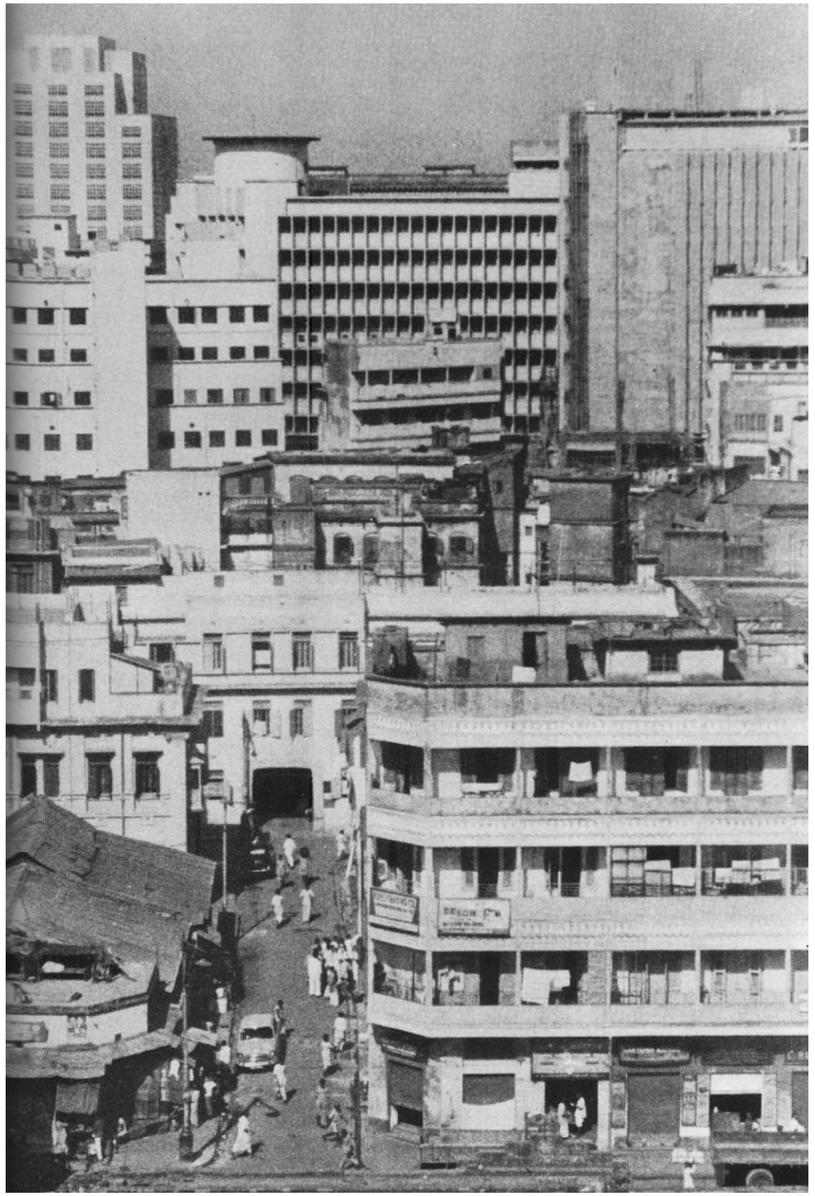
Calcut ta



1 Frontispiece to Ford Foundation Basic Development Plan for Calcutta, 1966.

Computing Alibis:
Third World Teratologies

Arindam Dutta

A "going-on"; yes, anastasis is the word
for research a virus has defied,
and for the virologist
with variables still untried—
too impassioned to desist.
—Marianne Moore, The Staff of Aesculapius

Why does one compute? The question might appear to have many answers. In 1857 Charles Babbage, the draftsman of the Analytical Engine, gives us a lexical response: the machine will take up the "menial," mensurative, quantitative work of the brain, as opposed to the qualitative ones. In the documents of the Ford Foundation's landmark urban planning exercise for Calcutta carried out between 1961 and 1974,[Fig. 1] Edward Echeverria, Ford's head in Delhi, outlines a peculiar collaborative potential of the computer particularly germane to preempt the political challenges faced by a First World group of "experts" operating in the Third World. In Echeverria's letter to Prasanta Chandra Mahalanobis he argues that the computer has the ability to anticipate the babble of tongues erupting from the ground that may otherwise overwhelm the determinate language of the urban planner:

> In planning activities, systematic co-operative use of such devices as the new graphic data processing equipment could be a powerful force working for the coherence of related efforts. Conversely, non-cooperative use of even identical equipment in very similar activities can lead to a confused situation characterized by technical rivalry, linguistic incompatibility, redundancy of information and of information processing, and practical inaccessibility of bought and paid-for information. The introduction of new information processing equipment always provokes the development of a using [sic] technology. In the case of graphic data processing equipment, which I believe will play a major role in planning activities at all levels. [sic] I hope that a cooperative development using technology should begin before arrival of the equipment spurs an immediate wild growth of techniques that defies control …[1] At this point I would like you to know of our problems with a gravity model that we propose to use in projecting urban travel patterns, 25 years in the future … This is done on an IBM 650 computor [sic]. We would like to know at this time whether your computer is radically different from this, as we would not like to change drastically the program that has been prepared by [us].[2]

Is your computer compatible with ours? Observe that the conversation is not between expertise and a lack of expertise, between modernization and its opposite—the mode in which some "post-colonial" critiques are often unwittingly posed—but rather between two forms of expertise, two kinds of computers, two kinds of planned modernity. Prasanta Chandra Mahalanobis, Ford's interlocutor in the above correspondence, was no mere "native informant"; in many ways he was the literal embodiment of an institutional apparatus more distinguished than that of Ford itself. Mahalanobis founded the Indian Statistical Institute in Calcutta in 1931 and the National Sample Survey in 1950 as a supplement to the Indian census and as an aid to the fledgling Five-Year Plan exercises then being initiated by the Indian government. The "Mahalanobis Model" of development—involving selective investment into heavy industry and restricted growth in the area of small industry—was the official credo adopted for the second Five-Year Plan (1956-1961). Mahalanobis had also been appointed the Honorary President of the International Statistical Institute and the first Chairman of the United Nations Subcommission on Statistical Sampling. In other words, Ford was speaking to the very marrow of Indian statism, the totem of a certain model of decolonization. The above correspondence—with its anxious gambit to remove "non-cooperation," "confusion," "rivalry," "redundancy," "wild growth," and the defiance of "control"—alerts us to a desperate attempt to secure against a lack of correspondence between two models.

The purpose of this paper is to decipher "globality" as an epistemological project, discerned in the intimate schism between two distinct but complementary vectors: the state/"nation" on one hand and "transnationality" on the other. These two contingently competitive logics inscribe within their rupture the seed of a productive difference, never quite cancelling each other, nor completely affirming the other. Rather, within the dissonance between the two is the cognitive fount for discerning new kinds of categories, from which new subjects can be produced.

As the Ford documents point out, there is never a contest between planning and the unplanned. No terra incognita exists that the state (or its transnational proxies) will suddenly discover around the bend of some unknown river. The conflicts that emerge between the state and transnationality, between place and space, are not between those of knowledge and its absence, between computation and the lack of computation, modernization and the lack of modernization (late CIAM), architects and the lack of architects (Bernard Rudofsky), between "unself-conscious" and "self-conscious" design cultures (Christopher Alexander),[3] between "Orient" and "Occident" (Edward Said). This essay points towards the archive where the transnational embeds itself in the national, not through exogenous frames descending from on high, but through infinitesimal plays of difference within a given context. To our question asked at the outset, "Why does one compute?" the answer would look something like this: One computes never to address the uncomputable or the non-computational, but to contest, critique, censor, and circumscribe already available modes of computation, whether material or human.

This minimal shift is patent in the above correspondence between Echeverria and Mahalanobis. "Calcutta" in this archive is less a place-name than an epistemic stand-in, a locus inviting a conflict of competing teleologies, a contest of narratives. Computers have the ability to preempt all manner of heterogeneous problems that might erupt in a planning exercise, with one caveat: it is critical that all the computers involved—both machine and human—speak the same language. The conflict of computation that confronts us here presents something of a structural isomorph with what we may call "organicism,"[4] in that the latter also purports to legislate the categorical structure of variation as such—nothing to do with biomimesis then, a genre with which organicism is commonly confused, but rather the format to study the extra-mechanical discontinuities between causes and effects, wholes and parts.

Organicism is the rigorous reminder that the whole is of a radically different order than its parts; one cannot build up to totality purely from the study of the finite.[5]

This is a lesson we must learn in order to understand the proper province of monsters. Monsters are not other from a given norm. Monsters present a particular kind of epistemic paradox, a particular genre of anomaly: they are of a norm and yet embody the failure of the norm to establish its normativity. Teratologies are always of, contingent to, the episteme in which they are spawned. In a Christian epoch of "miracles", monsters were celebrated as "wonders," In the Renaissance, an age that emphasized symmetry, the defining characteristic of monsters was their asymmetry. In the eighteenth century, monsters follow the transition from the cabinet of curiosity to the tabulated laboratory specimen. In the nineteenth, monsters were stripped of their status as emblems of causal alterity, becoming examples of irrepressible, unfortunate variations in an eugenist's / statistician's field of reproductional types. Today, when the design paradigms of nanotechnology are seen to confront the microuniverses of genomes and proteins, teratogens emerge at the scale of acid receptors and molecules, zygotes and lipids.[6]

Monsters are not liminal beings,[Fig. 2] creatures from some Other or "dark Africa" of the Western mind; rather they present a special problem of knowledge itself. In a predicable spectrum of chance, they present an exceptional instance, a chaotic effect where a known law acts lawfully to produce unknown outcomes. In a field defined by the calculus of error, monsters represent error that is incalculable, variation unhinged from the norm. Monsters open up the suture where a scientific/ disciplinary "will to power" is revealed as conflating its "positive" and "normative" aspects.

"Calcutta"

When the Ford Foundation made its initial infrastructure proposals for Calcutta in 1961, its first rhetorical move was to cast the city as a sort of wild growth of modernity.[Fig. 3] Its ethical self-sanction for its ability to manage the Calcuttan morass turned on this epistemological translation: that chaos could be computed as complexity.[Fig. 4] To be sure, this desired translation bears some of the key traits of the Cold War. It would be hard to distinguish between Ford's interests abroad and those of the United States government. According to Ford's Bernard Loshbough in his request to US ambassador Chester Bowles for USAID funds, Calcutta was merely the first in a byzantine pattern of semi-urban, agrarian dominoes ready to tumble against a Communist onslaught or worse, across the breadth of Asia and the Third World:

> Unquestionably the most blighted urban area in the free world today is the Metropolitan District of Calcutta … Partly because of extremist pressures in over-populated and poverty-stricken Calcutta … the importance of Calcutta's setting an example in physical, economic and social well-being can hardly be overestimated. If Calcutta falls into the Communist camp, or into suicidal anarchism, all of Asia will take heed and probably follow … strengthening Calcutta is a matter of vital concern to the whole free world …[7]

India was Ford's first foray into international development work, and Calcutta was the biggest metropolis in a teething and teetering democracy in an area of the world where ideological "spheres of influence" were very much in contention.[8] Ford consultant Arthur T. Row described the project as nothing less than the "toughest planning job in the world in operation," the "biggest and most important [job] that would ever engage [the] minds" of its participants.[9]

The very breadth of Ford's ambition would produce counteractive results. On the one hand, their focus on disciplinary elaboration prior to coherent action would significantly defer any visible changes in Calcutta's infrastructure. On the other, their involvement would become in fact an exacerbating factor in the public perception of Calcutta's continuing degradation as an emblem of the failures of the Congress party, the party in power in both Delhi and the state of West Bengal. With increasing food scarcity in the countryside, by 1967 the Communists, pursued and harried by police, had formed a coalition government in Bengal. Pointing to Ford, Communist party manifestoes explicitly cited US "imperialist aid" as a key element of the state's ideology which had to be confronted and fought against.[10] In the next five years, the dominant political conflict that emerged was no longer between the "centrist" Congress and the left, but different factions within the left,[11] as Calcutta became the proxy battleground of an armed conflict between an insurgent Maoist militia movement and the electoral Marxists.[12] [Figs. 5-8] By 1977, West Bengal had passed securely into Communist control, and continues to be so today. A visit by Robert McNamara to review and bolster support for the Ford effort was met with mass protests against the war in Vietnam, and Harrington Street, the address of the United States consulate in Calcutta, was renamed Ho Chi Minh Avenue to drive home the point.

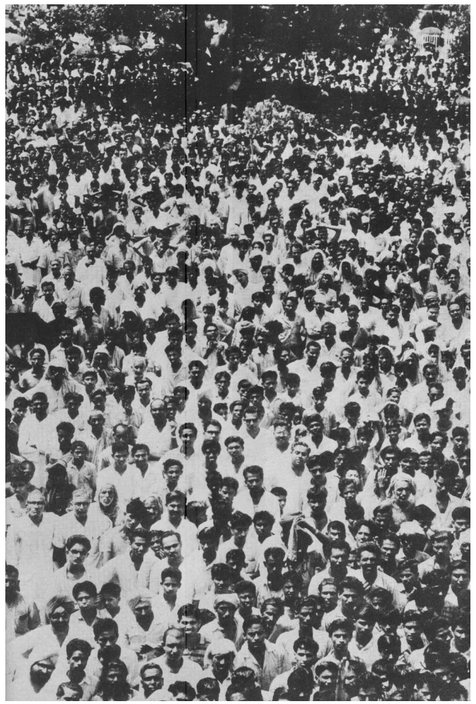
By the turn of the decade, Ford struggled to save face, battling media accounts that it had been asked to leave by the Communists (wags noted how the anti-Communist ethos of the early mission had been replaced by a new-found willingness to "work with" the Marxist government). The psychological effect of this outcome within Ford can be described as nothing less than traumatic, given the decade-and-a-half-long exercise of troops on the ground and the millions spent with practically nothing to show. Arthur T. Row's The Great Experiment, a report left unfinished by Ford's last chief consultant on the Calcutta mission, reveals some of the internal dynamics of this failure. The report is a somewhat tragic document of a dying planner's anxious effort to salvage the pedagogical value of the Calcutta mission in light of the well-entrenched feeling within Ford that "the Foundation should never repeat the Calcutta effort."[13]

What is evident in Row's account is that this failure was seen not simply as the respective shortcoming of the operational modus itself, but rather the failure to coordinate strengths between the involved disciplines. Note how, for instance in the following paragraph, the cognitive deficiencies of planning as a discourse is—even in the moment of failure—located in an internal disjuncture. The key problem of expertise is not some inadequacy of the understanding, but an inability for experts to agree:

> How could one disagree? What was wrong with employing a traffic engineer to devise the means for sorting out the traffic; a highway engineer to improve the roads; an urban planner to choose a location for a new bridge; a bridge engineer to design it; … an anthropologist to see that the housing reflected the social milieu and the culture of the people for whom it was designed; an architect/engineer to plan a development that mixes residence with work on an accessible site; a demographer to estimate the future population for which these several programs would be planned; and all this under the direction and coordination of an experienced and able urban planner?[14]

2 Migrant head-carriers transport prefabricated steel building element. Louis Malle, Calcutta (1969)

3 Between 1967 and 1969, Louis Malle found himself in Calcutta as a cultural emissary of the French government. His trips were to generate a series of documentaries on the India of the period, among them Calcutta (105 mins., 1969). For long stretches of the film, the camera pans around the slums, leprosy shelters and urban poverty of Calcutta, as if too stupefied to offer commentary. Ford could not have done better than the French avant-garde.



4 Frontispiece to Ford Foundation Basic Development Plan for Calcutta, 1966.

5 Communist demonstration, Dharmtala downtown, Calcutta. Louis Malle, Calcutta (1969)

6 Communist demonstrators flee police tear gas. Louis Malle, Calcutta (1969)

7 Police chasing communist demonstrators. Louis Malle, Calcutta (1969)

8 Police chasing communist demonstrators. Louis Malle, Calcutta (1969)

9 Migrant homeless sheltering in Hume pipes requisitioned by the Calcutta municipality.

10 Frontispiece to Ford Foundation Basic Development Plan for Calcutta, 1966.

The asphalt and the electricity lines would not be laid. Setting out to provide new infrastructural materiel for an impoverished city, Ford would unwittingly provide Calcutta with its greatest icon of poverty, in the shape of the unlaid Hume pipes in Mark Edwards' photographs.[Fig. 9] As the Hume pipes gathered moss by roadsides, a vast population of homeless moved into the shelter provided by these durable, concrete structures. Nonetheless, these failures have not blunted a certain judgment by Ford's American and Indian apologists, for whom the key success of the mission lay not in its failure to devise a successful plan but in the creation of its institutional inheritor, the Calcutta Metropolitan Development Authority (CMDA), a permanent, appropriately localized infrastructure for the production of phrases in the same regimen. The primary work of planning is not to produce plans but more planners, subjects that will continue to posit planning as an effective theater of epistemological conflict.

Keeping Up Generalities

Rather than attending to the objective stipulations of the Ford plan—what road got laid, how traffic and sewage were handled, how wealth and income were sought to be augmented—given their non-realization, what is much more important for us here is the modus, the genre of intervention that Ford attempted to put into play, drawn not from the particulars of the ground but as the determining terms of agreement amongst a potentially untrammeled field of conflicting disciplinary inputs. For one, Ford's involvement was considerably more protracted than the routine paratrooper missions carried out by UN planning personnel such as Charles Abrams and Otto Koenigsberger.[15] Secondly, Ford's contribution was not meant to be in the form of a comprehensive plan or report that it described as the "conventional" mode of planning. Ford's intervention was designed to produce a model for intervention itself. With a long-term mission staffed by rotating, short-term staff from Western universities and with requisite input from local professionals and state officials, the Ford team envisaged inserting itself into the marrow of the government's decision-making apparatus. Policy directives would be initiated and monitored from the inside, giving Ford's input an organic face. This organic evolution of policy had a double-edged potential. In the decolonizing context where political contestation was the hardest defended legacy of the anti-colonial struggle, this access to the executive gave the Ford mission a privileged lever to manage the legislature. To be sure, Ford described this as a planning innovation: the post-colonial planner was to be contrasted, by descriptive sleight of hand, against the "apolitical" colonial improvement trust and administrative officer. "Planners need to find political support for their proposals and to reflect political and economic realities by incorporating pragmatic implementation strategies within them."[16] To husband this support, the "anti-politics machine" came with carrots: conditional World Bank bounty for a destitute government.[17]

Ford's benevolence was not assembled under the direction of a given population or its representatives to provide the material means requisitioned, as a supplier or contractor would. Expertise was not construed here as a means of answering the needs of the population in question but rather in determining those needs, since what the indigenous beneficiaries lack, by definition, is not their ability for language, but the categorical or comparative hindsight that will allow them to properly phrase their requirements into a truly compatible and computable language. The indigene can only operate from the exigencies of the local, offer a hodge-podge compendium of speech-acts without grammatological reflection.[Fig. 10] This distinction is critical, and on it turns the difference between coloniality and the coupling of the neocolonial and the post-colonial, between Ford and Mahalanobis: knowledge is understood as the ability not only to speak for the clientele in question but to appropriate the role of translator, a characteristic exemplified by the Ford Foundation's description of its role alternatively as an impartial, external advisor and as an organic extension of government from within. No muffling, sequestration of the speech of the other, but a rewriting of the dictionary.

This characteristic suffuses the outlines of both the promulgation and the failure of the Ford plan. Well in advance of the telephone lines, the sewer lines, the roads and the electricity, Ford's primary intervention was in the form of a phrase regimen, a terminology of optima, matrices, standards, coefficients, indices through which a state of decay would be engineered into a vibrant economic organism. The physical city was the last concern of this overbearing urbanism; throughout, Ford's reports evince an anti-architectural bias, instead privileging processes and patterns underlying habitation in its generality, a point to which we shall return. The objects in the Ford archive that we come across therefore have the paradoxical status of being anti-objects—they are designedly in the genre of the performative: diagrams, charts, maps that bring different kinds of events into being.[Figs. 11-12] Like green highway signs that guide well-acculturated subjects on their way, these diagrams are also calls to particular enclaves of skill, instrumentally coded, procedural, monstrative, gestural, indexical. Such is "expertise" in its new, postcolonial denomination: everything hinges on description, not the efficiency of things and machines, but prerogative and power of description. Phrases acquire meaning not by reference to a given reality but by contiguity, relation to each other. Calcutta here is a crossroad of phrases, a juncture where words lose and gather meaning.[Fig. 13]

In a way, the object referred to—the Asian city—can only mirror what is in the first instance a failure of epistemological synergy. The cognitive deadlock of the Asiatic mode of urbanism was, according to Ford, owed precisely to its lack of differentiation of categories. This cognitive morass is, quite literally, a traffic jam. Traffic is "a conglomerate of automobiles, trucks, pedestrians, handcarts, rickshaws, bicycles, bullock carts and a miscellany of animals … an uncontrolled mixture of incompatible kinds of traffic."[18] [Figs. 14-16] For a discipline like planning, whose task is to address the "totality of the problems,"[19] design by computation not only appears to have the power to process great amounts of data but to synthesize the disciplinary input of diverse forms of expertise. This aggregate mechanism has the function of disaggregating the face of any unitary agency of design, thus dissipating the target of opposition. A curious ruse takes place, the substitution of the "judgmental / original" by the "theoretical":

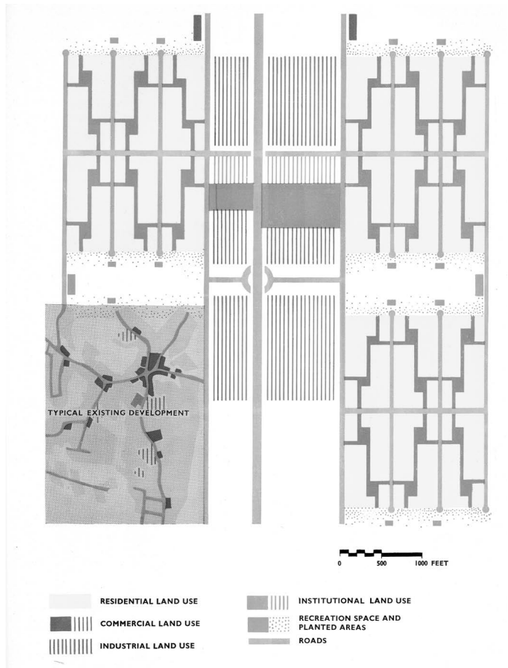
> Where design is a team effort, the capabilities of immediate display or recording of various functions provides a superb form of communicating both the design and its implications—a form that is usually considered too costly in time and effort except for the final product. Many iterations of the design process can take place in the time it now takes to accomplish one. The preparation of computer programs needed for using the equipment forces an examination of design methodology and the techniques of design criticism. This examination distinguishes the judgmental and original from the algorithmic while explicating the theoretical; the whole scheme of operation becomes more susceptible to improvement.[20]

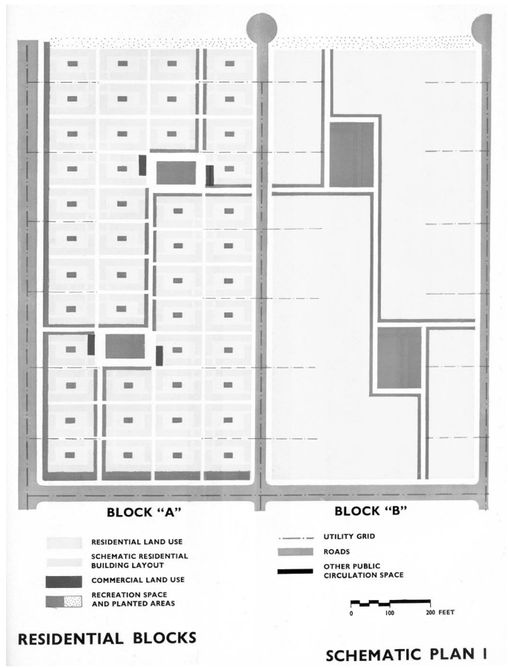
This is the computer's political agon: to preempt the conflict of the faculties. Computation is not merely the lapse into quantification, nor is it a compartmented, antiseptic alleviation of certain kinds of intellective labor. Rather, its theology depends on keeping alive the modern vestiges of an archaic dream of melding together heterogeneous regimens of thought into so many coefficients of a continuum. The computer's work is in the order of the a priori, of reverting the cognitive faculties back to a primordial soup from which all categorical differentiation can only be posterior. "Technology … before … the … growth of techniques," as Echeverria's letter has it. Computing and planning therefore have a relationship that describes something like a chiasmus: computing is of the order of causality, planning that of the determinant.[21] Computing portends to attend to thought prior to its disintegration into heterogeneous realms of expertise; by comparison, planning coordinates the active disciplines at the point of their convergence. This chiasmus is the nub of the computer's substitution of, to borrow an expression from Georges Canguilheim, "a technological anthropomorphism … for a political anthropomorphism."[22]

Statecraft and Statistics

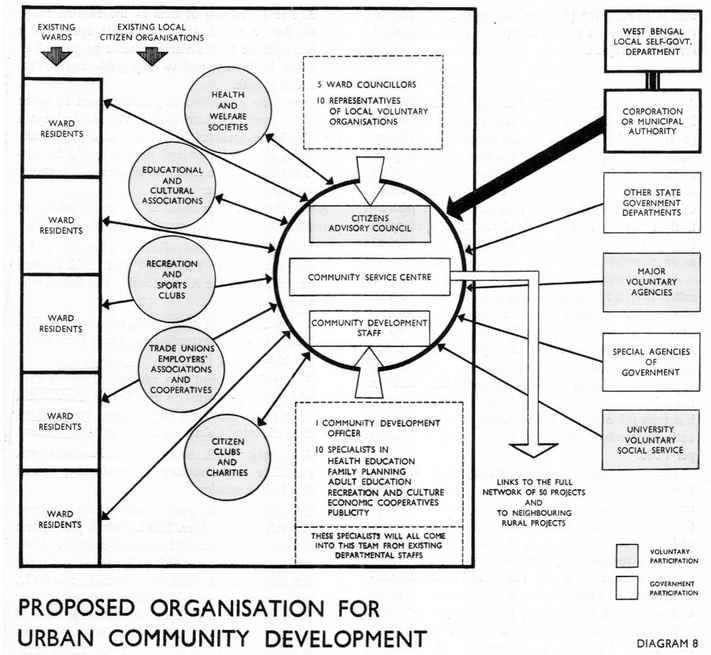
This substitution has specific purport for our context: the contingent calculus of the global—the production of "society"—cannot operate unless it has something like a "national" sanction. India was the first country whose constitution in principle conferred the rights articulated within, immediately upon effect, to all the constituent populations contained within the geographical boundaries of the state (without qualification of sex, language or ethnicity). The primary reference of the Indian state was to a conceptual totality, not to the empirical populations contained within it. The legitimacy of this totality thus drawn necessarily lay in its mobilization of a subsequent mensurational task through which the heterogeneous constituents of a geography could identify themselves as citizens and subjects of this named entity called India. The notification of the Mahalanobis's Indian Statistical Institute (ISI) and the National Sample Survey as national institutions, in addition to the five-year planning and ten-year census exercises, were explicitly in keeping with this mensurational work. Needless to say, a problem emerges here: the mensuration of heterogeneity necessarily brings with it a larger, commensurational work, the problem of coordinating differences of kind. Take, for instance, the following note by Samar K. Mitra, head of computing at the ISI, to Mahalanobis, delineating a distinct role for the computational expert above that of mensuration alone. The computational "expert" in Mitra's view is not just a mere programmer but defined by his dexterity in translating broader problems into computational ones; Babbage's relegation of the qualitative in the work of computation had now swung to its diametrical opposite:

> A computer can be fully engaged by a clever mathematician almost eternally to solve a problem. But what useful result it will [sic] turn out? … This type of stereotyped thinking and blindly aping some foreign institutions will not carry anyone very far. The computer will become a junk piece in no time … Our attitude has never been that "here is the computer at your disposal for this period, program and run your problem, if you get a 'solution,' well and good, if not, do not bother us." Knowing the state of scientific and technological





11-12 Residential block diagrams, Basic Development Plan, Calcutta Metropolitan Planning Organization (Ford Foundation), 1966.



13 Urban Community Development Plan, Calcutta Metropolitan Development Organization (Ford Foundation), 1966.

14-16 Illustrations provided to capture Calcutta's traffic problems, Calcutta Metropolitan Planning Organization, Traffic and Transportation Plan, 1966.

development in India, we felt that this "western" attitude will not ultimately help. We know that people cannot yet correctly formulate their problems, we know that by and large they are ignorant of numerical methods and analysis, and their ideas about the potentialities of a computer are not clear …[23] The man who owns the most expensive piano cannot be the best pianist. In computers there is no exception to this rule … A real musician can create magical tunes out of a mere bamboo flute, but a non-musician cannot, though he can be proud of his expensive and glamorous instrument.[24]

A certain para-computational logic emerges here, an artisanal pattern next to the machine, an other science of translational skill next to the conceptual, self-referential, domain of "pure" science. The unity of comprehension—in the nation, in cognition, or in objects—that one seeks in computational labor cannot be wrought without an unverifiable power of judgment that one can describe only as aesthetic.[25] In the final analysis, expertise rests not on skill but on intuition. Mahalanobis' academic cultivation drew from a well-articulated intellectual program—within the liberal national program—of associating aesthetic consonances and scientific ones. His technical training and association with the founding personas of statistics, Karl Pearson and Ronald Fisher, cannot be dissociated from the vegetal obsessions of the aesthete and poet Rabindranath Tagore's Santiniketan school, the fount of Indian aesthetic thought in its nationalist phase. Confronting the vast interstitial failures of a colonial administration marked only by piecemeal investment, both nationalist aesthetics and nationalist science in India are marked by their overwhelmingly generalist and categorical thrust: it is not by coincidence that Mahalanobis began his career as Tagore's amanuensis, and the founding support for statistics as a nationally significant field was given support by a poet strongly marked by Romanticism. The following extract from Tagore was published in the second issue of Sankhyā (Numbers), the journal of statistics founded by Mahalanobis in 1933; the formulation is thoroughly and rigorously Kantian—the authority of the judgment explicitly eschews an objective referent:

> The enchantment of rhythm is obviously felt in music, the rhythm which is inherent in the notes and their grouping. It is the magic of mathematics, this rhythm which is in the heart of all creation, which moves in the atom and in its different measures gold and lead, the rose and the thorn, the sun and the planets, the variety and vicissitudes of man's history. These are the dance-steps of numbers in the arenas of time and space, which weave the maya of appearance, the incessant flow of changes that ever is and is not. What we know as intellectual truth, is that also not a perfect rhythm of the relationship of facts that produce a sense of convincingness to a person who somehow feels that he knows the truth? We believe any fact to be true because of a harmony, a rhythm in reason, the process of which is analyzable by the logic of mathematics.[26]

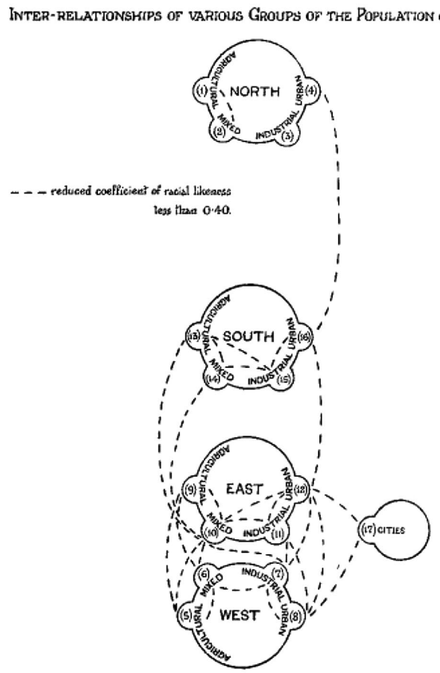
Both the aesthetic's two key attributes—the intuition of a phenomenal unity (maya) on the one hand, and its lack of objective referent on the other—are critical to the establishment of expertise. It is only through this intuitive passage ("the sense of convincingness") that we can understand the manner in which the minimal art of apprehension (of the fragment or sampling) that, in Mahalanobis' language, could acquire cognitive control over the whole.

There is thus something of an intuitional transference between the pervasiveness of chance and the totality of knowledge claimed by disciplines that use the techniques of probability—physics, economics, sociology, planning—that distinguish them strongly from their pre-modern counterparts: their "imperialist" tendency, in Nancy Cartwright's words, "to account for almost everything."[27] Once again, this ability to discontinuously project the (categorical) whole from the (empirical) part is the hallmark and the tremendous pouvoir-savoir bind that constitutes the force of organicism as the opening into governmentality itself: a part, a chink whose undifferentiated unexceptionality testifies even more strongly to its elemental relationship with the inner determination of the whole. The proper horizon of statistics is to motorize everything, at once, in all of its entangled complexity with the minimum of possible tools, with the state as the metonymic agent of willed change. Pace Mahalanobis:

> With the emergence of the scientific view of an objective world of physical reality in which events were regulated by laws of nature, the choice was between making an exception of the outcome of games of chance or bringing them within the world of physical reality governed by laws of nature … In this way chaos and random chance were integrated in the world of reality … In advanced countries with established scientific tradition there is continuing concern with validity of data and validity of conclusions. In underdeveloped countries the principle of authority is still dominant; the question of validity can scarcely arise. Statistics, therefore, necessarily remains a matter of formal or administrative sanctions …[28]

We must understand well the monstrous domain of this field: it is not just a matter of cropping, reducing, and contorting the axioms of the universal into the manageable dimensions of the quantitative; rather it is an entirely new apparatus of marshalling this translation that needs to be built. To use the conventional term "social science" for this field—for indeed this new apparatus encompasses the specifically "modern" fields of economics, statistics, planning, and policy that are under examination in this essay—would be a misnomer, or at least a metalepsis, in the sense that it is not that science is being applied to society, or even that the sciences are socially derived, but that "society" is only the image of this apprehensibility of an infrastructural field, a field that correlates systems, organizations, predicable subjects, of open-ended calculi without causal compass.

The national, in this sense, can exist only to the degree that its heterogeneous constitution can be covered over by an epistemic image of congruence. What would the Saidian critique of Orientalism make of texts such as Mahalanobis' "A Statistical Study of Certain Anthropometric Measurements from Sweden," published in July 1930 in Biometrika, the vaunted international journal established in 1901 by Francis Galton, Karl Pearson and W. F. R. Weldon?[29] On their part, contemporary development economists in whose disciplinary formation Mahalanobis has had a key role to play—particularly through his establishment of the National Sample Survey—would very likely have a convenient apologia: Mahalanobis' key contributions are to the refinement of quantitative formulae. Popper would be the patron saint here: one must separate "the context of discovery from the context of justification."And yet, it would be hard to completely erase the eugenicist locus of Mahalanobis' equally piquant eighteen-year, tripartite study carried out for the Zoological Survey of India, Anthropological Observations on the Anglo-Indians of Calcutta.[30]



17 Mahalanobis, "A Statistical Study of Certain Anthropometric Measurements from Sweden," Biometrika, 1930.

On studying these documents, it is clear that Mahalanobis' primary interest is not in painting an effigy of white raciality but to finesse the scientific relationship between measure and mixture, a science which is deemed particularly apposite to the epistemologies of complexity by which the emergent Indian nation-state will be defined, but are not exclusive to it. The nation is itself in the traffic of norm and variation from the universal that is at the core of eugenicist / statistical / probabilistic research; as such, it is defined only in the mode of uncertainty. "Society" (i.e. the nation in transnationality) is the sanctioning alibi of this new genre of the sciences of the heteroclite. The basis for the affinities that will be continually drawn between humans and monkeys, between population and agriculture, between logic and trees, between sadness and genes, is not therefore one of mere miming, but constitutes a full-fledged displacement from mimesis into a systematic logic of assembling and disaggregating, tabulating parts and wholes through a contingent calculus.

The problem with measuring Swedish heads Fig. 17—such that one can derive a "Coefficient of Racial Likeness"—is not just that of establishing what the problem sets out to do in the first place, that is to establish craniometric means and standard deviations, but that the integument of the body appears to escape a certain definability. Good calipers are critical to the measurements that enable one to derive standard tendencies in population groups and yet, how does one standardize the pressure that one applies to the caliper, the weight of the hand, the clench of the fist? The aesthetic, the locus of unverifiable intuition, once again rears its head in the very core of science. Despite any number of prescribed, normative practices, there is this perceived difference between the laboratory and the field, between the controlled environment from which the law is derived and the "natural" / "social" environment for which the law is held applicable: the control exerted on the latter cannot ever be completely determined. There will always be the irregular wind that brings foreign spores into the agricultural field under experiment for productivity. In addition to the first order problem of determining the coefficient of the referent in question based on a certain measure, a second order problem arises: of determining the accuracy of the measure, of factoring the force of the hand, the human, the organic as inbuilt error, that will carry out the measure.

This second order determination is the prime calling of statistics in its modern, twentieth-century form. By the turn of the century, statistics increasingly adopted probabilistic formulae into the core of its calculations: the project was no longer so much to decipher the mean and deviation of a given set of data, but to cancel out the inconsistencies embedded in the very collection of data by a calculative estimation of possible error, the deviation possible in any such field of inconsistency. To adjust for this deviation, the enterprise is no longer to close off the inconsistencies of field observations, but, assuming that this is irreducible, to average out the scope of possible error. Inconsistency must be corrected not in the field but back in the office, since "error [cannot be prevented but] is inherent in the very structure of statistical reasoning."[31] Once the aporia between randomness and probability has been bridged by an epistemological sleight of hand, the "science" of statistics can step out to its proper province and authority: to predicate the rules of reality over and against the chance, empirical, manifestations of the real. What appears like paradox here is also the ideological masterstroke: to announce the normative tendencies of a reality whose actual empirical fullness is essentially understood as non-purposive. The biological is only the alibi for a science whose address is in fact elsewhere. (Redux Kant: "nature" straddles a fundamentally different teleology from the "human.") Not only is a first-order, exhaustive enumeration of plenitude seen as impossible and unnecessary, but in Mahalanobis' words, techniques could be derived that would understand phenomena "better than complete enumeration".[31] Indeed, the potency of this form of expertise will be to determine the broadest possible conclusions from the minimal, least necessary number of facts, in order to make statistics "[especially] in the underdeveloped countries … purposive," neither mere mathematics nor pure economics, "but a fully developed technology of a multi-disciplinary character."[32] The task is to adumbrate the structure by which the piecemeal impression is to produce the categorical enunciation, by cancelling itself out to be sure, but also by normativising the domain of error.

Once subjective error has been rendered manageable by a calculus that presumes to harness both categorical discontinuity and the problems of infinity, a system has been laid down that appears to schematize the very morphology of correlation itself, certainly between subjective and objective worlds, but also between random phenomena and teleology, between part and whole, rendering them into a continuum. Expertise thus rests on a substitution, of phenomenal plenitude as such by the potential full, analytical extrapolation of the statistical fragment (i.e. the sample). Infinity has been replaced by a totalizing field. Radical doubt has thus been displaced by a computable doubt, the difference between infinity and totality measured in margins of error.[33] Codependence—the collapse of "differend" between general and particular[34]—has now

acquired a mathematical mimesis, and if the collation of data and corrective methodologies were to proceed apace, the story goes, in a future that will only remain speculative rather than actual, statistical part and phenomenal whole could potentially become indistinguishable from each other. No Archimedean point in space, this, but rather an ectoplasmic teratogen deduced from within the interstices of labyrinthine nature itself. What is critical here is not merely that these two kinds of doubt are radically heterogeneous, incommensurable, incompatible, but that, through this substitution, expertise also lays claim, by way of a transferred epithet, to a project that will infinitely continue to unravel, riding the back of chance itself.

Third World Teratologies

In the nationalist imagination, this class of teratological statecraft has a sister-species: Planning. And just as in Marx's use of the word "Ideology," to elide the adjective "German" would simply mean to miss the point of reference, for one cannot emphasize enough the adjective in the first question in the paragraph quoted below, an adjective that it would become the Ford Foundation's mission to elide:

> What is meant by National Planning? Planning means a comprehensive, scientific, systematic development of all the available resources of a country, material as well as cultural, so as to meet the obligations or requirements considered collectively up to a given predetermined standard within a given period.
>
> The resources of the country must be taken stock of in all their various forms. They consist not merely of the several kinds of raw material necessary for productive industry or for preparing consumption goods, whether from the cultivation of the soil, or the exploitation of the mineral wealth, or the development or working of forests, rivers and other gifts of nature, but also the different agents of production, including the human factor, experience [sic] or skilled and unskilled labour, and enterprise; the equipment by way of tools, implement or machinery; power supply and consequently sources of fuel or other such energy producing industry; organization in the shape of the most efficient forms of conducting or controlling productive venture [sic], and the several accessories of the same. A list must, therefore, be made by a competent experienced body (or sub-committee) …[35]

These words are the opening paragraphs of what may be considered the foundational document of Indian planning, articulated a full eight years before independence as part of the Indian National Congress's deliberations on planning through its National Planning Committee—a short-lived body scuttled within two years of its inception. The history of Indian planning—and Mahalanobis and Jawaharlal Nehru's role in it—is a complex one, one that has been better told in a slew of writing on the subject, but this much is clear: "national" planning is the overdetermining exigency resorted to as the various, internally contradictory factions that comprised Congress came to ask for their pound of meat at the cusp of independence.[36] Congress's attempt to cast itself as the sole negotiator limning the framework of the future independent state meant painting itself as the monopolistic representative of all the varied, mutually opposed factions of the Indian political spectrum. In this context, for all intents and purposes, Ford was only complementing the Indian government's exercises to obtain a synthetic portrait of its own economy, particularly in areas where it was either overstretched or inattentive, thus appearing merely to shore up the "national sanction" given to the epistemology of expertise granted to figures like Mahalanobis.

The Cold War tilt here was subtle, measured in slight shifts of epistemic emphasis, intangible given the multi-determinate emphases of the Indian "mixed" economy, but palpable nonetheless given the global ideological conflicts of the first decades of decolonization. The Marshall Plan in Europe had been modeled on a Keynesian, demand-driven logic; a logic conveniently adapted to integrate European economies with American industrial output through the widespread absorption of American commodities.[37] Given the dominantly non-industrialized basis of Indian capital and resources, and the tenuous monetary situation, the Indian planning effort (with the exception of business lobbies) had rejected the Keynesian model in favor of strategies that emphasized capacity-building. What is interesting in Ford's "research" support of Indian institutions in this period is its inordinate emphasis on demand. Fig. 18 Through "home science" programs in universities (a principal arena of Western intervention in this period) and the like, the techniques of planning—behavioral studies through statistical and quantitative analysis—were mobilized to set up an enterprise whose implications could only have been to undermine the considered biases of Indian planning. Upon studying the various Ford programs in urban and rural areas, one sees an entire archaeology of this sort of second-guessing—para-planning in its true sense.

Once the move has been made, a strange set of experiences come to be encompassed in the Ford projects under the rubric of expertise. Ford study #1: Which of the following metals used for cooking, 1) brass, 2) aluminum, 3) stainless steel with copper bottom, gives the most return in terms of time consumed, nutritive value and palatability of food consumed? (Answer: 3).[38] To be sure, there were the usual, "developmental" agendas that were also pursued: copious nutrition, the proteins in milk, immanent energy in cattle dung, family planning attitudes in Gujarat, the psychological needs of adolescent girls, their relationship to parental control, and so on. And yet, a peculiar panoply of concerns enter the Ford Foundation's ecumenical plate, defined more by their amenability to statistical experiment rather than any sense of crisis-led apprehension. Ford study #2: What is the iron content of Amaranth cooked with and without tamarind in iron, aluminum and in brass pans? To press the course of decolonization towards the deductibility of demand-driven "choices," the "free" subject must be fully illuminated, exposed in all its rationales, choices and exertions. Slowly but surely, the practices of the everyday are being nudged in the direction of commodification, towards the integration of the Indian market with its American counterpart. Sometimes, Ford more nakedly reveals its hand. Ford study #3: Which aspects of kitchen design are immigrant Indian homemakers in the United States most receptive to?

More vivid, however, is the application of the premises of a science—probabilistic statistics—whose other axis we have already identified in Mahalanobis's writing. The more humdrum or prosaic the study, the more the claim to authority of a science that purports to unravel the very workings of life processes, the organum of the organism, in their everydayness, of phenomenality as unexception. "Science" is here constituted as the measure of the difference between the unexceptional normal and the error, all covered over by a calculus of "distribution"; this is "modernization" in its grander, niggling, insinuative, tactical denomination. Ford study #4: Take a hundred children from Alembic Vidyalaya School. Group them in three size groups A, B, C, based on thirty-three measurements, recorded in centimeters and taken next to the skin, "except for a knit pantie which was supplied freshly laundered for each subject." To make accurate measurements, it will be important to devise an appropriate series of instruments, all of which can be made at the Baroda Arts and Crafts Department: Anthropometer, Bitochanteric meter, weighing scale, steel tape, Raja tape of cloth, colored pencil, neck chain, small chair.

Ford's Calcutta project is pervaded by this very ethos of taking measure, only now colored pencils and anthropometers have been surmounted by the IBM 650. The computer therefore comprises the apex implement of an entire machinery of analysis assembled to deconstitute the terms of the urban into a series of measures.

> It would be greatly appreciated if you take immediate steps to purchase four hand-operated "Facit" calculating machines, and two electric "Facit" calculating machines, and one hydraulic Calculator to be airfreighted to … our office in New Delhi … [which] will then forward this equipment to Calcutta for the use of the Calcutta Metropolitan Planning Organization. The Hydraulic Calculator is a small slide rule used for measuring the inside of pipes.[39]

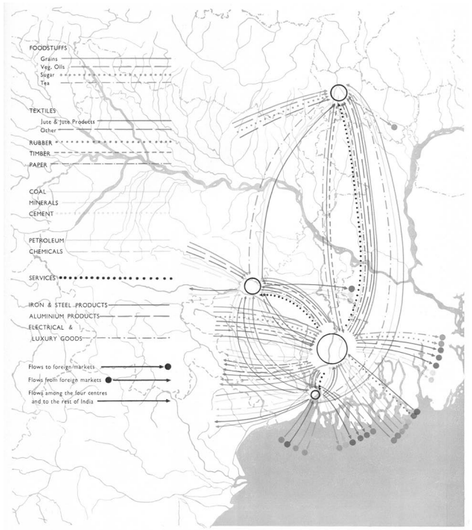
Dismissive of architecture's picturesque "stunts," Fig. 19-20 the city of Ford's urbanism is a city of increments and infinitesimal differences. From the traffic jams, the impedances, and the stickiness emerges an image of particulate liquefaction. Between suspect calipers and inefficient calibers, the city has made into a "hydraulic" organism—to use a derisory term for Keynesianism—a phantasmatic mechanism of fluxes and capillary flows.

It is in the vein of the sample that we see the housing types propounded in the UCOPAN (Universal Concrete Panel System) / Tapsia-type designs for mass-produced housing, which Ford, in consultation with Indian architects and engineers, designed for indigent migrants to Calcutta. Figs. 21-23 "These concrete panels are universal in the sense that many types can be cast in the same mould, and they can be used for all types of dwellings without being restricted to a single floor plan."[40] By only designing the component, a sort of differentiated minima for occupation, one refrains from using architecture to "propose architectural solution[s] to non-architectural problem[s]" at the same time as making available the means to "replicate them on a scale that would have any significant impact on the problem."[41] One designs not just a house, or a set of houses to address a discrete set of cultural demands, but all housing at once, coterminously; the problem of housing reduced into a problem set.

Overdetermination and its Discontents

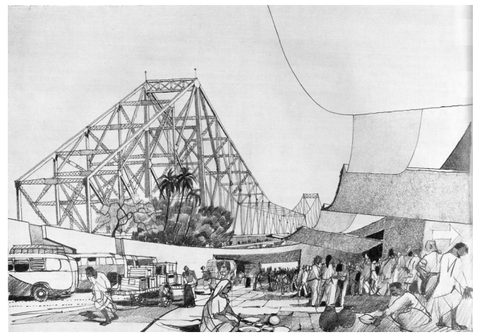
In its attempt to insert itself into the decision-making apparatus of the postcolonial state, Ford had sought to graft its overdetermining epistemology onto the already extant planning apparatus of the Indian state embodied by the Mahalanobis-Nehru axis defined, as we have seen, by its own overdetermining, organicistic structure of reconciling the conflicting aims of all its different factional constituencies. For Mahalanobis, this overdetermination was a necessary one. Planning was the necessary instrument to correct a situation where the economic inequality of underdeveloped countries offered precisely the lever for manipulation by neocolonial powers of a select elite defined by its excessively asymmetrical monopolization of resources.[42]

Given that it was operating in a nominally sovereign country with a political tide increasingly turned against its

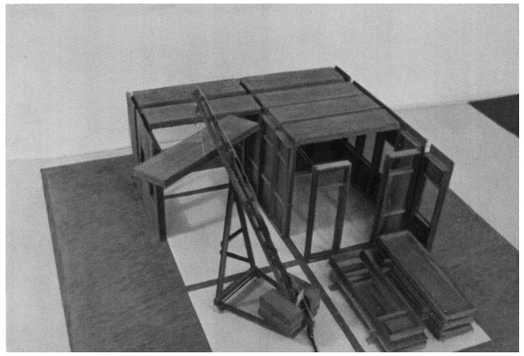


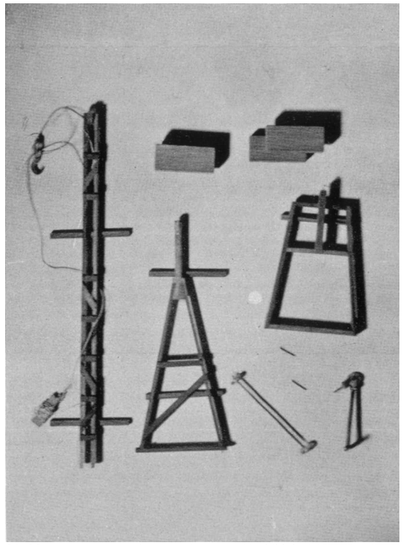
18 Commodity flows into Calcutta, à la Benton MacKaye and the Regional Planning Association of America, Basic Development Plan, Calcutta Metropolitan Planning Organization (Ford Foundation), 1966.

19 Sketch of Maniktala "work-cum-living center", Calcutta, by the British "townscape" theorist Gordon Cullen commissioned by Ford, dismissed by Ford's Arthur Row as visual "stunts".

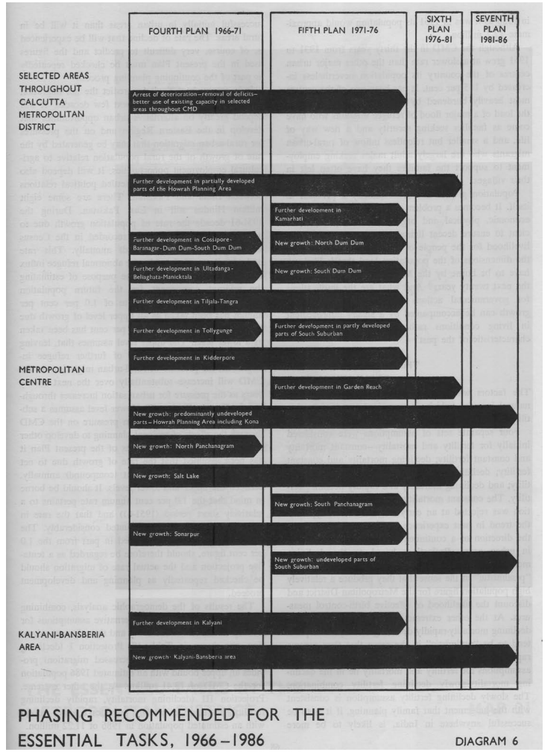


20 Sketch plan for improving Howrah Bridge approach.



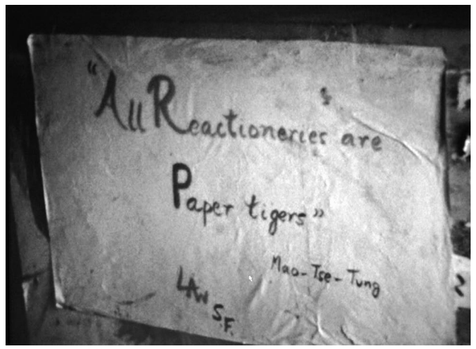


21-22 Elements for Tapsia-type / UCOPAN mass housing for urban immigrants and poor developed as part of the Ford Foundation initiative.



24 Phased plan development for the Calcutta Master Plan, "1966-1986", aligned with the Five-Year National Plan process, projected in 1966. The Five Year Plan process went on "holiday" in 1966.

23 Tapsia-type mass housing, cluster plan.



25 "All reactionaries are paper tigers" —Mao-Tse-Tung Communist-aligned Student Federation poster. Louis Malle, Calcutta (1969)

epistemological authority, Ford scrupulously couched itself as merely an advisory body, agonistic rather than antagonistic. It is clear that the agency was caught between two institutional vectors: on the one hand, the imperative of "intervening," in an interested way, into ever-changing political dispensations and cross-currents in order to effect its objectives through the state, and the pressure to retain the veneer of professional disinterestedness through which planning can appear to bear the thrust of a universal good rather than a specific ideology. To say the Ford mission was a failure, a defeat by political change, is to beat a dead horse, except for the caveat that it had been Ford which had foregrounded "political" engagement in the decolonizing context as the basis of long-term efficacy, and it was Ford's politics of co-opting weakened governmental arrangements which were put into the dock by the left politics of the 1960s and the 1970s.What it had not calculated in its contest with Indian nationalism was that nationalist expertise itself could be contested from below, and indeed the 1967 election—where Congress lost its national dominance, leading to the rise of regional entities including the Communists in Bengal—put paid to an entire configuration of epistemic authority, Mahalanobis's included, as the state slid from its liberal dispensation to a neoliberal one.[Fig. 24]

If in the wider sense, the broad insinuations of US experts and institutional advice in the post-independence period did therefore succeed in the 1970s with the Indian state's adoption of a demand-driven economy and the "free trade" fiscal ethos pursued by the native business elite, one regional and ironic effect of this success was the eviction of Ford's Calcutta effort itself. In the increasing shift towards neoliberalism, as feudal landlordism reigned newly triumphant with the collapse of the national planning effort, food and commodity prices underwent exponential inflation with the relaxation of monetary controls, state procurement and price controls epitomized by the five-year planning process. In 1967 a military insurgency, the Maoist Naxalite movement, was born in the very landscape in and around Calcutta that Ford had sought to compute with, an insurgency which pervades large pockets of agrarian eastern India, from Nepal to Andhra Pradesh, even today.[Fig. 25] The analysis of this movement and its usage of its own set of overdeterminations is best left for another occasion, but what is of consequence to our analysis so far is its critical engagement with the very overdetermined geography with which the American and (socialist) Indian planners had jointly—albeit in the terms of an ideological dispute—sought to rewrite the Indian landscape. The cognitive multiplication of determinants carried with it a geographic expansion as well, "Urban planning is regional planning," a move implying within it a surreptitious gerrymandering of political boundaries: "in a federal union such as India, regional planning means interstate planning."[43] [Fig. 26] In the following passage from a revolutionary pamphlet entitled Spring Thunder over India, we see something like an involution, a turning inside-out rather than upside-down, of the overdetermined landscape of the nation-state. A theoretical counter-totality nestles within the geographic totality of India, a totality sutured out of the neglected particulate elements of the rural socius, programmed into its own "wave," its own rhythm of periodic oscillation. And if for Ford—as for the American RPAA, manifested in all those Benton MacKaye diagrams—the "region" was the proper frame from which the city would unravel its organic inference, in the following communiqué this modus has been folded unto itself. If the work of the developmental state is to reduce chaos to complexity, the threads of these reductions can themselves become the programmatic sites for detonation, turning the devices of the state itself into a countervailing set of outcomes:

> India is an enormous country; the countryside, where the reactionary rule is weak, provides the extensive areas in which the revolutionaries can maneuver freely. So long as the Indian proletarian revolutionaries adhere to the revolutionary line … and rely on their great ally, the peasants, it is entirely possible for them to establish one advanced revolutionary rural base area after another in the huge backward rural areas and build a people's army of a new type … they will eventually develop them from isolated points into a vast expanse, from small areas into extensive ones, in a wave-like expansion. Thus, a situation in which the cities are encircled from the countryside will gradually be brought about in the Indian revolution to pave the way for the final seizure of the cities and winning nationwide victory.[44]

Parts and wholes, territory built of bits and pieces, subjects as fragments, tenuously tied; projects protracted into projection, the state extrapolated from geography: the reversal that confronts us in this communiqué is not just of socio-military (or police) strategy alone. The territorializing gambit of the Ford and the Mahalanobis-Nehru axes had turned on a gamble—of displacing politics into epistemology—a gamble whose advance would be justified on its incremental scrutiny of accumulated error(s). In cutting open the threads of that normative patchwork, of state and transnationality, to reveal the displaced totality as in fact disjoined from the sum of its parts—that representational apparatus was not representative—the aporias that inhabit organicism have turned towards another putative organum, in effect reverting epistemic teratology back to territoriality. Monsters are not other from a given norm; indeed, norms themselves also generate monsters.

Monsters are not other from a given norm; indeed, norms themselves also generate monsters.

1 "Copy of Letter Dates 7 September 1965 from Mr. Michael R. Lackner, Advisor in Information Processing, The Ford Foundation Advisory Planning Group, 8 Rawdon Street, Calcutta-16, to Professor P. C. Mahalanobis, ISI, Calcutta-35"; File No. 317. Calcutta Metropolitan Plan Organization (Ford Foundation), 1961-69, ISI-PCM Archives. Research for this paper was conducted, in addition to published material in various libraries, at the Ford Foundation archive in New York, the Prasanta Chandra Mahalanobis Memorial, Museum and Archives at the Indian Statistical Institute in Calcutta (henceforth ISI-PCM Archives). In addition to various microfilm documents kept at the Ford archives, my account of Ford's involvement in Calcutta is also gleaned from the following published accounts: Arthur T. Row, An Evaluation of the Calcutta Planning and Development Project, 1961-1974 (New Delhi: The Ford Foundation, 1974); Arthur T. Row and Kalyan Biswas, Calcutta: The Great Experiment, Unpublished document, Reports 013484, Ford Foundation Archives; The Ford Foundation: Drafting a New Blueprint for India's Largest Urban Center (New Delhi: The Ford Foundation, 1964). The Calcutta Metropolitan Planning Organization (CMPO), the para-statal unit that was formed expressly to facilitate the advisory input of the Ford Foundation into governmental action, published a series of annual reports that were also crucial in forming this account.

2 Italics added, letter from Edward G. Echeverria to Mahalanobis; File No. 317. Calcutta Metropolitan Plan Organization (Ford Foundation), 1961-69, ISI-PCM Archives.

3 For a study of Alexander's computational agenda and some of the American institutional background undergirding at least some of Ford's logic, see Alise Upitis, Natural Normative: The Design Methods Movement, 1944-1947 (Ph. D. Dissertation, MIT Department of Architecture, 2008).

4 This chapter is extracted from a larger chapter in my forthcoming book on organicism, titled TransNational HaHas: Totality and Architecture. For a definitional elaboration of organicism, see Arindam Dutta, "Learning from Organicism: Interdisciplinarity / Para-Architectures," in Journal of the Society of Architectural Historians (December 2006).

5 See Arindam Dutta, "Cyborg / Artisan: On a Certain Asymmetry Deriving from the Binary System; or, Notes on a Moment in the Development of a Taylorist Feudalism," in The Bureaucracy of Beauty: Design in the Age of its Global Reproducibility (New York: Routledge, 2006).

6 See, for instance, recent articles in the journal Teratology, published by Wiley Press.

7 Bernard E. Loshbough to Chester Bowles, "A Proposal for a US-AID for Calcutta," May 22, 1964, "Training and Research Activities of the Calcutta Metropolitan Planning Organization," 1961-1970, Grant Notification Letters, Reel No. 2640, Ford Foundation Archives.

8 For Ford's own account of its interventions in India, see The Ford Foundation, 1952-2002: Celebrating 50 Years of Partnership (New Delhi: The Ford Foundation, 2002). The eleven volumes of the report list interventions in the sectors of public governance, law and human rights, urban planning, regional security, the environment, agriculture and water resources, women and poverty, reproductive health, human resource development and arts and culture.

9 Row, An Evaluation of the Calcutta Planning and Development Project, op. cit., 79, 89.

10 R. Chandidas, India Votes: A Source Book on Indian Elections (New York, Humanities Press, 1968).

11 See T. J. Nossiter, Marxist State Governments in India: Politics, Economics and Society (London: Pinter Publishers, 1988).

12 See Rabindra Ray, The Naxalites and their Ideology, 2nd ed. (New Delhi: Oxford University Press, 2002).

13 Arthur T. Row, "A Note on CMPO/Ford Foundation Efforts 1961-1971", Reports 006795, Ford Foundation Archive: 5.

14 Row and Biswas, op. cit., 84.

15 On this subject, see Arindam Dutta and Ijlal Muzaffar, "Housing the Indigene; The Making of a Third World Architecture," unpublished paper, Expertise: Consultants, Connoisseurs, Con-men. Conference, Graduate School of Design, Harvard University. October 2002. Also see the work of Ijlal Muzaffar on the interrelationship between modern architects and international aid agencies, The Periphery Within: Modern Architecture and the Making of the Third World (Ph.D. Dissertation, MIT Department of Architecture, 2007).

16 Preface by David Willcox in Row and Biswas, op. cit., 2.

17 For a study of the depoliticizing effect of developmental agencies on Third World governments, see James Ferguson, The Anti-Politics Machine: "Development," Depoliticization, and Bureaucratic Power in Lesotho (Minneapolis, MN: University of Minnesota Press, 1994).

18 CMPO, Basic Development Plan for the Calcutta Metropolitan District, 1966-1986 (Calcutta: CMPO, 1966): 29.

19 CMPO, First Report, 1962 (Calcutta: CMPO, 1962): 8.

20 Letter from Lackner to Mahalanobis, op. cit.

21 The difference between causality and determinant derives from Kant. I have written about this relationship elsewhere: "'Causality' describes a procedure where the phenomenon, the effect, is given first; the process of reflection must extend back through the exercise of reason toward the generality of a principle … 'Determination' is the inverse of this procedure. The generality (i.e. the rule, principle) is made available first, and from this it works down towards the particular." See Dutta, The Bureaucracy of Beauty, op. cit., 291.

22 Georges Canguilheim, "Machine and Organism," in Incorporations, ed. Sanford Kwinter and Jonathan Crary (New York: Zone Books, 1992) 54.

23 Note by Samar K. Mitra, File no. 310, Electronic Computer, (UNIVAC) I, 1959-67; ISI-PCM Archives.

24 "Discussion between Homi Bhabha and Mahalanobis about location fast computer in India, (suggested UNIVAC) whether TIFR or ISI. Computer in Bombay suggested to be of the CDC 3600 or IBM 7090 type, to serve needs of the Atomic Energy Establishment at Trombay." File No. 513 - Electronic Computer (Univac) II, 1957-62; ISI-PCM Archives.

25 See Dutta, "Unmaking Beauty: Aesthetics in the Shadow of History," in The Bureaucracy of Beauty, op. cit.

26 Anikendra Mahalanobis, Prasanta Chandra Mahalanobis (New Delhi: National Book Trust, 1983) 44.

27 Nancy Cartwright, The Dappled World: A Study in the Boundaries of Science (Cambridge: Cambridge University Press, 1999).

28 P. C. Mahalanobis, "Statistics as a Key Technology," The American Statistician, Vol. 19, No. 2 (April 1965): 44.

29 P. C. Mahalanobis, "A Statistical Study of Certain Anthropometric Measurements from Sweden," Biometrika, Vol. 22, No. ½ (July, 1930): 94-108.

30 P. C. Mahalanobis, Anthropological Observations on the Anglo-Indians of Calcutta (Calcutta: Zoological Survey of India, 1922-40).

31 See Mahalanobis, "On Large-Scale Sample Surveys."

32 Mahalanobis, "Statistics as Key Technology", op. cit., 46.

33 See, for instance, Mahalanobis thoroughgoing tract "On Large-Scale Sample Surveys," 329-451.

34 For an elaboration of this particular employment of Jean-François Lyotard's theory of the different, see Dutta, "Learning from Organicism: Interdisciplinarity / Para-Architectures," op. cit.

35 All India Congress Committee Archives, File No. PL-14 (III)/1939, Archives of the Nehru Memorial Museum and Library, New Delhi, henceforth AICC Archives.

36 The terminology of overdetermination and contradiction is not a chance use. See Louis Althusser, "Overdetermination and Contradiction," in For Marx, trans. Ben Brewster (London: Verso, 1969).

37 See Robert Skidelsky, John Maynard Keynes: Fighting for Britain, 1937-1946 (New York: Penguin, 2000); Also see Antonio Negri, "Keynes and Capitalist Theories of the State Post-1929" (1968), in Revolution Retrieved: Selected Writings on Marx, Keynes, Capitalist Crisis & New Social Subjects, 1967-83 (London: Red Notes, 1988).

38 These cases are cited from a report on Ford Foundation-supported studies in the field of "Home Science" across India, under the rubric of the Home Science Project, coordinated jointly by the University of Baroda and Iowa State University. See Mattie Pattison w/ Shakti Chhaya, Annotated Bibliography of Research related to Home Science in India (Baroda: Faculty of Home Science, M. S. University of Baroda, 1967). Also see Kim Berry, 'Lakshmi and the Scientific Housewife: A Transnational Account of Indian Women's Development and Production of an Indian Modernity' in Economic and Political Weekly (March 15, 2003).

39 Letter to Eugene Stedtman in the New York Ford office, July 25, 1962, "Supplemental Support for Project Specialists and Consultants in Planning for the Calcutta Metropolitan Planning Organization" 1968-1972, Reel no. 1620, Grant Notification Letters, Ford Foundation Archives.

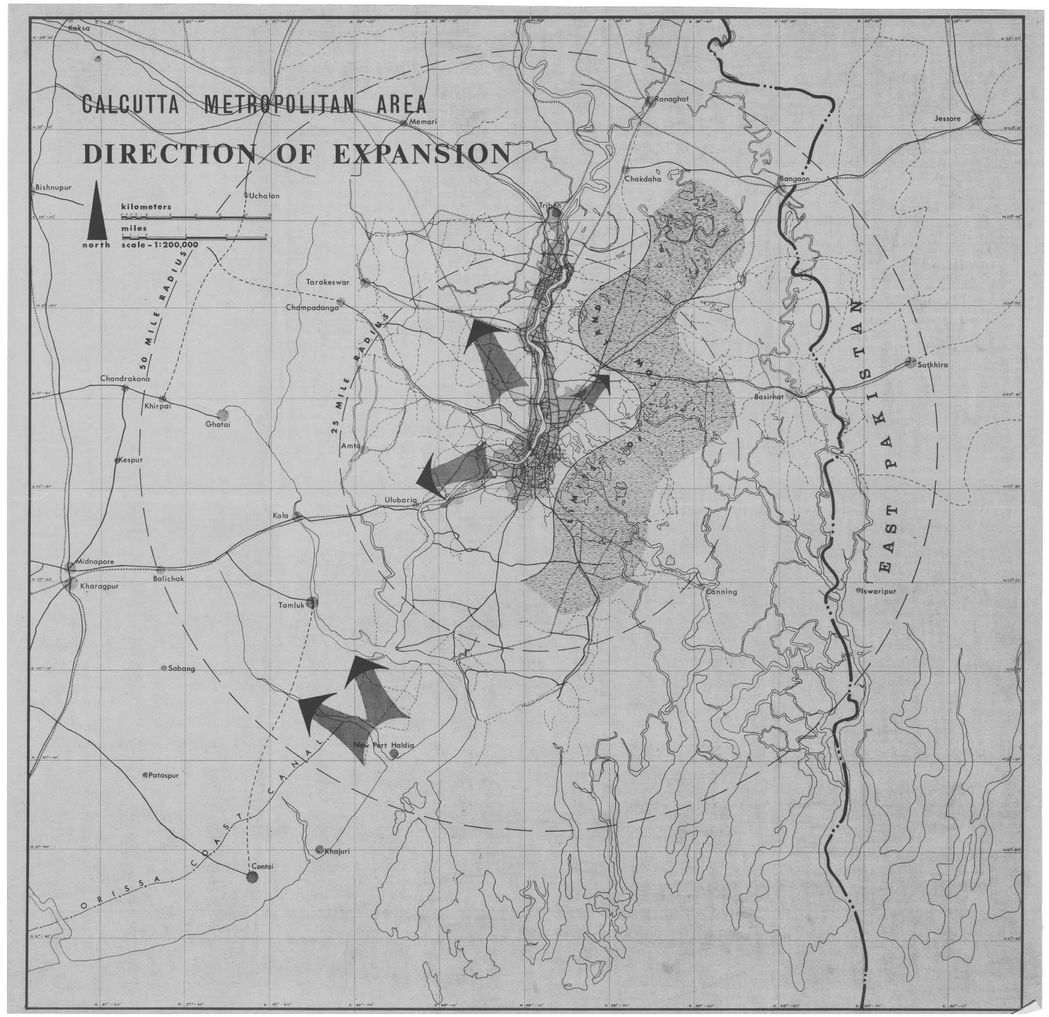
40 CMPO, Single-Storey Housing Unit: Tapsia-Type / Housing Designs / The Ucopan System (Calcutta: CMPO, 1970). Also see Sujit Banerji, "Innovative Techniques in Low-Cost Housing: The North Bengal Experience," in D. J. Dwyer, The City as a Centre of Change in Asia (Hong Kong: Hong Kong University Press, 1972).

41 Row, The Great Experiment, op. cit., 71.

42 Prasanta Chandra Mahalanobis, "Industrialization of Underdeveloped Countries - A Means to Peace" (1959), in Papers on Planning, ed. P. K. Bose and M. Mukherjee (Calcutta: Statistical Publishing Society, 1985) 185.

43 Row, The Great Experiment, op. cit., 182. Row offers a set of reasons for the failure to follow through with this understanding, the main thrust of which was that Ford was hardly equipped to move the governments of four states and the Centre with the limited resources at its command. Interestingly, in his 1974 report, Row describes Ford's grasp of this problem as a continuing effort. See Row, An Evaluation of the Calcutta Planning and Development Project, op. cit., 55.

44 "Spring Thunder over India," reproduced from Peking Review No. 29 (14 July, 1967); Appendix II in Marius Damas, Approaching Naxalbari (Calcutta: Radical Impression, 1991).



26 **Calcutta, Metropolitan Plan Expansion, Calcutta Metropolitan Plan Organization (Ford Foundation), c. 1960s.**