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AMARTYA SEN
Economics Nobel Laureate 1998
by
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I. Lamont and Harvard

Some years ago, when Amartya Sen, then Lamont University Professor at Harvard University, was doing a lecture tour abroad, a journalistic write-up listing Sen's many achievements noted that he taught at two famous American Universities, Lamont and Harvard. It must have seemed a shocking mistake to all those who knew Amartya Sen or Harvard University (I cannot tell what it seemed to those who knew Lamont University). But over the last few months, ever since he won the Nobel Prize in economics, reading the popular press prodigiously interpreting Sen's work and why he won the Nobel Prize one realizes that errors of this kind, while disturbing, are the least of it. The more significant mistakes are the ones in interpreting his work.

One source of many such mistakes is Sen himself. He has straddled comfortably two worlds, that of academic, technical economics, and that of policy and pamphleteering. Since the laity and the non-specialized journalist have some familiarity with the latter, it has been easy for them to jump to the conclusion that it is for the latter that Sen won the Nobel Prize. A mistake of this kind could not have occurred, for instance, with Gerard Debreu, also a Nobel laureate, since journalists would not be able to read *any* of his papers.

One of the most common assertions has been that Sen was given the Prize for showing how famines can occur during times of plenty or how famines are unlikely in a democracy or for his work in development economics. The exception is the official Nobel citation released by the Royal Swedish Academy of Sciences, which states that Sen has been given the Prize "for his contributions to welfare economics". The accompanying write up mentions a whole range of his work, but it gives primacy of place to Amartya Sen's work on social choice theory, axiomatic welfare economics and individual decision-making. This is the work that he had done from the mid sixties to the late seventies, mostly in Delhi and London. A part of this work is reported in his classic book, **Collective Choice and Social Welfare (CCSW)**. This is, in my judgement, his most important book; it is a work of immense elegance, that combines formal logic, welfare economics and moral philosophy. The book had many new theorems (or at least reported on new theorems which Sen had first published in journals), but more importantly it influenced the *way* one thought of welfare economics and collective decision-making.

II. Welfare and Social Choice

Amartya Sen did not start out in welfare economics. As an undergraduate student at Trinity College, Cambridge University, (where he has now returned to be Master), Sen wrote a dissertation on the choice of technology. The dissertation, with small modifications, won him a Ph.D and in 1960 was published as a book by Basil Blackwell. **Choice of Techniques** became a celebrated book, which students of development, planning and growth read, researched on and modified. This work had many spin-offs for Sen himself. He contributed to growth theory, cost-benefit analysis and development; he became full professor at the Delhi School of Economics in 1963, at the age of 30, and a little thereafter he became Fellow of the Econometric Society.

During this time his interests were, however, beginning to shift as he became intrigued by the problems of welfare and the conundrums of voting and social choice. There was a small literature on the latter at that time. It had all begun in the early fifties with the publication of Kenneth Arrow's path-breaking "impossibility theorem", which showed that all systems of voting, existing or conceivable (for example, the majority-decision rule or the two-thirds-majority-or-status-quo rule), will violate some elementary and desirable norms of democracy. I consider this one of the most profound breakthroughs in economics. It did not require any hard mathematics, as so much of modern economics does, and that is precisely what made it such a challenge. There were no standard results to fall back on; the theorem had to be proved through plain reasoning of which, in principle, everybody is capable. Yet the reasoning had to be sustained relentlessly over such a long stretch that few could, in practice, have done it.

When Arrow began working on voting theory, the subject had a negligible history. This is not to deny that it had attracted some colorful personalities. Almost two hundred years before Arrow, the Marquis de Condorcet and Jean Charles de Borda had been intrigued by a strange feature of the majority decision rule, which allows it to generate cycles, so that, for *every* candidate, we can find another candidate whom the majority prefers. The problem, which had later attracted the eccentric genius of Lewis Carroll (who wrote mathematics using his real name, C.L. Dodgson), is easy enough to illustrate.

Suppose three persons, 1, 2 and 3, have to choose between three presidential candidates, Adlai (A), Bush (B), and Clinton (C). Suppose 1 prefers A to B to C, 2 prefers B to C to A and 3 prefers C to A to B. If they agree to use the majority decision rule, it is easy to see that between A and B, A will win the election (because voters 1 and 3 would vote for A); between B and C, B will win; and between C and A, C will win, thereby yielding no clear verdict on who the winner is. Note that for each of the three candidates, we can find someone whom the majority would prefer.

Arrow's shatteringly important theorem and the problem with the majority rule set the agenda on which Amartya Sen's work on social choice was based. One set of papers that he wrote, alone and with Prasanta Pattanaik of the University of California at Riverside, specified the conditions under which the majority rule 'works', that is, does not give to the above problem of indecision. An important direction that he explored was to place restrictions on the voters preference. It is arguable that in most societies preferences are not quite as varied across voters as in the above, imaginary example. Sen showed that given some natural restrictions on the variation in human preference, the paradox of majority decision-making illustrated above may be averted. Given the widespread use of the majority rule and its obvious practical importance, these papers attracted a lot of attention.

Another direction that he pursued was to introduce a new axiom into this framework, that of individual liberty, capturing the notion, which goes back to John Stuart Mill, that every individual should have some 'protected sphere' over which he or she has the *right* to decide, without being constrained by what others feel. For example, whether or not person *i* reads **The Satanic Verses** could be said to belong to *i*'s personal sphere. This work turned out to be extremely influential, drawing the subject of rights and liberty into the domain of social choice.

Sen's book, **CCSW**, played a very significant role in the coming together of welfare economics and moral philosophy. Like liberty, other concepts and ideas from philosophy, such as fairness and justice, came to be analysed using the tools of social choice theory. Arrow had written about an alleged inscription on a grave in England:

Here lies Martin Engelbrodde.
Ha'e mercy on my soul, Lord God,
As I would do were I Lord God
And thou wert Martin Engelbrodde.

This is an illustration of putting oneself in another's shoes. This is the basis of a new approach to comparing the well-being of different individuals. Economists had, for long, acknowledged the deep difficulty of making interpersonal comparisons. How can we ever know what goes on in a person's head? Can we really say that a poor boy in the street is unhappier than the wealthy tycoon in his mansion? The new method of interpersonal comparison relied on making the mental experiment of putting oneself in the shoes of each of the characters involved. Would you rather be a rich tycoon than a poor boy in the street? If you can answer this, then, even though you are still in the dark about what goes on in the heads of the boy and the tycoon, this gives you *some* insight into the well-being of the two individuals. This method of making interpersonal comparisons was formalized into a new approach--that of 'extended sympathy'--and through the effort of Sen and other economists and philosophers, has helped us understand better the foundations of utilitarianism and John Rawls' moral philosophy.

With such a diverse set of ideas crowding the pages of **CCSW**, the book became a classic. It drew the attention of not just economists, but professional philosophers and, it is just

right that it is the spreading influence of this book which was ultimately honored by the Nobel Prize.

III. Delhi and London

Much of this work was done at the Delhi School of Economics, where Amartya worked from 1963 to 1971. This was a remarkable time for the Delhi School. Jagdish Bhagwati was there teaching and researching on trade theory and development, Sukhamoy Chakravarty had returned from MIT to be professor, and the eminent econometrician, A. L. Nagar, provided leadership to the quantitative economics group¹. The Delhi School was conceived of as a multi-disciplinary institute, all the more impressive when one realizes that it was run on a shoe string budget. Its economics community was matched by an outstanding collection of sociologists.

I got to know Amartya Sen as a student at the London School of Economics, where Sen had moved to in 1971. He was already quite well-known and his lectures drew full-houses, with students squatting on the floor and perching on window sills. Those were heady days, days of unbridled idealism, and his blend of economics and philosophy appealed to the students. One of the greatest lectures I have heard in economics was Sen's inaugural lecture at the LSE, which was later published as 'Behavior and the Concept of Preference', in **Economica** in 1973. It helped shape my own Ph.D research agenda, a Ph.D which I would later do with Amartya as principle adviser. In this paper Sen puzzled about the meaning of individual rationality. Was rationality simply a matter of consistency, as much of economics had come to believe following Samuelson's famous work on revealed preference (in which a person's preference was taken to be simply that which was revealed by her choice), or was it something else? Also what was the relation between the various kinds of consistency axioms that were floating around at that time? The lecture raised more questions than it answered but it led to a series of formal papers on rational choice theory and consistency.

¹ In an essay on the Delhi School, Sen has recounted a story from his days there, about a comical implication of the school's outstanding reputation in economic theory. The China specialist, Alexander Eckstein, gave a talk at the Delhi School at which Professor Naqvi of the School asked a long question. Eckstein said he could not hear him properly and asked him to repeat. Naqvi, thinking that it was his name that Eckstein could not hear, replied, "K.A. Naqvi". This breathtakingly short paraphrasing of the long question had Eckstein flummoxed, but he persisted, asking again for clarification, to which Naqvi said that it was real easy, "first you take N, then A, then Q, then V, then I". Eckstein, his preconception of the Delhi School confirmed, decided to put the matter to rest and said that though he did not fully follow him, he would think about the "formula".

IV. Philosophy

Throughout the time that Sen was working on the choice of technology and social choice theory one of Sen's enduring passions had been philosophy. The roots of this passion are not difficult to fathom. His mother's father, K. M. Sen, was a philosopher of distinction, who wrote on religion and Hinduism, and lectured at Viswa Bharati University (founded by the literature Nobel laureate, Rabindranath Tagore) in Shantiniketan, a small town outside Calcutta, where Amartya was born and grew up. K. M. Sen belonged to a generation which upheld the oral tradition and Amartya must have learnt philosophy talking and listening to him.

The first evidence of Amartya's interest in philosophy was a paper he wrote in 1959 in **Enquiry**. This is a little known paper; for a long time I had the smug satisfaction of not knowing anyone apart from myself who had read it. The paper consisted of a compelling statement on determinism and free will. Sen may have moved away from the position taken in the paper but it is a paper I would recommend to the reader, if for nothing else for its lucidity.

Sen's philosophical interest continued to grow in Oxford where he interacted with the philosophers, and, in addition to the above mentioned journals, his papers appeared in **Philosophical Quarterly, Philosophy and Public Affairs, Theory and Decision, and Journal of Philosophy**. He has also lectured to philosophy students at Oxford and later at Harvard, where he offered a course jointly with Robert Nozick.

V. Poverty and Campaign

During his stay at the LSE his interest moved on to something which had always, though somewhat subliminally, been there--the subject of poverty and inequality. Towards the end of his seven years at the LSE and after he moved to Oxford as professor in 1977, Amartya Sen worked on this subject. One branch of this interest was concerned with the technical problem of how best to measure poverty. The standard method in those days was to consider an income level--the poverty line--below which a person could be called poor, and then to find the percentage of a nation's population that lived below the poverty line. This was the so-called 'head-count measure'. Sen noted that this had an obvious restrictiveness. If you take away 10 dollars from a person way below the poverty line and give it to someone *just* below the poverty line, the head-count measure of poverty will fall, since the recipient will cease to be below the poverty line. But surely, in an important sense, such a transfer (from someone poor to someone better off) cannot be thought of as a poverty-reducing act. Hence, governments that were using the head-count measure to design policy risked crafting faulty policy.

Sen drew on his expertise in choice theory and constructed a new measure of poverty, approaching the problem by setting down a set of axioms of poverty that a good poverty measure should satisfy and then deducing the measure. Sen's measure was sensitive not only to the number of persons living below the poverty line, but to how far below the line they were and also to the distribution of poverty. The paper that resulted was published in **Econometrica** in 1976 and it immediately caused a groundswell of interest in the subject.

The other branch of Sen's work on poverty was related to more practical concerns: what causes famines and how best should famines be controlled or avoided. This resulted in the book, **Poverty and Famines**, which is arguably his most widely read book. This was an extremely important book, beautifully written, full of practical policy implications and insights (some of which he pursued further in his subsequent work with Jean Dreze). Its significance is however different from that of his earlier work. My guess is that the same book written by a less famous person would not have caused as much of a stir as it did. This was an area where Amartya Sen was using his already established reknown to campaign for causes that he believed in, to urge for state action to eradicate poverty and to lighten the burden of the weaker sections of society. And of course he was bringing an enormous amount of scholarship to bear on the subject, so that this book on famines has today come to be regarded as an important work of economic history.

Working on poverty and basic needs, Sen gradually came to challenge the pervasive use of income to measure and compare human welfare. Thus the most popular way of ranking the economic performance of countries is in terms of the per capita incomes of the people. Sen argued repeatedly for the need to bring in other indicators of the standard of living in order to evaluate the overall well-being of societies. This work has had enormous practical implications, ever since the UNDP, openly acknowledging Sen's influence, began computing the Human Development Index (HDI) to evaluate societies. The HDI is constructed by taking account of three aspects of each nation or society: The life expectancy of its people, the average level of literacy and education *and* the per capita income. But would it not be the case that a nation with a higher income will also have better health facilities, and therefore higher life expectancy, and better educational facilities, and therefore higher literacy? The answer must be no, because moving away from using solely the per capita to the HDI makes enormous differences to the ranking of nations. Canada, for instance, which has a lower per capita income than the US, Switzerland, Kuwait, Norway, Singapore, Denmark and Japan, turns out to have the highest HDI in the world. At the poorer end, Sri Lanka and Vietnam, for instance, move up considerably when they are assessed in terms of their HDI, instead of their per capita income alone. The shifting of attention away from income has led to policies also being evaluated in terms of their impact on education and health. The **Human Development Report**, which reported the HDIs of different nations began as a sort of alternative publication to the World Bank's immensely influential **World Development Report**. A sign of the spread of this larger concept of well-

being is how close the two reports have moved to each other in recent times, with the World Bank laying increasing stress on the importance of *human* development.

In some newspaper articles Sen's normative work has come under attack. A mindlessly virulent one was by Robert L. Pollock in the Wall Street Journal of October 15. Fortunately, his own partisanship comes into display early in the article, when he says that to him "seemingly every winner" of the Nobel Prize for literature is a Marxist. Clearly he himself must be positioned somewhere very outlandish for the world to appear all on one side! But one mistake that he makes others have made. From the fact that Sen has written repeatedly about the need for public action to help the disadvantaged, some have jumped to the conclusion that Sen does not appreciate the role of the market and of incentives. But that is like concluding that since Mr. E wrote only about relativity, he does not believe in government intervention or, for that matter, he believes in government intervention.

A careful reading of Sen's *oeuvre* shows that the body of policy that he believes in is not very different from what would be prescribed by a large number of eminent economists, such as Kenneth Arrow, Paul Samuelson, Joseph Stiglitz, though each of them may have concentrated on some specific policy--the one closest to his expertise.

It has been said that Sen's recent work is repetitive and populist; and there is, I believe, some truth to that charge. But it has to be kept in mind that a large part of the recent work is that of a person with a cause and this Sen II must be evaluated differently from Sen I. While the former may not have added to the *scientific* worth of Sen I, it does not detract from that either. In addition, while it is true that the Nobel citation emphasizes his early work, the prize may have eluded him if it were not for the build up of popular acclaim, a lot of which was a consequence of his later work.

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