

**NEOLIBERAL REFORM AND BIOMEDICAL RESEARCH IN INDIA: A
STORY OF GLOBALIZATION, INDUSTRIAL CHANGE, AND SCIENCE**

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ABSTRACT

This dissertation examines how political and economic reforms in India associated with the onset of neoliberalism since the early 1990s have affected biomedical research in that country, with an emphasis on health biotechnology. The term “biomedical research” is understood broadly to include three main institutional settings – government, university research hospitals, and industry – and a range of research types – subclinical, clinical, and epidemiological. The early empirical chapters of the dissertation attempt to synthesize the manner in which changes in public policy in India associated with neoliberal reform (such as new intellectual property law regimes, privatization of healthcare, and new research funding sources) have affected priorities in biomedical research. The concluding section of the dissertation analyzes the theoretical implications of the onset of neoliberalism in the Indian life sciences for broader STS literatures on changing structures of scientific research, with particular attention to the manner in which trends in the commercialization of research in an emerging economy of the global South differ from those observed in Western industrialized nations. In particular, I examine how the comparative perspective offered by India contributes to theories of the rise of academic capitalism, asymmetric convergence between academia and industry, the emergence of the triple helix of government, academy, and industry, and the emergence of trans-disciplinary, mission-oriented Mode 2 science.

The main argument of the dissertation is that *place* matters to the ways neoliberal globalization unfolds on the ground. The processes of commercialization of research in India are somewhat different from what one might expect in an originally capitalist society like the United States. Historically, India is a predominantly socialist society that

has embraced not just New Deal and Keynesian-style governance over five decades of postcolonial rule, but also an ethos of public ownership. Thus it has tended to evince a strong legacy of state-involvement in economic development. The infrastructure for basic research has always been stronger in the country's public sector labs as opposed to industry. While drug development in India, as elsewhere, has always been a commercial activity, the key difference in the Indian case is that this form of research enterprise has tended to be approached, culturally, as a way of meeting the country's public health goals, as opposed to targeting individual sovereign consumers and social groups, as often happens in the United States. On account of its socialist welfare objectives, the Indian state has historically supported protectionist patent regimes that encouraged industry to manufacture low-cost generic drugs in bulk for local populations. As a result, the Indian academic and industrial sectors of the life sciences have had very diverse objectives, with the former largely engaged in fundamental research missing an explicit applications focus and the latter largely invested in revenue-based commercial projects having limited use for fundamental research. For strategic reasons, a semantic separation between basic research and applied priorities, and likewise between "science" and "technology," also featured prominently in the original policy documents that drove post-independence scientific and technological growth in the country in the 1950s. This led to an ossification of the division of responsibilities between institutions on the ground, causing them to evolve historically distinct missions that contributed to a rift between academic and industrial research and a consequent formation of institutional research silos, thereby rendering partnerships on the ground a veritable challenge.

With the onset of neoliberal reforms corresponding to globalization in the early 1990s, the enforcement of a new global standardized patent regime has rendered fundamental research in the life sciences a strong imperative for most countries. India, being one such signatory to the WTO-mandated GATT, and a rapidly developing representative of the global South, has had to assert its original research capacities amidst a global pharmaceutical empire. On account of the weakness of industrial biotechnology in India, the main channel by which this was accomplished was through aggressive participation by the country's infrastructure-rich government labs in globally oriented research enterprises. Many such public labs, spearheaded by the federal government ministry of Science and Technology, seek projects catering to the big capital markets, with the potential for original ownership of IP, while also engaging in lower-end contract-based research for Western pharmaceutical concerns. In contrast, the Indian pharmaceutical industry continues to function largely on a safe and lucrative commercial model based on reverse-engineered off-patent drugs. Thus neoliberal growth in India gets inflected upon former statist socialism in a particular way - it plays out much more in the domain of state-funded governmental labs as opposed to a fledgling bio-pharmaceutical industry, thereby rendering the Indian state a primary locus of innovation, entrepreneurship and commercial activity within the current global financial empire.

In other words, neoliberal approaches to health research in India defy any simplistic assumptions about the uniform and unidirectional transportation of the American free market imaginary to regions of the global South. The role of the state in spurring scientific and technological development is key to the differences observed in the Indian case. On the domestic front, the unique epidemiological circumstances of the

country present strong pressures for a continued liberal model of government-investment in public health care and medical research oriented toward the bulk of India's population. On the international front, the Indian government has been required to embrace the new global intellectual property regime, participation in the global pharmaceutical industry, and a privatized model of medical care focused on the middle classes. Such cross-currents between international and domestic priorities present complex trade-offs between a neoliberal model of profit-oriented research and a liberal model of public-benefit research. Thus I argue that neoliberal reforms in India have recast the contemporary Indian state in the image of a corporate entity that competes with other private concerns in a transnational space of global capital, while also maintaining a more traditional welfare-centered identity geared to the local epidemiological needs of its population, and to the protection of its indigenous biological resources from exploitation by external commercial interests.

One of the main theoretical implications of this case study is to argue for a disaggregation of neoliberalism/social liberalism from hegemonic accumulation/redistribution. Along with other scholars who have studied the case of Euro-America, I argue against a tendency in social science scholarship to periodize political ideologies like neoliberalism as totalitarian regime shifts having a purely elitist focus that presumably contrasts with the purely ameliorative focus of former social liberalism. Instead, based on my findings in a region of the global South, I suggest that newer political-economic philosophies tend to get superimposed on older ones through layered spatial and temporal pathways incorporating diverse, and often competing, objectives relevant to local social systems. India is a case in point. The Indian state is

currently the main driver of public-private partnerships achieved through appropriate tax-breaks and other incentives offered to its industrial partners. As a result of the state's dual commitments to economic development and social objectives, several such partnerships are focused on ambitious projects catering to endemic-disease research priorities (e.g. much needed research on multi-drug resistant tuberculosis, HIV/AIDS, and malaria), but nonetheless premised on a distinctly neoliberal commercial model of development. In other words, a strong lingering commitment to public welfare in India demands that neoliberal institutional agendas deviate from the perceived dominant model centered on wealth accumulation by elites toward more socially oriented models centered on local relevance and redistributive justice. In other words, the intersection of newer neoliberal policies with India's longstanding nationalist project of economic and social development has led to outcomes that demonstrate complex mixtures of hegemony and redistribution. Even as India's political elites focus on earning the country a prominent position on the global map of research and development catering disproportionately to its middle classes and to Western pharmaceutical concerns, they are simultaneously required by a longstanding social contract with the people to justify their expenditures through partnership projects aimed at the eradication of endemic infectious and genetic diseases afflicting local populations. This observation frustrates any attempts to conceptualize the global spread of neoliberalism as unitary and hegemonic. I also use the notion of "the entrepreneurial Indian state" to attempt to disaggregate "neoliberalism" from "entrepreneurialism," and likewise, "entrepreneurialism" from "the private sector," suggesting that these concepts are more hybrid and nuanced than this straightforward correspondence allows. Modes of entrepreneurship in the commercial life sciences in

India suggest that ambitious venture capitalism contributing to regional research cluster development is as often state-driven as private, and can incorporate not just a profit incentive but also a public welfare-oriented mission.

This study employed a qualitative approach based on semi-structured interviews and site visits at government research labs, academic centers, and industrial facilities in the Indian cities of Delhi, Bangalore, Hyderabad, and Chennai over a 12-month period. 61 semi-structured interviews were conducted among four categories of interview subjects - (a) government researchers and administrators, (b) academic researchers and administrators, (c) pharmaceutical industry representatives, (d) health advocates and policy advisors. Field data was supplemented by documentary analysis of texts, especially government budget reports, policy documents, and institutional literature. The methodological approach of the study was inspired by the new political sociology of science (NPSS), a field of research that departs from micro-sociological studies to conduct a macro and meso-sociological inquiry into the role played by institutions and networks in conditioning the availability and distribution of power in the production and dissemination of scientific and technological knowledge. The qualitative methodology employs a multi-scale analysis that interweaves global, institutional and local developments over two decades to arrive at a structurally and historically informed analysis of cross-sectoral change. This approach corresponds to the main aim of the study, which is to connect political economy with cultural studies by demonstrating that structural changes are often driven by cultural perceptions of political and economic crisis. Thus, neoliberal developments are treated not just as a hegemonic top-down imposition of political-economic doctrine on the functioning of governments and markets

but also more fundamentally as cultural-moral programs affecting the attitudes and behaviors of individuals and social groups.

The results of this dissertation will contribute to streams of scholarly research on: (a) political economy: studies of globalization and neoliberalism, (b) political sociology: NPSS studies of the commercialization of science, (c) industrial sociology: innovation studies, models of entrepreneurship, (d) comparative social scientific studies of medicine and IT, and (e) South Asian and cultural studies, for e.g. subject constitution of the emerging professional elite cadres (in particular, “the globe-trotting, cosmopolitan, middle-class, visionary scientist-entrepreneur”). The outcomes of this research will also contribute to policy studies of scientific and technological research. Taking the case of the life sciences, I suggest how early legislation in the more inchoate aspects of institutional and technological development might be allowed to proceed lock-step with unplanned growth and innovation, so that the eventual outcomes, in the interests of social justice, might serve the interests of a larger public as opposed to a narrow set of elitist private concerns.