, gifts, commodities, and technologies are the very stuff of human society.

Such artifacts can be perceived in very different terms, however. While premodern valuables and gifts were understood to embody lasting social relations, modern money and commodities tend to be perceived as autonomous objects severed from the exchange relations that they reflect. In economic anthropology, the contrast is often mentioned between Marcel Mauss’s reflections on the fact that premodern Maori experienced gifts as animated by the