Chapter Five

DISTANCING THE SOCIAL:

Between the Biological and the Economic

STATISTICS AS A TECHNOLOGY OF TRANSLATION

In my last chapter, I have tried to demonstrate three registers in which interactions between the biological and the economic took place in the first half of the twentieth century in colonial Bengal. These acts of translation presumed a vernacular domain which provided staging of the social in such a way that the acts looked conducive to local specificities and rearticulated the idioms of social transformation. In this chapter, I shall interrogate a moment of overwriting of the earlier modalities of translation and a strategy of purification of the messy, overlapping, and conflicted narratives of mediation between the vernacular domain and the procedures of production of economic knowledge.

As we have seen in case of Satis Mukherjee and his The Dawn, the biological and the economic met at an organicist space of “social economy” where caste was projected as a marker of difference from the overtly “materialistic” universe of political economy. Mukherjee identified Eastern pedagogy as a site of translation founded on the supremacy of religious sentiments. This modality of translation postulated a one-way traffic from experience to data, much in the stylistic implication of the colonial state which gave primacy to translation of experience into information through governmental procedures of giving witness before a commission.

The break from Mukherjee to Benoy Sarkar within this experiential modality was significant: Sarkar and his colleagues at Ārthik Unnati broke apart from the earlier tradition by imagining an
entwinement of the translation practices. In the various discourses on contemporary economic issues, they proposed a modality of experiential equivalence where a double movement of translation from experience to data and data to experience could operate simultaneously. This modality allowed Sarkar to appear as a proxy of the colonial state to bring about social reform – not by imitating its rhetoric of governmentality but by being in physical proximity with the population as a field of experience and inheriting the risk of exposing the limit of liberal governmentality.

This illiberal impulse was shared by Sarkar’s contemporary Radhakamal Mukherjee who subscribed to the same experiential modality of double translation but differed from Sarkar in his critiques of the Western model of socialization through redefining caste as a political body capable of delivering social insurance. Both Sarkar and Mukherjee were looking for an organicist re-configuration of the social, but the technologies of mediation that they offered as its operative principle were markedly different. For Sarkar it was the physicality of the mode of data collection and, for Mukherjee, it was the attainment of physiological justice by redistribution of energy.

Curiously, these connections between the biological and the economic did not get any space in the standard histories of economic development in India. By locating the institutional connections and personal motivations, these narratives sought to produce a linear history of development and planning which, in the last instance, reproduces the logic of an autobiographical endorsement of progressive evolution by the postcolonial Indian state. Although Benjamin Zachariah’s perceptive and detailed history of the discursive entanglements in development theories and practices in late colonial India admits marginal references and indistinct traces of a biological conception of the economic, especially in writings on anthropometry and racial profiling by the stalwart statistician and planner Prashanta Chandra Mahalanobis, it readily dismisses it as inconsequential to the history of development planning in India: “By the time [Mahalanobis] became involved with national planning, possibly through the influence of colleagues, this strand was no longer particularly important to him.”¹ According to Zachariah, the term “race” as deployed in the discourses of development in India was nothing but a “red herring,” not properly disseminated in the way it was conceived and made to represent “in European contexts at the time.”² It was either interpreted, he argues, as an “aggressive form of nationalism,” or as a mechanically construed pointer in the urge to introduce a

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² Ibid.
culture of “national discipline.” Like the other histories of development in the fashion of history of ideas, Zachariah’s approach to this issue is conservatively functionalist and restricted to a map of discursive connections which has already been “developed” by the Indian state in its full glory.

The chief argument of this chapter is that the apparent separation between the biological and the economic was produced by situating statistics as a technology of translation in the epistemic universe of developmentalism in late colonial India. What is ironical in this narrative of disengagement is that the divorce between race and economy was effected by a ritual of racial profiling. Moreover, this ritual was performed in the same studies of anthropometric surveys by Mahalanobis that Zachariah considers incidental to his career as the architect of a planned economy in postcolonial India. I shall argue that this opinion is characteristic of both institutional and biographical histories of development which believe that the relation between the procedures of racial profiling and developmental practices will have to be one of ideological and overlooks the very technologies of disrupting this relation. By not following how powerfully the materiality of these technologies could enforce such disruptions, these histories get incorporated in the same discourse of development which they want to critique. The ineffectiveness of these histories also emanates from a negligence of the vernacular tracks of the production of economic knowledge.

If we get out of the comfort zone of describing any non-commonsensical discursive connection as obscure or inconsequential, we will take a step towards exploring the impure genealogies of economic development from a different perspective. This chapter engages in such an attempt by taking another look at the anthropometric writings by Mahalanobis and trying to find out how, from these writings, a different modality of translation – the modality of spatial equivalence – emerged and effected the separation between the economic and the biological in the first half of the twentieth century. This chapter seeks to connect the phenomenal growth in recognition of statistics as a scientific discourse in postcolonial India with its role in emerging as a metadiscursive technology of mediation between the biological and the economic and consequently, severing the link between them by conflating various registers of representation and intervention. Gerd Gigerenzer et al. have argued that, after 1900, the epistemic status of statistics as a discipline changed in relation to other scientific discourses. Previously dispersed through a constellation of social and political agendas,

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statistics now “became a branch of applied mathematics,” considered by people from different fields of science, business, and government “as a tool created by mathematicians for providing quantitative solutions to scientific and practical problems.”\(^5\) This development gave the mathematical statistician an opportunity to become “a universal expert, whose specialty was not so much a subject matter as a method of inference applicable to all subject matters.”\(^6\)

In this chapter, I shall argue that an associated effect of the coming of a universal expert is discontinuation of conversations – exchange, so to speak – between various disciplines as, in the name of universality and flexing of boundaries, new principles of delimitation are devised and novel techniques of demarcation are made to circulate. I shall try to show how the statistician became a universal expert in the first half of the twentieth century in colonial India by staging his discipline as a tool of translation – and not as a site of the same – between different concerns from separate fields of knowledge, particularly between the biological and the economic fields. It is necessary to admit that I am not concerned with the history of statistics as a discipline and how it became a “science” in colonial India. I am more interested in exploring the moment of disentanglement of the economic and the biological and how the illiberal foundations of the “Indian economic” were displaced in the official, non-vernacular histories of development.

A STATISTICIAN AMONG SCIENTISTS

In January, 1950, the thirty-seventh session of the Indian Science Congress was held in Poona. Prashanta Chandra Mahalanobis, the famous statistician and the founder of the Indian Statistical Institute (ISI) was elected to be the General President of the session. “I naturally feel honored at my election as General President,” he spoke quite earnestly in his presidential address and recounted a tale of an underdog discipline finally gaining respect and recognition among the most severe of its skeptic detractors.\(^7\) Several years ago, he discussed with a friend of his about the possibility of initiating a separate section for statistics at the Congress. The friend, having found the suggestion quite agreeable, spoke to some of his colleagues. The colleagues, however, did not appreciate the merit of the idea and dismissed it right away by saying, “If statistics is to have a session, you may as

\(^5\) Ibid, 69.
\(^6\) Ibid.
well have a section for astrology.” The comparison, though a little unfair, was not unusually far-fetched. It was commonly held that since both disciplines focused on forecasting future events, they must take recourse to similar “unscientific” methods of analyses. “And yet,” Mahalanobis reminded his audience, “the section for mathematics was converted into the section for mathematics and statistics in 1942; a separate section was created for statistics in 1946; and this year, a person engaged in statistical work has been elected General President.” Mahalanobis in all modesty clarified that the honor conferred upon him should not point to his personal achievements, but to the “recognition of the growing importance of statistics” in India.

The recognition came mostly in the form of governmental approbation. Although, in his speech at the Science Congress, Mahalanobis showed restraint in acknowledging his own role in the process, elsewhere he did not hesitate to inform how at “the desire of Prime Minister Jawaharlal Nehru” he started working “as the Honorary Statistical Advisor to the Cabinet, Government of India” since 1949. In the same year, he agreed “somewhat reluctantly” to become a member of the National Income Committee, which had among other agendas the plan of a “thorough review of the gaps in statistical information in India.” To bridge the said gaps and to create a centralized system of collecting information on a more regular basis, the National Sample Survey (NSS) was established in 1950 “in the form of about two complete “rounds” per year covering both rural and urban areas of the whole country.” The field staff in charge of collecting the information worked under the direct supervision of the Ministry of Finance, and the statistical experiments and studies including sample design, processing and analysis of data were performed at the ISI. Under Mahalanobis’ “technical guidance,” a Central Statistical Unit was already formed to channelize the collected information in course of development schemes designed by the government. In 1951, the Unit was elevated to a more official sounding Central Statistical Organization (CSO), which was hoped to emerge as “a pivotal agency for general coordination and the development of comparable concepts, definitions, and standards on a country-wide basis.” The CSO was tasked with supervising the statistical bureaus in various states of the country and coordinating their programs with the statistical

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8 Ibid.
9 Ibid.
10 Ibid.
12 Ibid, 3-4.
13 Ibid, 4.
14 Ibid.
departments in the central ministries. The effective concentration of the apparatuses of statistical knowledge in the triad of CSO, ISI, and NSS impressed Nehru so much that, in 1954, he asked Mahalanobis to “initiate studies in planning at the Indian Statistical Institute to help in the formulation of five year plans.” In 1959, the recognition of statistics as a discipline that could impact the schemes of national development was acknowledge publicly in the Parliament, when the ISI was declared as an Institute of National Importance, and was authorized to award its own degrees in statistics.

It was no small achievement for an independent organization, which started its career at one corner of the Physics department at the Presidency College, Calcutta. It was then called the Statistical Laboratory. Primarily a brainchild of Mahalanobis, at that time a professor of Physics at the College, the Laboratory was founded in the early nineteen twenties to conduct theoretical studies in statistics. Soon it came under the notice of the government, and various departments started taking advice from Mahalanobis and his colleagues, who voluntarily joined the Laboratory for learning the techniques of statistical experiments. Following a devastating flood in 1922, Mahalanobis was asked by the Bengal government to prepare a “comprehensive Report on Rainfall and Floods in North Bengal during the period 1872-1922.” A similarly detailed report was prepared for Orissa at the request by the Government of Bihar and Orissa with a small grant “sanctioned for computation expenses.” The Imperial Council of Agricultural Research sanctioned an annual grant in 1931 which enabled the Laboratory to employ a “small stuff of semi-permanent workers.” By that time, the workers at the Laboratory had started to think in the direction of a much more organized set-up with independent funding and resource arrangements.

The proposal for converting the Laboratory into a Statistical Society with larger scope and opportunity for research was first approved by Pramatha Nath Banerjea, Minto Professor of Economics at the University of Calcutta, D. B. Meek, Director-General of Commercial Intelligence and Statistics, and Nikhil Ranjan Sen, Professor of Applied Mathematics at the University of

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16 Ibid.
18 Ibid.
19 Ibid.
Calcutta. A draft constitution was printed and circulated in June, 1931, which was endorsed by eminent academics and influential members of the business communities alike. On December 14, 1931, a letter was issued over the signatures of Banerjea, Mahalanobis, and Sen informing about a meeting to be held on the 17th to “consider steps to be taken towards the establishment of an Indian Statistical Institute.” The meeting was presided by Rajendra Nath Mookerjee, industrialist and the former sheriff of Calcutta. A unanimous resolution for establishment of the Institute was passed in the meeting, and Mookerjee was requested to be its first President. George Shuster, Finance Minister of the Government of India, and Brajendranath Seal, philosopher and the former Vice-Chancellor of the University of Mysore, were elected Honorary Members of the Institute. Two local centers of the Institute were proposed to be founded in Mysore and Bombay, respectively under the supervisions of K. B. Madhava and C. N. Vakil. In a next meeting, another local centre was planned to be established in Poona with the economist Vaman Govind Kale as its chairman. On April 28, 1932, the Indian Statistical Institute was formally registered under the Societies Registration Act No. XXI of 1860. Its Memorandum of Association stated that the objects of the Institute should be to promote studies in both theoretical and applied statistics and to arrange funding for research and instructions for the advancement of the discipline. It was held to be the Institute’s prerogative to undertake field-works and prepare reports either independently or in service of governmental agencies. Calcutta was chosen to be the venue of the registered office, as the administrative decisions were still being taken from the same corner of the Physics department of Presidency College.

Within a few years, two more local centers were opened in Lahore and Madras. In 1933, the first journal of statistics in India was started by the members of the Institute. Its name was decided to be *Sankhyā: The Indian Journal of Statistics*. The word “Sankhyā” resonated manifold implications for Mahalanobis, the first editor of the journal. In the editorial of the first issue, he wrote:

> We believe that the idea underlying this integral concept of statistics finds adequate expression in the ancient Indian word *sankhyā*. In Sanskrit the usual meaning is ‘number’, but

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21 *Ibid.* G. D. Birla and D. P. Khaitan of Birla Bros., P. H. Brown, the President of the Bengal Chamber of Commerce, and Nalini Ranjan Sarkar, the President of the Bengal National Chamber of Commerce promised to support the proposed organization.


23 *Ibid*.

24 “Appendix 1: Indian Statistical Institute, Memorandum of Association” in *ibid.*, 135.
the original root meaning was ‘determinate knowledge.' In the Atharva-Veda a derivative from \textit{sankhyata} occurs both in the sense of ‘well-known’ as well as ‘numbered’.\textsuperscript{25}

He went on to explain how the dual interpretation of the term was also embedded in the most famous analytic philosophical tradition of ancient India – \textit{Sankhyā Darśan}. In one sense, the name suggested a philosophical system “based essentially on enumeration of the categories beginning with Nature or Root Cause;” on the other hand, it also appeared to be a source of “the adequate knowledge of reality.”\textsuperscript{26} “As we interpret it,” he added at the end, “the fundamental aim of statistics is to give determinate and adequate knowledge of reality with the help of numbers and numerical analysis.”\textsuperscript{27} One cannot help but compare Mahalanobis’ fascination with the ancient roots of statistics with Benoy Sarkar’s investments in excavating an Indian past of objective outlook. For both of them, it was essential to legitimize their pedagogical experiments by appealing to a historical-ideological narrative of past glory, revealing a legacy of scientific thinking in ancient India in contradistinction with the spiritualist accounts by the European Orientalists. However, we shall see that, even if the urgency of “socializing” their discipline was the same, they reached at two very different ideas of the “social” at the end of the experiment.

“The spirit and outlook of \textit{Sankhya} will be universal,” Mahalanobis wrote in the same editorial, “but its form and content must necessarily be, to some extent, regional.”\textsuperscript{28} He promised his readers to “devote closer attention” to collection and analysis of data in the Indian context, but all these regional concerns must be attended “in relation to world problems.”\textsuperscript{29} We have seen how the dichotomy between universal outlook and regional concerns was centrally located in the vernacular domain of production of economic knowledge. In the nineteenth century textbooks, it was resolved through invoking a modality of equivalence of illustrations grounded in the notion of familiarity. In the early twentieth century modes of vernacularization, as I have already shown in the last chapter, a modality of experiential equivalence provided a framework to resolve the same. In this case, however, the discipline itself turned into a tool of translation in relation to other disciplines. In the next sections, I shall discuss how this was achieved by means of reorientation of some of the epistemic concerns of statistics, especially in terms of determinacy and indeterminacy of knowledge itself.

\textsuperscript{25} P. C. Mahalanobis, “Editorial”, \textit{Sankhya: The Indian Journal of Statistics} 1, no. 1 (June, 1933), 3.
\textsuperscript{26} \textit{Ibid.}, 3, 4.
\textsuperscript{27} \textit{Ibid.}, 4.
\textsuperscript{28} \textit{Ibid.}.
\textsuperscript{29} \textit{Ibid.}.
THE CIRCLES OF UNCERTAINTY

In his speech at the Science Congress, Mahalanobis situated statistics against the history of the land and discovered traces of a “statistical system” – a system of collection and analysis of data for better governance – in *Arthashastra*, the magnum opus supposedly composed by the sagely statesman Kautilya in the third century B.C. and in the sixteenth-century text *Ain-i-Akbari* prepared during the regime of the Mughal emperor Akbar. He also referred to Francis Buchanan’s *Survey of Eastern India* (1807-15), and described it as a “fascinating reading” replete with details about the lives and occupations of people from early colonial Bengal: “The report everywhere shows the critical attitude, keen scientific spirit, and the experimental approach of Dr. Buchanan.” By the end of the eighteenth century, he told his audience, the history of statistics merged with that of insurance, and theories of chance and probability became the chief object of analytical statistics. The concept of probability was applied to reach at the “theory of errors culminating in the works of Gauss and Laplace.” Mahalanobis used the term “error” in its technical sense, which was defined as “deviation form the average.” The advantage of a theory of probability was that it allowed estimation of the margin of deviation. It was supposed to be the cornerstone of modern statistics, which hoped to draw inference about any prediction by dispelling the mysticism of uncertainty involved in it. “The aim [of statistical theory],” he disclosed, “must therefore be to draw general conclusions from a particular set of measurements, taking variation itself into consideration and not ignoring it.”

Laying the foundation of modern statistics on chance and uncertainty, Mahalanobis explored the relationship between sample and population. A “population” or a “universe,” according to him, was defined as “the totality of all possible sets of measurements (that is, the totality of all possible samples)” with their respective variations. In other words, a population was constituted by getting all the possible samples together, by assuming that there was a finite number of sets of measurements corresponding to every possible sample, which could be brought together to form a totality of universal enumeration. “In order to reach conclusions about the population or universe,”

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33 *Ibid*.
35 *Ibid*. 

Mahalanobis explained further, “it is clearly necessary that a sample should be representative of the universe.”

Incidentally, an essential requirement of statistical representation was that it should be premised on absolute uncertainty: “The condition for such representativeness is supplied by the fundamental concept of ‘randomness’.”

He admitted that it was difficult to define randomness, but its implications were clear to him. It was a crucial strategy to avoid “bias” in the choice of samples while trying to make a statistical inference: “The only safe course is to chose [sic] the sample without reference to any previous knowledge about the individuals included in the sample.”

Only by adopting the technique of random sampling, Mahalanobis confirmed, the statistician could utilize the “calculus of probability in a valid way to reach conclusions about the statistical population or universe from which the sample was drawn.”

Since every sample was one among many “probable” samples that constituted the population, any one of them would reflect its characteristics with equal guarantee of perfection. Thus the legitimacy of any inference based on random sampling was contingent on the absoluteness of uncertainty inherent in the process: “Conclusions based on a random sample, although valid, must therefore, be necessarily uncertain.”

The source of this necessary uncertainty was the self-inflicted ignorance on part of the statistician. Only complete lack of knowledge about the elements in a sample would lead to proper and unbiased knowledge about the population. The same paradox was reworded in Mahalanobis’ speech in the following way: “If statistical theory is right, predictions must sometimes come out wrong; on the other hand, if predictions are always right, then the statistical theory must be wrong.”

Any theory, which accepted uncertainty as its central premise, would have to depend on a lot of uncontrollable factors to make predictions about future events. If some of them went out of line, the results might betray the theorist’s expectation. But the theorist was helpless. To ensure application of the theory of probability, she must encourage randomness of the sampling method. On the other hand, it was only by the use of “the calculus of probability,” she could “estimate a valid measure of the degree of uncertainty.”

This epistemic conundrum was shared by most of the modern scientific disciplines. The acknowledgement of the “growing complexity within the natural, and later in the biological and social sciences” forced the custodians of science to discard the earlier “deterministic-mathematical

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36 Ibid.
37 Ibid.
38 Ibid.
39 Ibid.
40 Ibid.
41 Ibid, 203. Author’s emphasis.
model” in favor of a more flexible “probabilistic-statistical view.”

In this context, he produced a “mental map of scientific activities” – a uniquely graphical description of different scientific disciplines arranged in order of their allegiance to uncertainty. Pure mathematics, being the most deterministically oriented of the lot, did not even belong to the field of science. It was represented by “a mathematical point which has “position but no dimension.” A small circle could be drawn round the mathematical centre to represent the physical sciences, as they entertained fluctuations of little magnitude. A larger circle representing “the area of kinetic theory of gases, statistical mechanics, and thermodynamics” was drawn around the first one, but the “factors of variation are still amenable to a large degree of control.” Around the second circle of uncertainty was drawn another one, this time demarcating a field that was supposed to contain more complex and less controllable factors of variation, namely, biometry.

Biometry, Mahalanobis informed, was a comparatively fresh area of expertise, which flourished in the last fifty years to study the factors of “biological variation.” Coined by the pioneer British statistician Karl Pearson, the term became quite popular among scientists interested in applying statistical tools to explore the “whole field of biology and genetics including agriculture and the study of livestock.” Mahalanobis was surely the best person to explain the exciting potential of this newly arrived discipline, as he himself got attracted to statistics in the first place under the influence of Pearson’s writings in Biometrika, a journal of biological statistics founded by him in 1901. Somesh Dasgupta writes:

After his Tripos examination [at the Cambridge University] in 1915, Mahalanobis met his tutor W. H. Macaulay in the college library, who showed him some new bound volumes of Biometrika. Mahalanobis got so interested in these volumes that he purchased a set of Biometrika and brought it to India.

Almost two decades later, in 1933, when he was established as a statistician and would start a journal of his own, Mahalanobis did not forget to pay tribute to his idol in the first editorial of Sankhya, “In

43 Ibid, 203.
44 Ibid, 205.
45 Ibid.
46 Ibid, 206.
47 Ibid.
48 Ibid.
49 Ibid.
one sense, however, the history of modern statistics may be said to have begun from Karl Pearson’s work on the distribution of $\chi^2$ [Chi-square] in 1900.\textsuperscript{51} The Chi-square test, he explained in the next few lines, was a technique of immense importance, as it provided for the first time a precise method of estimating “the significance of the agreement or discrepancy between theoretical expectations and actual observations.”\textsuperscript{52} The same technique also made possible the later developments in the field of sample distribution.

Few years later, Mahalanobis published a short note on a list of Pearson’s writings on statistics and biometry to be studied by the workers of the Statistical Laboratory.\textsuperscript{53} Here he talked about another crucial contribution of Pearson’s Chi-square statistics in the development of the discipline:

> One of the most fundamental problems of statistics is to determine the probability of an observed sample having been drawn from a given population, or as it occurs more frequently in practice, to test whether two samples have been drawn from the same parent population. Karl Pearson constructed the Chi-square statistics to solve this problem, and found its exact distribution in a most elegant manner in 1900.\textsuperscript{54}

In his speech at the Science Congress, however, Mahalanobis proposed to draw another circle around the one representing biometry, and designated it with the technique of statistical sampling, where the factors of variation were so complex that it became impossible to apply experimental control: “This is the field where the traditional method of the exhaustive census or the attempted complete count has been used for a long time.”\textsuperscript{55} A fifth circle was added to represent an area, which was not even amenable to sample surveys or censuses: “Here the only feasible approach is the patient collection of observations followed by classification and painstaking investigation of possible, statistical relationships.”\textsuperscript{56} The example he gave of this particular field of research called “free observations” went back to his earlier experiments with statistics in the 1920s. In 1926, requested by the Government of Bihar and Orissa to look into the reasons of a catastrophic flood in the Brahmani river in Orissa, Mahalanobis found “a significant correlation between the rainfall in

\textsuperscript{51} Mahalanobis, “Editorial”, 2.
\textsuperscript{52} Ibid.
\textsuperscript{54} Ibid, 413.
\textsuperscript{55} Mahalanobis, “Why Statistics?”, 207.
\textsuperscript{56} Ibid, 208.
the catchment area and the height of the river flood in the delta.”57 On the basis of his findings and statistical analysis, he advised the government not to waste money on raising the height of the adjacent embankments, as the rainfall that year was “exceptionally heavy,” and was not supposed to repeat in near future.58 “The fact that no great change has occurred in the severity or frequency of floods during the last twenty years shows that the statistical findings were correct,” disclosed a proud Mahalanobis at the end of the story.59

Fortunate for people living in the delta of the Brahmani, Mahalanobis’ prediction proved right, but there was ample risk of its being otherwise. He himself admitted in the same lecture that some predictions were bound to be wrong, if the theory was right. On the positive side, “several crores of rupees” were saved by heeding to his statistical expertise, by accepting the risk of any such advice involving probabilistic calculations and uncertainty of inference.60 Uncertainty, Ian Hacking shows, became a scientific commonsense at the turn of the nineteenth century.61 What was more ironical than the immediate acceptance of indeterminacy was the opportunity it provided to exercise control over any such deviation with even more determination: “the more the indeterminism, the more the control.”62 Linked with the recognition of chance in every aspect of life was the desire to invent “normalcy” as a central tendency of the forces of natural and social conventions. By the same impulse, the extreme was labeled as the “pathological” or “deviant.” So forceful was the discourse of normal average that it was almost instinctive for Mahalanobis to absolve the risk in his prediction by calling attention to the “exceptionality” of the rainfall and thus cancelling the possibility of its re-occurrence in an estimated timescale. It was the same instinct, which drove him to assert in the first issue of Sankhya that the object of any statistical study was to deliver “determinate and adequate knowledge of reality with the help of numbers and numerical analysis.” Following Hacking, we may argue that this faith in the numerical came from internalizing “the notion that one can improve – control – a deviant subpopulation by enumeration and classification.”63 It was not surprising, therefore, that Mahalanobis would identify as one of the fundamental problems of statistics the issue of the origin of samples: whether a particular “observed sample” was drawn from a “given population,” or, more specifically, whether two such samples were drawn from the same “parent

57 Ibid.
58 Ibid.
59 Ibid.
60 Ibid, 209.
62 Ibid, 2.
63 Ibid, 3.
population.” Obviously, discovering the origin of a sample in a given population would help control the randomness – the element of uncertainty – involved in the very procedure of sample selection. At the same time, it would also restore the stability of the “parent population” by exposing the logic of its constitution, its depths and details, since, by definition, the population was nothing but a collection of all possible samples. However, for Mahalanobis, it meant something else as well. It gave him an opportunity to resolve the contradiction between uncertainty as a necessary epistemic constraint and determinacy as a desired pedagogic outcome. He tried to assuage the tension between these two apparently conflicting strands in his writings on anthropometric measurements of different caste groups in Bengal before independence. By exploring the “racial configuration” of caste communities through physical/anatomical measurements obtained during decennial censuses and specially targeted sample surveys, he was able to posit a metonymic relationship between caste and race, the former as a socially manipulated local category, and the latter as a biologically defined universal category of analyses. Thus he made available for himself a chance to revisit the dichotomy between the local and the universal as two poles of pedagogic intervention.

But the most ingenious move on part of the statistical expert of the twentieth century was not trying to exert control on a subpopulation by determining its origin. The new method of statistical investigations, as we shall see in the next section, would provide a conceptual framework laden with various strategies of conflation between governmental and epistemic concerns, and subsequently introduce newer forms of socialization. In Benoy Sarkar’s writings, we have witnessed a concept of risk which was an unavoidable corollary to his organicist conception of social reconfiguration by pedagogical intervention from a proxy state. In Mahalanobis’ lecture, we sense an urgency to reconceptualize the same notion of risk in terms of randomness as an essential attribute of statistical reasoning. Like in the example of the flood in the Brahmani river, the chance of Mahalanobis’ prediction going wrong did not prevent him from taking the risk to advise the government not to raise the adjacent embankments. This is a new modality of translation where risk is translated into randomness and was brought frontally as an epistemic necessity. By internalizing risk, statistics, thus, itself became a tool of translation and, in turn, helped redefine the problematic of population. What is crucial here is to recognize that the internalization of risk was justified by drawing attention to an economic argument of cost-effective policy. An element of uncertainty would be also introduced in Mahalanobis’ writings on anthropometry, but, as we shall see, that conception of risk would not have any connection with the notion of economic life, as it clearly had in case of both Benoy Sarkar
and Radhakamal Mukerjee. But before going into a discussion of how Mahalanobis came up with a new concept of population in his anthropometric writings which facilitated a separation between the biological and the economic and proposed a new theory of the social, we need to situate his intervention against a brief history of anthropometry in colonial India.

A RACE TO MEASURE

In a short essay titled “The Future of Anthropometry,” Charles Samuel Myers, experimental psychologist and one of the founders of the British Psychological Society, granted the honor of founding the discipline of anthropometry to a Manchester surgeon named Charles White. In 1799, White published “the results of measurements made by him upon about fifty African negroes in order to determine certain differences between them and European peoples.” Myers’ essay was published in 1903. By that time, anthropometry had emerged as the most dependable science to catalogue and categorize racial differences and likenesses among populations, based on relentless efforts by anthropologists and medical professionals in various parts of the world to collect measurements of physical indices like the “ratios of head-breadth to head-length, of nose breadth to nose-length, of leg-length to thigh-length, etc.” By comparing averages of these indices observed among one group of people to those among another, the theorists of race claimed to have reached more definite conclusions about the genesis and development of different racial conglomerates. After some time it was realized that calculations focusing on central tendency often overlooked the range of variation among members of the same racial group: “A study of the extent and frequency of such deviations from the mean was thus initiated.” Thus, the statistical methods of estimating variation started to inform the framework of anthropometric classifications. In fact, one of the most popular publicists of anthropometry in the nineteenth century, Francis Galton himself discovered the methods of correlation and regression, which estimated degrees of dependence among variables in a comparative statistical analysis.

65 Ibid., 36.
66 Ibid.
67 Ibid.
68 Ibid.
In the history of race studies, however, Galton was famous for introducing the concept of “eugenics” – a term coined by him in his enormously successful *Inquiries into Human Faculty and its Development* (1883) – which was defined by him as a science “which deals with all influences that improve the inborn qualities of a race; also with those which develop them to the utmost advantage.”

He picked up the term from the Greek *eugenes*, meaning “good in stock, hereditarily endowed with noble qualities.” In a paper read before the Sociological Society at the London University, Galton clarified that the prefix “eu” (good) in the name of his science did not denote to “moral character” of a human being, but to his “health, energy, ability, manliness, and courteous disposition.” The study of eugenics concentrated on acquiring “knowledge of the laws of heredity” at the level of the individual, and exploring “the rates at which the various classes of society (classified according to civic usefulness) have contributed to the population at various times, in ancient and modern nations.”

Galton wanted to introduce eugenics “into the national conscience, like a new religion” and predicted about the possibility of its turning into an “orthodox religious tenet of the future, for eugenics co-operate with the workings of nature by securing that humanity shall be represented by the fittest races.” His predictions proved right – and quite violently so – in the first half of the twentieth century, when the Fascist and the Nazi governments took to the task of securing racial fitness of humanity rather more seriously than he perhaps intended. Galton’s obsession with improvement of the racial stock made him turn to the techniques of anthropometry for piling up information required to study the laws of biological inheritance. Apart from setting up public-booths in the streets of London to take measurements of the passers-by, he founded the Anthropometric Laboratory at the University of London, which was incidentally transformed into “the first modern department of statistics.” Hacking connects these attempts in accruing a database of racial features with one of the “innermost dreams” of anthropometry, that is, to facilitate “control of population.” “That remains the meaning of the old French term *anthropométrie judiciaire*” he informs, “a method of identifying criminals by measurement.”

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71 Ibid. 3.
72 Ibid. 5.
73 Hacking, *Taming of Chance*, 182.
74 Ibid.
75 Ibid.
the concept of correlation did point to his interest in documenting body measurements of criminals, so that they could be identified at once by any police force in the world.76

The history of anthropometric surveys in India dates back to the last decades of the nineteenth century. It took off formally with Herbert Risley’s involvement in the Ethnographic Survey of Bengal in 1885. Before him, some preliminary data “on the people of eastern Bengal, consisting of measurements of skin color, skull size, orbito-nasal indices and overall stature” were collected by James Wise.77 Combined with E. T. Dalton’s study of the tribes of Chota Nagpur, the results of Wise’s survey were published in a four-volume dictionary of the Tribes and Castes of Bengal. Two volumes of the same dictionary included Risley’s own findings.78 In August, 1882, during the compilation of last year’s census, a suggestion came from the Census Commissioner for India to prepare lists “for each district showing separately the castes and occupations found there, and that inquiries should be instituted locally regarding any special caste and occupation about which further information might seem desirable.”79 In 1885, Risley was appointed by the Government of Bengal to carry on an inquiry into caste relations and occupational patters in Bengal. “No specific instructions were given to me,” wrote Risley in an essay sharing his experience, “and it was understood that I was at liberty to adopt any line of investigation that I thought likely to yield interesting results.”80

The pressure to yield “interesting results” came from Risley’s ambition to make observations that “might be of some service to students of comparative ethnology in Europe.”81 Previously in the same essay, he observed that “Indian ethnographic literature” reeked of “grave defects of its own,” the most significant of which was being disregardful to the contemporary European scholarship.

“The result is that,” he wrote with grave concern, “writers on ethnology, when compelled to treat of Indian subjects, are thrown back on mere literary accounts which gave an ideal and misleading picture of caste and its social surroundings.”82 Risley wanted to free ethnography from the volatility

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76 Galton’s chief competition in this regard was Alphonse Bertillon, who “proposed that height, and lengths of foot, arm and finger should be recorded. He seems to have thought that these four measurements were, in some undefined way, independent. Galton saw at once that there was much redundancy in this system, for tall people tend to have big feet, long arms and long fingers. They were, in short, correlated.” [Ibid, 187.]
78 Ibid.
81 Ibid.
82 Ibid, 237.
and idealism of literariness, and replace it with a “precise” and “scientific” methodology that would prove effective to both administrators and the scholars in the west. But his job was made quite difficult by the overlap of known ethnographic categories in the melting pot of social interactions: “Most of all in the East, where religion, law, custom, and morality, are all inextricably mixed and jumbled up together, would the attempt to attain any such precision be futile and misleading.”

Anthropometry appeared in this context as the most helpful method of investigation. First of all, it shared an essential concern that Risley had always had in mind, namely, the question of origins of the lower and intermediate castes. One of the most popular hypotheses of anthropometry was the idea of an almost mythical past, when each one of the different races “exhibited a separate type.”

With time and increasing social mobility, the so-called purity of the races was sacrificed, leaving the anthropologists wonder about the true stories of their origins and the “criteria of racial purity.” It was also one of the objects of Galton’s eugenics to recreate and preserve the condition of “racial purity” by introducing several strategies of social and governmental reform, including prohibition of marriages “unsuitable” from a “eugenic point of view.”

Caste provided a similar opportunity for Risley to retrace the narrative of origin, especially since it was held to contain a certain degree of eugenic potential:

An institution like caste, which seeks to eliminate crossing, and works with tolerable success towards the end, may be expected to preserve with the minimum alteration whatever distinct types were in existence when restrictions on marriage first began to take effect; and methods of observation which profess to ascertain and record types of physical development may for this reason be supposed likely to yield peculiarly clear and instructive results.

His scheme was simple. By collecting and comparing physical measurements of the groups of people under survey, he could distinguish the “considerable masses of non-Aryans from the general body of Hindus,” and classify them further into “specific stocks as Kolarian, Dravidian, Lohitic, Thibetan, and the like.” Anthropometric research, Risley believed quite firmly, could actually “throw light upon the distribution of different race stocks in the population.”

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83 Ibid, 243.
85 Ibid, 38.
88 Ibid, 247.
89 Ibid.
Determined to imbibe the spirit of anthropometry, Risley consulted William Flower, the president of the Anthropological Institute of Great Britain and Ireland, for the exact methods to be followed in this regard. Flower suggested to him the works of Paul Topinard, professor of anthropology and the secretary to the Anthropological Society of Paris. After much consultations and correspondences, Risley chose to adopt “two distinct lines of research,” one in the direction of an ethnography of the “customs of all tribes and castes in Bengal” and the other, following Topinard’s instructions, in the line of an “anthropometric inquiry” into certain “physical characteristics of selected tribes and castes in Bengal, the North-West Provinces, Oudh, and the Panjab. Among the fourteen measurements chosen for the survey, twelve were recommended by Topinard in his *Eléments d’Anthropologie Générale;* and the last two – the bimalar and the nasomalar indices – were selected from a paper by Oldfield Thomas on Torres Straits Islanders:

These fourteen measurements were taken for fifteen castes and tribes in Bengal Proper, five in the Chittagong Hills, ten in the Darjeeling Hills, ten in Behar, seventeen in Chota Nagpore, twenty-three in the North-West Provinces and Oudh, and nine in the Panjab, in all eighty-nine distinct groups, comprising nearly 6000 persons.

The nasal index consisting of “the relation of the maximum breadth of the nose at its base outside the nostrils to its total height from the nasal spine to the root” was deemed to be the most definite marker of distinction between the high and the low castes. In his defense, Risley cited the “Vedic accounts of the Aryan advance,” which recorded the amazement of the Aryans at the “shortcomings of their enemies’ noses.” Finally, he concluded:

Summing up the entire body of evidence furnished by the nasal index we may say that it establishes the existence in India of two widely distinct types, the one platyrhine to a degree closely approaching to the negro, and the other leptorhine in much the same measure as the
population of Southern Europe. Between these extremes we find a number of intermediate
types, the physical characteristics of which suggest the inference that they must have arisen
from the intermixture of members of the extreme types and their descendants.\textsuperscript{94}

The evidence of intermixture between the extreme racial types forced Risley to assume that the laws
of endogamy as according to the Institutes of Manu “was less stringent in earlier times.”\textsuperscript{95} The most
remarkable feature of the these findings, he observed with surprise, was their correspondence with
both “the order of social precedence” and “the character of the exogamous sub-divisions by which
the matrimonial arrangements of every caste are regulated.”\textsuperscript{96} If one arranged the castes from
different provinces according to their nasal indices, “putting the lowest or most leptorhine index at
the top,” the table would replicate the order of social hierarchy with little exception.\textsuperscript{97} “Everywhere,”
Risley continued, “the Brahman Kayasth and Rajput are at the top of the list; everywhere the
Chamar and Musahar are at the bottom.”\textsuperscript{98} The “remarkable correspondence” between the grades of
racial types and the orders social hierarchy pointed to only one conclusion that he wanted to make
throughout his essay: “community of race, and not, as has frequently been argued, community of functions,
is the real determining principle, the true causa causans, of the caste system.”\textsuperscript{99}

Risley’s anthropometric inquiry must have caused a lot of enthusiasm among the scientifically
minded students of ethnology, for whose benefit he insisted on producing “interesting results.” In
December, 1899, during the preparations for the next census in 1901, Michael Foster, the president
of the British Association for the Advancement of Science, wrote a letter to the Secretary of State,
Government of India, requesting continuation of the ethnographic survey as part of the impending
census with an emphasis on collecting anthropometric measurements.\textsuperscript{100} “It has come to be
recognized of late years,” an official in the Home Department remarked in this connection,

that India is a vast storehouse of social and physical data which only need to be recorded in
order to contribute to the solution of the problems which are being approached in Europe

\textsuperscript{94} Ibid, 252.
\textsuperscript{95} Ibid.
\textsuperscript{96} Ibid, 252-53.
\textsuperscript{97} Ibid, 253.
\textsuperscript{98} Ibid.
\textsuperscript{99} Ibid, 259. Author’s emphasis.
\textsuperscript{100} “Ethnographic Survey of India in Connection with the Census of 1901: Extract (Nos. 3219-3232) from the
Proceedings of the Government of India in the Home Department (public), under the date Simla, the 23rd May, 1901”,
\textit{Man} 1 (1901), 137-41.
with the aid of material much of which in inferior in quality to the facts readily accessible in India, and rests upon less trustworthy evidence.\textsuperscript{101}

The trustworthiness of the material from India was corroborated by the recognition of caste as an effective mechanism for sustaining purity of race. Importance was given on recording measurement of the “Dravidian tribes,” who were thought to have little connection with the outside world. Even Foster in his letter asked the government to direct “special attention” to the “jungle races” of the central mountain districts, the tribes from the Assam and Burmese frontiers, and the “criminal tribes” like Haburas, Beriyas, and Sansias in North and Central India.\textsuperscript{102} He was convinced that these suggestions would not be taken lightly, since “the new Census Commissioner is an accomplished ethnographer, well known by his publication on the \textit{Tribes and Castes of Bengal}, the valuable results of which would be supplemented by the inquiries now proposed.”\textsuperscript{103}

Risley’s appointment as the new Census Commissioner for India confirms that his attempts at recording anthropometric measurements were considered a success in the eyes of the government. In the report of the 1901 census, therefore, a large chapter was devoted to caste, tribe, and race. W. Crooke summarized the findings of Risley and his associates in a review published in 1904:

There are seven main physical types in India, of which the Dravidian alone is possibly indigenous. The Indo-Aryan, Mongolid, and Turko-Iranian types are, in the main, of foreign origin. The Aryo-Dravidian, Mongolo-Dravidian, and Scytho-Dravidian are formed by the crossing of foreigners with the Dravidians.\textsuperscript{104}

Not everyone in the government, however, was enchanted by the rigorous experiments with physical enumeration. Edward Gait, who succeeded Risley in the position of the Census Commissioner in 1902, was not convinced of the effectiveness of anthropometry as a means of ethnographic research. In a paper read before the Royal Society of Arts in 1914, Gait admitted of his reservations, “The conclusions drawn from [anthropometric] measurements have been disputed by various writers, and a strong case has been made out for a re-examination of the whole question.”\textsuperscript{105} His caveat came from the realization that physical measurements, as argued by his famous predecessor, were not to

\textsuperscript{101} Ibid, 138.
\textsuperscript{102} Ibid, 139n.
\textsuperscript{103} Ibid.
\textsuperscript{104} W. Crookes, “Review: Census of India, 1901, by H. H. Risley and E. A. Gait”, \textit{Folklore} 15, no. 2 (June 1904), 223.
\textsuperscript{105} E. E. Gait, “The Indian Census of 1911”, \textit{Journal of Royal Society of Arts} 62, no. 3211 (1914), 631.
be trusted as the epitome of invariability; more often than not, various culturally specific customs contributed to alterations in the so-called biologically constant indicators of racial identity:

[A]bout three years ago, an Austrian physician announced that the head of an infant can be made long or broad according as it is kept lying on its side or on its back. It seemed desirable to inquire if there was anything in the customs of the Indian people which would account in this way for local variations of head shape, and it was thus found that many communities deliberately set themselves to alter the natural shape of their infants’ heads, and sometimes of other features also.\(^{106}\)

Gait’s reservations were shared by many anthropologists, who could not deny the importance of measurements as to determine the racial stock of the Indian population, but were helpless at the face of what they recognized as the “inherent fallacy in the whole method”: the failure of anthropometry to explain the variations in the data collected by different observers.\(^{107}\) They were looking for a more formalized account of these variations, instead of the standard clarification which took recourse to the influence of cultural elements in making of a population. It was in this context that Mahalanobis made his contributions in the area of anthropometry in India.

CASTE AND AWAY

The opportunity of finding a distinctly theorized and precisely articulated version of the “fallacy” presented itself when N. Annandale, the Director of the Zoological Survey of India met Prashanta Mahalanobis at the Nagpur session of the Indian Science Congress in 1920.\(^{108}\) Since 1916, Annandale had started to take measurements of the Anglo-Indians of Calcutta – “persons of mixed Indian and European blood” – in order to confirm whether his own “doubts” about the methods of anthropology were justified by an “investigation of a race known to be of recent mixed origin.”\(^{109}\) The measurements were taken at the “zoological laboratory of the Indian Museum in the years 1916-1919.”\(^{110}\) It was not feasible for Annandale to analyze the data the way he intended to without any formal training in statistics, so he considered himself “fortunate” when Mahalanobis agreed to

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106 Ibid.
109 Ibid, 1, 2.
110 Ibid, 3.
look into the matter. Mahalanobis, on the other hand, was excited to test his own expertise gathered from his study of biometry in the previous years. It was indeed a special occasion for somebody interested in the merger of statistics and biology, for it was “the first time that a true biologically mixed population” was being interrogated with statistical techniques.

The shifting of focus from a “pure race” to an explicitly “mixed” population should be viewed in connection with the urgency to standardize the estimates of variation, both from the perspectives of statistics and anthropometry. “It should be noted however,” Mahalanobis clarified in his report published in the Records of the Indian Museum, “that the word “race” is here used in its statistical sense,” which would lead to the idea of homogeneous variation. Homogeneity was defined as the presence of a systemic degree of divergence. “Incidentally,” Mahalanobis confided, “it will be of great interest to compare the variability of such a “mixed” population with those of “purer” races.” He also added a footnote to this sentence: ““Purer” in a statistical sense, i.e., more homogeneous.” Seemingly, he was not comfortable with the anthropological concept of racial purity, and wanted to introduce a new language of interpretation, inspired by the movement started by Karl Pearson in his journal Biometrika, although Pearson himself, as Mahalanobis revealed a few years later, “had become interested in theoretical statistics primarily as a tool for the systematic study of evolution and the new science of eugenics.” Pearson was a “profound admirer” of Galton and held the chair named after him at the newly founded department of statistics at the University College, London.

Annandale’s data provided measurements of seven indices: stature, head length, head breadth, nasal length, nasal breadth, zygomatic breadth, and upper face length. Mahalanobis started his analysis of the material with the frank confession that he knew “very little of anatomy.” At the same time, he was nervous about the reception of his work among trained statisticians: “Much of the work will no doubt appear to [a statistician] to be quite superfluous.” The small size of the sample containing only 200 members of the community also made him anxious about the accuracy of his calculations.

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111 Ibid, 4.
113 Ibid.
114 Ibid.
115 Ibid, 6n4.
117 Hacking, Taming of Chance, 182.
119 Ibid, 10.
Therefore, he took great care to estimate the probability of “bias” involved in the process of sample selection. He observed that in case of the measurement of stature, most of the readings were “even” numbers against “odd.” The presence of “bias” is obvious,” he confirmed, “but I have calculated the “Contingency” for the whole group of above seven measurements.” As the “unit of grouping” in case of the stature was held to be greater than 10 mm., the bias for even numbers was assumed not to leave any significant impact on the final conclusions. The estimate of variability of the data – the central tendency or the average of the deviation of each observation from the average based on total observations – was calculated by using the concept of “standard deviation,” which was technically the square-root of the “average squared-deviation of all the measurements.” In the final summary, Mahalanobis came up with two sets of conclusions, one riddled with statistical implications and the other replete with anthropological generalizations. “There was no definite evidence of statistical heterogeneity,” he wrote. “The Anglo-Indian sample may be accepted as a statistically homogeneous sample.” When describing the anthropological conclusions, however, he listed a series of general remarks. He informed that the “more highly civilized races” seemed to show “greater variability than the average,” but it never exceeded the fair level of homogeneity. On the other hand, Indian castes and tribes, according to him, were “significantly less variable than the average.” “The Anglo-Indian variability” scored more than the “Indian caste variability,” and was on the same level with the “modern European races.”

On closer examination, we find that Mahalanobis’ conclusions were not essentially different from those observed by Risley: what Risley described as the presence of “racial purity” among Indian castes and tribes due to their restrictive social conduct, Mahalanobis interpreted as the absence of “variability,” although he did not cite any reason, sociological or otherwise, of its being so. The aspiring statistician’s discomfort with the anthropological idea of purity, however, did not prevent him from subscribing to the civilizational narrative of social Darwinism, which would describe the

120 Ibid. 15.
121 Ibid.
122 Ibid. 16.
123 Ibid. 94. Mahalanobis wrote, “In current statistical practice it is usual to measure variability by the Standard Deviation. The deviation of each measurement from the Mean (or Average) is squared. The sum of all such squares divided by their total number gives the second moment \( \mu_2 \), which is thus the average squared-deviation of all the measurements. The square root of \( \mu_2 \) finally, gives the Standard Deviation” [ibid].
124 Ibid. 91. Author’s emphasis.
125 Ibid.
126 Ibid.
127 Ibid.
European races as “more civilized” than the rest of them. It will not suffice to deride Mahalanobis’ remarks as “racist” or “orientalist” without further qualification. Though Risley and he seemed to have arrived at almost identical conclusions, there was a specific shift in the rhetoric of justification. Rather than “purity,” the narrative of racial improvement adopted a unique theoretical framework which would privilege “variability” as the sign of progress, but within a limit. To demarcate the boundary of variation, thus, was introduced the concept of statistical homogeneity. Sophisticated techniques of estimating variability like standard deviation or coefficient of variation were made part of the statistician’s arsenal. As a result, the notions like race and civilization were argued by the practitioners of the new science to have lost their usual social and political connotations, and gained uniquely technical interpretations, distinctly devoid of any reference to the complex, historical processes of their development as ideologies of discrimination. In one of the appendices of the report, Mahalanobis explained some of the mathematical concepts used in his study. In order to show the advantage of “coefficient of variation” in a comparative framework of analysis, he quoted Pearson, who, after defining the concept, was reported to say: “it may be only a convenient mathematical expression, but I believe there is evidence to show that it is a more reliable test of “efficiency” in a race than absolute variation.”¹²⁸ By “race efficiency,” Pearson clarified, he meant “stability, combined with capacity to play a part in the history of civilization.”¹²⁹ Pearson’s idea of “stability” referred to the limit of variation in a population, conveniently mathematically expressed in terms of homogeneity, and his notion of the “capacity” of participating in the history of civilization pointed to the possibilities of eugenic interventions, justified and practiced through reification of the same mathematical framework of estimating and controlling variability.

Mahalanobis’ dream of documenting a comparison between observations on “mixed” and “purer” races came to be fulfilled in 1925, when he read a paper on the phenomenon of “race-mixture” in Bengal as the presidential address at the Anthropological Section of the Indian Science Congress.¹³⁰

¹²⁸ Pearson cited in ibid, 96. Pearson’s definition of coefficient of variation is as follows: “We may take as measure of variation the ratio of Standard Deviation to mean, or what is more convenient, this quantity multiplied by 100. We shall, accordingly, define V, the coefficient of variation, as the percentage variation in the mean, the Standard Deviation being treated as the total variation in the mean...” [ibid, 96]. Coefficient of variation is used when the relative measure of variation is considered more important than the absolute measure. We shall see shortly how Mahalanobis adopted these relative measures to initiate comparative analysis of racial configuration of caste in Bengal.

¹²⁹ Ibid.

Two years later, he published the paper in the *Journal of Asiatic Society of Bengal*.\(^{131}\) There he informed that during his study of the Anglo-Indians, he encountered a set of “very interesting” questions:

> How are these 200 Anglo-Indians of Calcutta related to the different caste groups of Bengal? Are they more closely allied with the Hindus? or with the Mahomedans? Do they show a greater affinity with the higher castes of Bengal or with the lower castes? Is there any appreciable admixture with the aboriginal tribes in and on the borderland of Bengal? any appreciable resemblance with castes outside Bengal? In other words, can we obtain any idea about the possible composition of the given sample of Anglo-Indians in terms of the broader social and geographical divisions of the inhabitants of Bengal and its neighbourhood?\(^{132}\)

Already in Pearson’s remark cited above, we have seen that the relative estimate of variability was preferred to the absolute measurement, mainly because of the former’s ability to present a broader picture in terms of the racial configuration of the whole population – the collection of all possible samples – by describing and theorizing in detail how every community individually contributed to the formation of the population, and how they were related to each other in terms of biological resemblance. Interestingly, Mahalanobis had to bring back the questions of “broader social and geographical divisions” into the framework of analysis, but, as we shall see later, it would only substantiate the centrality of race as a statistical category that could appropriate the logic of cultural and social differences and absorb the instances of local irregularities.

With a hint of farcical irony, Mahalanobis chose as his source of study the anthropometric data published by Risley in his two volumes of *Indian Castes and Tribes* (1891). Thirty “typical castes of North India” were selected “because of their representative character and partly because of the comparatively large size of the samples.”\(^{133}\) The “cultural classification” proved to be the hardest obstacle he had to face while describing these caste and tribal groups. “The Hindu community,” he did not conceal his frustration, “does not present in actual fact a regular hierarchy of social order in

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\(^{131}\) P. C. Mahalanobis, “Analysis of Race-Mixture in Bengal”, *Journal of Asiatic Society of Bengal* XXIII, no. 3 (1927), 301-33.

\(^{132}\) Ibid, 301.

\(^{133}\) Ibid, 302. Eight groups were chosen form Bengal including Brahman, Kayastha, Sadgop, Kaibarta, Rajbansi, Pod, Bagdi, and Mahomedan; seven were chosen from the Chota Nagpur Tribes: Kurmi, Oraon, Santal, Munda, Bhuiya, Mal Pahari and Male; from Bihar were selected four groups including Brahman, Goala, Maghya Dom, and Dosadh; groups like Brahman, Kayastha, Goala, Dom, and Chamar were picked up from the North-Western Provinces and Oudh; from Punjab were selected three groups, namely, Khatri, Pathan, and Chuhra; and from the Eastern Districts were chosen five groups, of which only names of three were given: Lepcha, Chakma, and Magh (ibid).
which every caste can be placed in a definite intermediate position between any two other castes.”

Regulation of the social hierarchy, therefore, became one of his major concerns throughout the paper. As a workable solution, however, he depended on the “orthodox theories” popularized by Nagendranath Vasu in his Baṅger Jātiya Itihās and Lalmohan Vidyanidhi’s Sambandha-Nirnay. In case of Bengal, two castes were included in the category of High Castes – Brahmans and Kayasthas. Four groups including Sadgop, Kaibarta, Pod, and Rajbansi were selected as Middle Castes. The Bagdis were classified as Low Caste. Mahalanobis clubbed the High- and Middle Castes “as a distinct group of “upper castes,” while in certain portions of the work,” he informed, “Bengal Mahomedans have been included under “lower castes.”” The politics of categorization – its logics of compression and extension – became clearer when he introduced a device of his own to profile and order the caste hierarchies and chose a rhetoric of “distance” to support it with a stable, scientific framework based on a mathematically defined notion of racial semblance.

“My first task now will be,” declared Mahalanobis after laying out the geographical and social background of his data, “to measure the degree of resemblance (and hence presumably the degree of intermixture or convergence) which each of the 7 selected Bengal castes show with each of the other castes belonging to different geographical or different cultural divisions.” The logic of physical resemblance implemented the metaphorical concept of “caste distance,” which would represent the professed degree of convergence: “Two castes which resemble each other closely will have a very small caste distance; on the other hand, castes which are widely different in character will have large caste distances.” Mahalanobis proposed to estimate caste distance with the coefficient D, which was supposed to deduce, first the difference between average measurements of the same anthropometric index observed among any two groups, and then the central tendency of all such averages measured for all the indices taken together. It was a much simpler substitute of Karl Pearson’s “coefficient of racial likeness,” which was – quite evident from the name itself – created to estimate the same degree of convergence among racial types. Mahalanobis was reluctant to use Pearson’s technique due to the possibility of the conclusions being affected by the size of the sample: “[The coefficient D] takes into consideration the average values of the characters concerned

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134 Ibid.
135 Ibid, 303.
136 Ibid.
137 Ibid, 304.
138 Ibid.
139 The detailed statistical definition of the coefficient was given in Appendix III of the same paper. [Ibid, 328-30]
but ignores the number of individuals on which such averages are based.”

The reservation about the relative importance of sample size emanated from the anxiety about the lack of standardization of the methods of sampling – the small size of the samples and the shortage of randomness in the selection process – which we have already witnessed in case of the data on the Anglo-Indians of Calcutta.

Later in his writings on the techniques of biometric measurement, Mahalanobis would venture to impose strict regulations on the surveys conducted in India and elsewhere, and consequently, he would design an improved version of the coefficient of distance taking the size of the sample as an element of estimating caste distance. It was not feasible for him to entirely ignore the implication of the coefficient of racial likeness, as it was considered by many “a measure of whether any two races can be considered samples of the same population.”

We have noticed before, while talking about the theoretical significance of Pearson’s Chi-square statistic, Mahalanobis himself described the relationship between samples and populations as one of the fundamental concerns of statistics. He addressed the same concern in 1939 at a session of the Indian Statistical Conference devoted to the use of statistical methods in anthropology. He started by arguing to restrict the number of characters or indices for measurement to eight at most, since “the computational labour is likely to increase very rapidly as the number of characters is increased.”

Demonstrating the “fundamental logical” difficulties that a statistician might face in case of increase of the indices, he gave example of a statistical inference typical of any such investigation. He asked the audience to assume “two samples $S_1$ and $S_2$ consisting of measurements on say $p$ characters”:

Using appropriate statistical tests we may, on any desired level of significance, reach either of the two conclusions:

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140 Ibid.
141 Mahalanobis devised the D coefficient in the paper presented at the Science Congress. When he published the paper in the *Journal of Asiatic Society*, he added a note in the Appendix III saying that in the last couple years, he had improved on the previous estimate and worked out another coefficient named $D’$ which would include the sizes of the samples in the equation. “Although I consider the new coefficient $D’$ to be preferable to $D$, he wrote, “I have not altered the figures in this paper for two reasons. The correcting terms are quite small (usually about -0.02, the maximum value being about -0.03), so that the conclusions will not be appreciably affected. And secondly, the paper was given as an address on a particular occasion; I have therefore thought it proper to leave the contents practically unchanged” [ibid, 330].
142 G. M. Morant cited in ibid, 304n2.
144 Ibid, 596.
(A) The two samples $S_1$ and $S_2$ may be considered (at the assigned level of significance) to have been drawn from the same population, that is, they both belong to the same anthropological group; or

(B) the two samples $S_1$ and $S_2$ may be considered (at the assigned level of significance) to have been drawn from two different populations or two different anthropological groups.$^{145}$

If additional characters were brought under observation, the inference (A) became unstable: the two samples which were thought to have come from the same population might show “show significant difference when other characters are included.”$^{146}$ Inference (B), however, showed more stability, as the fact of their not belonging to the same population was not very likely to change under these circumstances. Other than relating the issue of stability of inference with that of the size of the sample, Mahalanobis made a very interesting point here: he proposed a shift in rhetoric from that of “drawing” to “belonging” when he interpreted the instance of drawing two samples from the same population as belonging to the same anthropological group. At one sweep, two major breaks from the earlier literature were proposed. First of all, the act of drawing was reinterpreted, if not replaced, by belonging to redefine the element of “uncertainty” or “randomness” associated with the former, and secondly, the statistical concept of “population” itself was made to conflate with the idea of a group of “real” people with “concrete” anthropological characteristics. We will see that it was necessary to invoke a modality of equivalence in Mahalanobis’ framework.

Speaking of the “autonomy” of a statistical argument, Ian Hacking makes a distinction between “prediction” and “explanation.”$^{147}$ “Statistical laws became autonomous when they could be used not only for the prediction of phenomena but also for their explanation.”$^{148}$ The shift from “prediction” to “explanation” did not rule out uncertainty as the unnecessary evil, but took great care to discover and reflect on the orderly nature of the randomness by which it could be harnessed to stable judgments about world and things. The event of “drawing” samples from the population, as we know from Mahalanobis’ own admission, had to accept randomness in order to be subservient to the laws of probability, and hence, predictive inference. “Belonging” to a population on the other hand, tended to bypass the issue of random selection, but not entirely, and made itself available to be explained by the laws of biometric regularity. It was also compatible with his definition of the population as a collection of all

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145 Ibid.
146 Ibid, 597.
147 Hacking, Taming of Chance, 182.
148 Ibid. Author’s emphasis.
the possible samples. Mahalanobis, however, was too cautious to celebrate the uniqueness of his observation. He identified “not belonging” as the most stable situation for a relationship between population and sample, as it could proscribe randomness completely by claiming zero correlation between the two samples. However, his prescription of limiting the size of the sample according to requirements of a determinate argument was symptomatic of the earnestness with which he tried to resolve the epistemic contradictions in his discipline.

The narrative of belonging was necessary also to conflate the statistical concept of population with the biological-anthropological ideation of the same, and it could not be demonstrated better than in Mahalanobis’ analysis of “race mixture” in Bengal. The most remarkable argument that he came up with in his paper was about the existence of a strong connection between geographical proximity and biological resemblance. “We may call such resemblance associated with geographical proximity as “geographical resemblance” for convenience of reference,” he wrote.149 According to this argument, the castes from one particular province showed more resemblance among themselves with respect to other castes from the other provinces. The Brahmans from Bengal were argued to have less physical resemblance with the Brahmans from other provinces than the other castes, upper or lower, from Bengal. “The effect of cultural affinity is also prominent,” Mahalanobis reported, as in order of the degree of resemblance, the upper caste groups like Brahmans and Kayasthas showed more resemblance between themselves than with the middle castes like Rajbansi or Bagdi. With the tribes from Chota Nagpur, the Bengal castes revealed a similar order of caste-distance governed by the elements of cultural and geographical proximity: “the lower the social standing of a caste in Bengal the greater is its resemblance with the aboriginal tribes of Chota Nagpur, or vice versa.”150 He went on to compare measurements of different castes from different provinces, and prepared tables showing the results arranged in the two axes of geographical and physical resemblance and ordered in the logic of cultural proximity. Finally, he made a connection with the earlier measurements on Anglo-Indians with his new findings and concluded, “It will be noted that the positional indices for the Anglo-Indians...are very similar to those for the Bengal Brahmans.”151

In the “General Summary of the Analysis,” Mahalanobis was quite forthright in claiming that his interpretation of the results would offer “a broad view of the general tendency of social history in

149 Mahalanobis, “Analysis of Race-Mixture in Bengal”, 305.
151 Ibid, 321.
Bengal” – a big claim that he chose to avoid in the first instance of his fiddling with racial theories.\textsuperscript{152} His bigger claim was of course corroborative of the resolution that he hoped to find in the daunting task of biometric analysis – the discovery of an organizing principle that dictated racial mobilizations in Bengal: “intermingling has not been altogether chaotic.”\textsuperscript{153} The traces of “horizontal fusion” – the mixing of castes within the same geographical and cultural vicinity – were more prominent than “vertical intermixture” subverting the prevalent orthodoxy of caste hierarchies.\textsuperscript{154} The tribal groups from Chota Nagpur, the most primitive of them all, showing the least amount of variability, were the most distant from the Brahmans sitting in the pinnacle of social order, with gradual reduction in distance as one moved downwards along the ladder of physical resemblance. Inadvertently perhaps, but it does remind one of the “mental image” of the scientific establishment he would draw many years later in the presidential address at the Indian Science Congress. Having pure mathematics, the most “primitive” of all the scientific discourses, at the centre and drawing numerous circles around it denoting different disciplines on the basis of their dealing with uncertainty as an epistemic condition had striking resemblance with the arrangement he thought fit for the caste relations in Bengal. Not surprisingly then, in that order, the Brahman of the scientific hierarchy – the most mature – would be “free observations”, which was also Mahalanobis’ most favorite method of investigation even during the initial days of his career as a statistician.

The claim of revealing a “general tendency of social history,” on the other hand, reminds Risley’s similar declaration that racial typologies replicated social institutions and explained metonymic relationship between race and caste, or more broadly, between universal knowledge and local irregularities. This resemblance was obvious, as Mahalanobis scooped his data from Risley’s findings without any further enquiry on his own. But while Risley’s efforts were based on “untrained” comparison of social order and racial classifications, Mahalanobis’ conclusions presumed a narrative of belonging to introduce a rigorously articulated concept of population. Population, in this scheme was endowed with a sophisticated, technologized interpretation that facilitated a rhetorical strategy to translate and diffuse the “risk” in a racial theory of socialization and conflate with a statistical category of analysis. The concept of “distance” was used both metaphorically and literally, once as the difference between mean values of a physical index observed among two groups in comparison, and then as geographical distance, denoting the spatial concentration of the same two groups, as part

\textsuperscript{152} Ibid, 323. Author’s emphasis.
\textsuperscript{153} Ibid.
\textsuperscript{154} Ibid.
of the same strategy of purification by conflation. The abstraction of the geographical term into an estimate of variation gave Mahalanobis an opportunity to disconnect any link between the racial profiles and socioeconomic considerations that might have influenced them. It was indeed a clever exploitation of the limit of a discipline where uncertainty was invented to be internalized as an epistemic condition to ensure the foreclosure of a scandalous relationship between the biological and the social.

I shall argue that this technique of delegitimizing the element of risk in the governmental category of population by translating risk as randomness was conducive to a modality of spatial equivalence. It was conceived with the discovery of the statistical notion of variation and used to conflate the markers of social, economic, cultural, biological difference into a universally valid conceptual framework of “development.” The mappability of the surface of human body with sophisticated statistical techniques, therefore, sanitized the impure and dangerous genealogies of the economic discipline. This modality of equivalence did not need any vernacular domain to operate, as the vernacular was forever abstracted from all its “real” and “concrete” coordinates. There was no traffic between experience and data, one way or the other, as they did not exist in isolation.  

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155 Mahalanobis’ later writings on anthropometry focused by and large on the efforts to standardize the methods of such inquiries, which followed from the same concerns about the importation of sample size and control of “error” and “variation.” The important works in this direction include the comparative study of different methods and indices chosen by anthropologists all over the world [P. C. Mahalanobis, “On the Need for Standardization in Measurements on the Living”, Biometrika 20A, no. 1/2 (July, 1928), 1-31]; a detailed report on the mathematical mistakes and methodological inconsistencies in Risley’s data [P. C. Mahalanobis, “A Revision of Risley’s Anthropometric Data Relating to the Tribes and Castes of Bengal”, Sankhya: The Indian Journal of Statistics 1, no. 1 (June, 1933), 76-105.]; another report on the same data regarding Chittagong Hill tribes [P. C. Mahalanobis, “A Revision of Risley’s Anthropometric Data Relating to the Chittagong Hill Tribes”, Sankhya: The Journal of Indian Statistics 1, no. 2/3 (May, 1934), 267-276]. The subsequent development of the D coefficient into a more technical and sophisticated “D²-Statistic,” commonly known as the “Mahalanobis Distance,” was also meant to strengthen the modality of spatial equivalence. Mahalanobis developed the concept primarily to obtain a more generalized formula for analyzing racial correlation among different groups within the same framework of “distance.” For details of how the concept of generalized distance evolved in his works, see P. C. Mahalanobis, “Tests and Measures of Divergence”, Journal of Asiatic Society of Bengal XXVI, no. 4 (1930), 541-88; and P. C. Mahalanobis, “On the Generalized Distance in Statistics”, Proceedings of the National Institute of Science II, no. 1 (1936), 44-55. Also see Dasgupta, “The Evolution of the D²-Statistic of Mahalanobis”, 485-501.
A SOLITARY VOICE OF DISSENT

“The movement of social sciences to-day is towards greater objectivity and quantitative precision,” wrote Radhakamal Mukherjee in an article titled ‘Statistics in the Service of Planning’ in 1945. The advantage of statistics lay, according to the veteran professor at the University of Lucknow, in its unique ability to handle “social data quantitatively” and thus becoming “an indispensable logical apparatus in these tasks of the social sciences.” Mukherjee came to his point very quickly and described how statistics was being held by intellectuals all over the world as the most suited mode of knowledge to address issues and concerns related to economic and social planning. He was certainly in the position to make these expert remarks, as he was appointed in 1939 as the chairperson of the Aims and Purposes Sub-committee in the National Planning Commission initiated by Indian National Congress. The subcommittee under his leadership proposed a list of statistical tests “for measuring the progress of an economic plan in India.” The most significant of these tests was directed to the “improvement of nutrition on the basis of irreducible minimum requirements or proteins, carbohydrates and minerals (as well as necessary protective foods) from about 2400 to 2800 calories for an adult worker.” Mukherjee argued to introduce a scheme of comprehensive development, which would facilitate a rise in the average expectation of life as well as in aggregate national income. The idea of a balanced coordination between the economic and the biological was not novel to him. We have seen in the previous chapter how he attempted to bring them together in his two volumes of Principles of Comparative Economics (1921 and 1922) and wanted to combine the forces of production and distribution in terms of energy as a common denominator.

However, from Mukherjee’s above mentioned article one cannot judge the intensity with which he tried to formulate a theory of redistribution of energy in his previous works; there was no mention of the word “energy” in this article, not in any general sense or in the special sense that he tried to introduce in his work. It was evident that the divorce between the biological and the economic was naturalized by then, especially at the brink of the end of the Second World War, announcing the

157 Ibid.
158 Ibid.
159 Ibid.
160 Francis Galton, the founder of eugenics, was also fond of the idea that enhancement of energy would lead to making of a better race: “In any scheme of eugenics, energy is the most important quality to favour; it is, as we have seen, the basis of living action, and it is eminently transmissible by descent” [Galton, Inquiries into Human Faculty and its Development, 19.]
defeat of illiberal forces to the liberal axis of power. There was, of course, an urgency to relate the issues of economic development with the category of population, but that did not subscribe to any critical appraisal of liberal orthodoxy in economic thought by invoking the embarrassing prospect of biological intervention. In his historical overview of Indian economic thought in the twentieth century, Bhabatosh Dutta informs that, after the census of 1931, “population problem” in India was thought to pose a serious threat to development. 161 B. T Ranadive, an economist and communist activist, was one of the first writers to point out the negative effects of population increase on national growth, especially in terms of food production. Even John Maynard Keynes in his hugely influential General Theory of Employment, Interest and Money (1936) used the same data to link poverty on a mass scale with demographic changes. But still, there were some occasional slippages and sporadic waywardness from the old vanguards of biological intervention. Radhakamal Mukherjee, Dutta tells us, was one of the early thinkers to ponder on the issue. His Food Planning for Four Hundred Millions (1938) laid out many suggestions about the possible remedies for diminishing marginal return in agriculture with a growing rate of population. Having observed that the rate of growth was less among the upper-caste Hindus than among the lower-caste, tribal, and Muslim groups, he recommended to implement a “eugenic programme’, which would include inter-caste marriage, widow remarriage and the abolition of hypergamy, dowry and bride purchase.” 162 Benoy Sarkar too wrote a treatise in 1936 to improve upon the “modest” contributions by Indian authors in the field of sociology of population. 163 So far we have seen how the incorporation of risk within the conceptual framework of randomness and variation had effected a separation of the biological and the economic aspects of social change. It is time now to listen patiently to last voice of illiberal unreason still making some hue and cry.

In his Sociology of Population, however, Benoy Sarkar approached the issue of biological improvement from the disciplinary perspective of sociology. “The problem in contemporary social science is,” Sarkar wrote,

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161 Bhabatosh Dutta, Indian Economic Thought, 37.
to discover a province in which sociology dies not have to compete or get mixed up and become virtually identical with (1) culture-history or cultural anthropology, (2) philosophy, ethics, metaphysics or psychology, and (3) economics, law and politics.\footnote{164}

Sociology could get out of the influences of these disciplines, Sarkar explained, only by focusing on the dynamism of social relations, by positing a science of relationships, which “prevailed, are prevailing and will prevail as long as there are human beings.”\footnote{165} The dynamism of these relations were, therefore, not dictated by the movements along historical time, but an eternally prolonged stretch of the present, giving a sense of stability that could not be thwarted by natural disasters or political upheavals. Population presented itself as one such category of eternal dynamism, as “population movements”, natural (birth, growth, death) or unnatural (migration, immigration) were “social relations.”\footnote{166} The first major argument, with which Sarkar started his discussion, was denial of the existence of “differential fertility” – that the differences in fertility among people from different races could not be supported by scientific evidence: “No “objective criteria” can, however, be found for arriving at a “hierarchy of races or cultures.””\footnote{167} The races could lose their purity and get extinct, but the civilization went on, and the “emergence of new elements from the lower order” became a “reality.”\footnote{168} He identified the upward movement of the “lower order” as part of the “social metabolism,” which was the bottom line of the eternal dynamism of social relationship. In spite of challenging the system of racial hierarchy in fertility, he did not find anything wrong in the measures for “race betterment and “conscious” planning of physical manhood” by way of a health movement gaining popularity in contemporary India.\footnote{169} The movement, he informed, included campaigns by the government for training in personal hygiene among students and growing popular interest in physical exercises like swimming, cycling, group-dances, and boy scout activities.

Sarkar made it very clear that he was opposed to the strategies of birth control; instead he found the idea of family planning quite promising in the Indian context. The latter did not necessarily lead to restrictions on size of the family, but might also encourage large family movements also taking place in the developed countries like France, Italy, Germany, and Japan. He discussed the situation in Germany in detail, where, under the supervision of eminent demographers like Friedrich Zahn,
various legislations were being brought to support larger families economically and otherwise: “The latest piece of world’s legislation on behalf of the Kinderreiche Familie (the family rich in children or the large family) is embodied in the Nazi Income-Tax Act of 1934.”170 According to the Act, the larger the family, the less taxes it had to pay on top of extra allowances from the government. He agreed that the conditions in India hardly resembled those in these countries, but his objective was to unsettle a lot of formerly “settled questions.”171 He did not want to conform to the “pessimistic nervousness” associated with population growth; it required a study “in connection not only with single regions but with single classes also.”172 One also had to take consideration of other factors of economic improvement. The standard of living, Sarkar claimed, was one such index, which showed a steady growth in India over the last few decades.173 With the advent of capitalism and technocracy, endowed with the spirit of swaraj (self-governance) and labor movement, he observed, “the ambition of the individual has been growing from more to more.”174 The ideological descendants of Malthus, however, failed to register the positive changes associated with a steady growth in population.

Finishing with his diatribes against the neo-Malthusians, Sarkar turned his attention to “the problems relating to the qualitative growth and improvement.”175 He who was so against the confusion between historical and sociological methods of enquiry now asked for “considerable researches” in the “continuous history” of eugenic methods “from the days of our Vedic Aitareya Brabmana and Manu-Samhita down to Galton’s Hereditary Genius (1869), Lapouge, Ammon, Mussolini and Hitler.”176 The western world, he explained, was being dominated by a “decline-cult” popularized by the intellectuals of the day like Georges Lapouge, Romain Rolland, Arthur Spengler, and Corrado Gini who had almost simultaneously forwarded a theory that the cumulative decay of the western civilization would result in the inevitable annihilation of the Aryan race. Sarkar posited his own theory of social metabolism as a form of “social mobility, vertical or horizontal,” which could transcend the forces of decline and promote new races substituting the earlier, better ones. “The world-process in group metabolism is visible under our very eyes in Bengal,” he disclosed.177 The aboriginal tribes like the Santals, the Oraons, and the Mundas constituted an insignificant

170 Ibid, 37.
171 Ibid, 38.
172 Ibid, 41.
173 Ibid, 44.
174 Ibid, 64.
175 Ibid, 67.
176 Ibid, 68.
177 Ibid, 71.
portion of the population of Bengal, but “while the “big three” higher “castes,” the Kayasthas, Brahmans and Vaidyas, numbering something over three millions, have during the last forty years grown 137 per cent, the “aboriginals” have grown 319 per cent.” He identified these aboriginal groups as the ““depressed” classes of today,” like the Kayasthas of yesterday, who also showed a greater rate of growth than the Brahmans, a caste positioned a notch higher than them in the social ladder. Once the Kayasthas were backward, both racially and economically, but now, by the law of “differential fertility”, they had outnumbered and out-developed the Brahmans – a sign of social metabolism, which was also apparent among the aboriginal tribes, reducing the proverbial caste-distance once deduced by Mahalanobis. Thus the notion of differential fertility was freed from the logic of racial hierarchy, and was noted by Sarkar as an indicator of biological development leading to economic self-sustenance. He refused to admit that the upward movement of the social metabolism was regressive in terms of eugenic improvement, as it was manifested by the “superior fertility of the poorer, depressed, “scheduled” and other alleged inferior castes and races,” and thus fulfilled the requirement of a eugenic reform prescribed by Galton, although, quite ironically, the claims of superiority were made by those who were traditionally held to be un progressive.

The shift in social mobility, however, was further characterized by what Sarkar described as a shift from “Bhakti-yoga (emotionalism)” or “Jñāna-yoga (intellectualism)” to “Yantra-yoga, the devotion to machineries, tools and implements.” The youth of Bengal, Sarkar believed, was trying to make themselves adept in the techniques of economic self-sufficiency inherited from the spirit of the Swadeshi movement of 1905. “One can observe the definite beginnings of a new class,” an overtly optimistic Sarkar concluded, “that is in formation out of the middleclass-intelligentsia. This is the class of industrialists and merchants, bankers and insurancemen. It is the youngest of the social classes in Bengal.”

No other pieces of writing by Sarkar could demonstrate his enthusiasm at the face of the perceived social change with more accuracy. In a sense, in this treatise, he repeated the same arguments he had been making in Arthik Unnati over the years. But, for the first time and more succinctly, he lay out the theoretical background of his notion of “biological development.” In this chapter, I have tried to give a sense of a moment in the history of the separation of the biological and the economic; but it will be a mistake to assume that the journey towards a complete separation

178 Ibid, 71-72.
179 Ibid, 72.
180 Ibid, 73.
181 Ibid, 91.
182 Ibid, 98.
was smooth and uncontested. But, since all histories are written by the victorious, the history of development planning in India did not remember Benoy Sarkar. He remains as a ghostly voice in a desert of anonymity, wandering alone, waiting for a patient listener, and sometimes, when someone is really interested, he tells her a story that no one has anticipated.