



The Politically Mathematics Manifesto: An Introduction

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THE MANIFESTO

Section 1:

“Who would deny logic? Every simple person uses logic without the guidance of a logician, but logic that attempts to prove the soul, the god, or the supernatural cannot be considered valid. The common person would believe any of this without some obscurantist logician creating confusion.” –Carvaka

In every age the old gods fall to new. Today the gods are data and programs. They see us. They govern our fate, and they will guide us to our destiny.

The rules of power are always obscure. Rules, fates, actions, and consequences are obscured so people do not resist or enact change, even when they can. Unlike before, communication is now instantaneous. Memory is becoming indefinite, and vision infinite. We can be watched, remembered, and tracked in ways we never could be before. Digital technologies guide what we want, what we know, and how we respond, while instilling an illusion of free choice. The ruling forces of today are capital, weapons and information gathering. We might say that the Gods have a new trinity of Gs, Greed, Guns and of course Google.

When production and governance become part of automated systems, people reduce to data streams whose actions become functions that are operated on again and again. These functions are abstract in nature, but they can make the difference between life and death. Insurance, for example, is getting granted based on scores and indices that trace the history and the risk of a person and assigns a number to them. A person might be denied a loan for

Babu, Senthil D. 2023. “The Politically Mathematics Manifesto: An Introduction.” *Marxism & Sciences* 2(2): 129–134. <https://doi.org/10.56063/MS.2310.02209>

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- DOI: 10.56063/MS. 2310.02209
- *Received*: 20.07.2023; *Revised*: 27.07.2023; *Accepted*: 28.07.2023
- *Available online*: 05.11.2023

their education because their family has a score of 600, and the bank wants a score of 800.

This may seem to portend some sort of a doomsday scenario, where we all become slaves to programs and their writers, but at the heart of any system of data analysis is mathematics. Data processing is ultimately a mathematical activity, and it is there that lies the hope. Mathematics is a human activity after all. Like any other human activity, it carries the possibilities of both emancipation and oppression.

We live in the age of digital data, and in that age, mathematics has become the parliament of politics. The social law has become interwoven with models, theorems and algorithms. With digital data, mathematics has become the dominant means in which human beings coordinate with technology.

We hope that the practice of mathematics takes up the challenges of the time, strives to bring accountability to the needs of the people. If action is not taken at this time, our digital technologies will be the new jails.

Section 2:

“Machines were... the weapon employed by capitalists to quell the revolt of specialized labour.” –Karl Marx

“The successful construction of all machinery depends on the perfection of the tools employed; and whoever is a master in the arts of toolmaking possesses the key to the construction of all machines.” –Charles Babbage

Three centuries ago, the Newtonian revolution in physics made mathematics a firm part of any technological project. Two centuries ago, began the age of specialization of mathematics, where mathematicians ceased to be natural philosophers or even mathematicians, but became geometers, logicians, computers, analysts, etc.

One century ago, the age of the universalist mathematician finally closed with the death of Henri Poincare in 1912. This era marked a crisis point in the history of mathematics, often associated with the search of Universal Foundations.

Almost half a century ago, human beings began to lose their monopoly of producing mathematical knowledge to technology with the publication of the first computer assisted proof in 1976. Since then, there has been an interplay between mathematical thought and technology that has been growing.

Each year, mathematics shapes politics in new ways, through technologies of surveillance, medicine, transport, communication, media, information, identification, and governance.

Mathematics, by its nature, is contradictorily both universally accessible and accessible only in parts—this is a time to start engaging with mathematics politically.

Over the last many decades, concerns about the relationship between science and society have informed public discourse at multiple levels—both internationally and within the Indian context. Although voices have been raised by different sections from within and outside the academy, and with varied political motivation, the efforts made to understand and transform this relationship have contributed both to theory and practice—influencing the different points at which science and society interact. In India, the Peoples Science Movements (PSMs)—which themselves have been guided by varied motivation—have sought to promote scientific temper, popularize science, to aid State building and national progress by promoting science and science education among the masses, to critique the relationship between Science and Technology and industry and also to use science as a means for social transformation. More recently, studies in the Sociology of Science have also sought to understand the relationship between science and society, to critique the practice of science and the structure of scientific research, and to question the role of scientific activities in accelerating inequality.

In current times, there have been sufficient efforts to reveal that the relationship between science and society is far from benign. In some ways, this relationship manifests itself in very apparent ways—the relationship between progress in science and technology and economic progress for example—and thus makes way for it to be better understood, and also challenged more often. In contrast however, the relationship between mathematics and society, across the various levels of education and access to technology, is much less understood. However, it is precisely because of this that it enjoys a special status—one that perhaps needs to be probed further.

Mathematics is often seen as a tool to be able to learn and do science. It is what formats and determines vocabulary, and that is where its role ends. On the one hand, this attitude lends a sort of impunity to the mathematics community within the academy (Pure mathematicians are not bothered by what their science is used for, the applications it finds is not their concern—they study mathematics for its own sake). On the other hand, mathematics assumes a crucial and dominant role within educational curricula precisely because it is what is needed in order to engage with scientific, technological and economic processes and activities. It is guaranteed a place at the university and compulsory at school. It therefore also serves as a sort of gatekeeper, helping to shape a notion of merit. It determines, in many ways, who takes part in the development of the Nation and industry and to what extent.

To address this issue, we should look at the nexus of the producers of mathematical knowledge and mathematically skilled professionals. In light of the recent debates regarding the restructuring of the University Grants Commission, the relationship of centres of research and industry, debates regarding the updating of the tertiary level mathematics syllabus, and the composition of mathematics education up until that point.

Mathematics is also different from science as a knowledge form in that it is associated not only with skills of reasoning or logical thinking, but also with a

deep capacity for abstraction. In a caste-ridden society like India, where the mind is valued over the hand, asking questions of mathematics as to how it renders itself into caste inequalities and reproduces social inequality becomes all the more necessary.

Section 3:

“I worried about the separation between technical models and real people, and the moral repercussions of that separation.”—Cathy O’Neil

Guided by the larger concerns of how knowledge gets valued in today’s changed economy, what processes contribute to creating this value, how forms of knowledge and their arenas of practice serve to uplift an economic system, accelerate economic inequality or support industry and contribute to state building, we feel the need to focus on mathematics as an area of knowledge in particular. And even more specifically, to examine the relationship between mathematics and society in the Indian context.

We feel it is important to understand how mathematics serves and has served as a basis for contributing to industry and State building and in turn how the State, industry, and other forms of organisation make demands—overt and subvert—of mathematics.

This is not the first time such questions are being asked of course. Unlike in the case of science, such concerns rarely emanate from the mathematical community within the academy, and in public. They do, however, find a voice within the community of mathematics education. But as it is, such concerns have been little explored in the context of India. Across the international community of mathematics education as well, discourse surrounding such concerns is increasingly directed towards the politics of curriculum making which asks important questions but has little to do with practice. So, what we are left with then is very little in way of data and empirical studies, which will help us be more concrete and pointed even in the questions we are trying to raise.

Formulating these questions to us is only an attempt at perhaps initiating such studies in the context of India. It is an invitation to those who might share these concerns to begin a dialogue.

We are putting up this initial note in the hope that those who are interested could add their own questions, ideas and of course anything that they think is pertinent to this initiative.

The questions and suggestions for study, we thought would help us situate and guide us to work through the concerns. We are looking for people to work together on questions which is of particular interest to them concerning mathematics in India. We do believe that not merely sharing concerns but even working together is still very much possible in our increasingly fragmented professional and social worlds.

INTRODUCTION TO THE POLITICALLY MATHEMATICS COLLECTIVE

In December 2016, a group of practitioners of mathematics came together for a conference in Pondicherry to share their political concerns regarding the use of mathematics today. The group consisted of Historians, Academics, Teachers, Activists, People from Science/literacy movements, Programmers, Social Scientists, and Educationists.

Different members expressed different concerns. Some asked the question of who mathematics serves in the modern context. Mathematics, as part of the educational system, should provide people with tools for emancipation, and at the same time, mathematics has acted as a gatekeeping mechanism to prevent people from the poorest sections of society from securing their basic needs and rights. With new systems of finance, credit and insurance, mathematics actually seems to become a tool in denying them their most basic needs.

Just one month prior, the Indian government pursued a disastrous policy of demonetization, where the majority of the country's currency was derecognized, leading to a financial crisis for the majority of the people. This was done in the name of controlling undeclared income, and wrought havoc in the country. The group began discussing how policies regarding the use of money, and then finance have become growing problems for people. Mathematical experts have been commissioned to serve aggressive neo-liberal policies and pursue programs used for surveillance, land grab, and large-scale dispossession. The Indian state has been explicit in stating that it wants to fund mathematics for industry-friendly areas such as mineral exploration, GIS, Big Data projects, etc. Many academics reported that they have seen projects, educational degrees, and departments that have facilitated these programs. People working on education have pointed out that there has been a shift in emphasis towards algorithms and computer programming. This illustrated how the school system, university, industry and state are consolidating the interests of capital.

This led to a discussion on what is missing in our collective understanding of mathematics. Even students who pursue mathematics to the higher levels find mathematics to be alienating. It is a paradox that those who have mastered this knowledge also are exploited by it. We realized that the education systems develop an extensive labour force of students trained in the use of mathematics. We wondered if this trend could be turned around by thinking of mathematics differently.

Since then, we have taken up specific themes of study where the practitioners of mathematics and the working people would come together to interrogate mathematical practice.

One initiative started in response to the continuously rising indebtedness and the burden on the working women for basic survival in the rural areas of the Coromandel coast and the Kaveri delta in south India. This brought us to examine the apparatus of calculations used in the flow of credit into the households and in relation to the flows of water and crops in these regions.

Another initiative that came out was to look at the history of mathematical practices in the working lives of people. This is to question the division between the activities of the mind and the hand, especially in a caste society like India, where manual work is denigrated in favor of abstraction, as the privilege of the few. We have looked at the histories of school mathematics, research mathematics, mathematics used by artisans, mathematics used by accountants and mathematics used by merchants, taking care to not valorize one over the other, but show their relationship in social histories.

During the COVID pandemic, we initiated critiques of the use of mathematical models to further the exploitation of the working poor in India. This includes the flimsy use of models to justify policies that hurt the working class, particularly the migrant workers who had been stranded and exploited during the pandemic, as well as exploitative credit allocation schemes that were given in lieu of proper welfare schemes needed at the time. We also launched criticisms on the state's callous policy on education, where provisioning aspects were neglected, and the children, especially girl children and children from remote locations, were deserted.

Page 134, line 24:-26: remove and replace with this: Friends of our collective have studied the labour of teachers in schools in the central Indian state of Chattisgarh. They have shown how teachers are exploited on account of their gender, caste and class locations.

There are many initiatives along the way. We intend to bring focus on algorithms, automation, data, and surveillance. Our work in credit needs to be linked to the larger world of finance and accumulation. Our work is taking us to deeper questions on measurement, regarding how life, dignity, work, and social reproduction are measured or not measured. We are creating an archive of mathematical practices. We are also looking at the shifting priorities of state and industry in developing mathematics.

We invite interested people to join us in further exploring these concerns and to develop ways to pursue studies along with the working people, to generate pedagogic resources that will facilitate ongoing efforts of the working-class movements.¹

1. For more information and contact, please visit www.politicallymath.in.