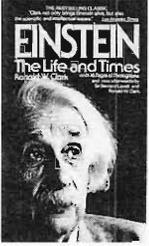


Einstein – The Life and Times

Bikram Phookun



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Ronald W Clark

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A short while ago, a special issue of *TIME* magazine announced that Einstein had been voted ‘Man of the Millennium’ by its readers. (Gandhi was the runner-up.) One’s first reaction to this maybe delight – that the people (well, OK, the readers of *TIME*) should regard Einstein, one of the greatest scientists of all time, as the man of this most scientific of millennia seems apt. But on second thoughts, one cannot escape the suspicion that the man who has been voted for by the masses is not Einstein the scientist so much as Einstein the legend.

Einstein the legend is the protagonist of Ronald Clark’s book. Einstein the scientist plays a supporting role, but to know him one must read some other biography (e.g. Abraham Pais’s *Subtle is the Lord*). To say this is not to denigrate Clark’s choice of subject. Einstein is a fascinating historical figure, not just a great scientist. For anyone who wishes to understand why this is so, *The Life and Times* makes interesting reading.

The title of the book is appropriate. No life, of

course, is independent of the times within which it is lived. Nevertheless, one tends to think of every life as the interplay of an inner world and an outer world. In Einstein’s life many of the forces emanating from both the inner world and the outer were extraordinarily powerful. If his inner world were transposed to another time, he would still be an extraordinary human being, but his potential, as a scientist and as a public figure, may never have been completely realized. He was possessed by a need to understand nature and gifted with the ability to take this understanding far beyond the reaches of other contemporary minds; and he came into his prime at a time when physics was in a state of crisis and needed a new vision. He was a German-born, Swiss-loving, peripatetic Jew, not very Jewish by inclination; but he lived in the Germany of Hitler, and turned into the best known Jew in the world and strong supporter of Zionism, the movement that led to the formation of Israel. He began as a somewhat confused but determined pacifist; but Hitler caused him to renounce his pacifism around the time the atom bomb became possible, and he was one of those responsible for initiating the programme to build this deadliest of weapons.

The Life and Times is divided, chronologically, into five sections entitled (I) The Making of a Mission, (II) The Voyage of Discovery, (III) The Hinge of Fate, (IV) The Einstein Age, and (V) The Illustrious Immigrant. Even those who know Einstein fairly well usually know little about his early years. In Part I,

Clark takes us from Einstein's birth in the German city of Ulm till 1905, the most miraculous year in his life, when, as a technical expert (third class) in the Patent Office in Berne, he published his great papers on the photo-electric effect, Brownian motion, and the special theory of relativity. We get to know that as a boy Einstein abhorred the regimentation of the Luitpold gymnasium, the school to which his parents sent him. We come away with the impression that at least some of Einstein's hatred of what he considered the German mentality was the result of his Luitpold experiences. Clark's young Einstein is a free-spirited, almost pugnacious young man, liberal by nature rather than conviction, and with a confidence in his own scientific abilities that is almost as extraordinary as the abilities themselves. More than anything else, he is, for all his affability, a genuine loner, an intellectual aristocrat – always apart, always thinking in his own peculiar way. There is little in the description, however, that prepares us for Einstein's explosive creativity in 1905. Clark cannot be blamed for this – there is indeed little in Einstein's life to which this can be confidently traced. One may talk of Einstein's attitudes and determination, but a thousand others now forgotten must have shared them. There are a few papers before 1905, but no real signs of a scientific struggle before the triumph. As Abraham Pais puts it in his scientific biography of Einstein, there is a Mozartian quality to the early papers. It was as if, like Mozart, he saw in an instant the whole of each of his compositions and simply

had to write it down.

Clark then describes the impact of Einstein's early papers on the scientific establishment in Europe. His rise to distinction was not instantaneous, but not slow either, considering how difficult it was for many of the old guard to accept his conclusions. Nevertheless, he soon moves out of the Patent Office into academia, and rises in eminence. It is clear that this eccentric young genius is a figure to reckon with.

From the point of view of a scientific historian the phase of Einstein's life described in 'The Voyage of Discovery' is undoubtedly the most fascinating. While the achievements of 1905 are awesome, they are historically unsatisfying because they seem to come out of nowhere. Between 1905 and 1915, however, we have a well-documented Einstein, already regarded by about 1908 as an extraordinary new figure in European science, struggling with two major problems – What is the meaning of the quantum nature of light that he so insouciantly, almost irreverently, spoke of in his work on the photo-electric effect? And: How to extend the theory of relativity to accelerated frames? Einstein never answered the first question to his satisfaction. Nor was he able to accept completely the explanations given by the quantum mechanics of Bohr, Heisenberg, Schrodinger, and Dirac. The second question led, in 1915, to the magisterial general theory of relativity, Einstein's theory of space, time, and gravity, which many physicists regard as the greatest intellectual creation of mankind. Clark's non-scientific

approach makes this the most disappointing part of the book. Einstein is not yet the great public figure that he becomes soon afterward. He is above all a scientific genius. And after 1905 he is a genius who struggles and leaves a trail. (Pais in his book compares the Einstein of this period to Beethoven, whose musical scores were written over and over again until he arrived at his final compositions.)

Unfortunately, very little of this can be found in Clark's book. Instead, we see Einstein moving up the academic ladder, in Switzerland, Czechoslovakia, and Germany. While Clark does discuss Einstein's scientific work, this discussion cannot be considered adequate. Even though his subject is Einstein the public figure, he should perhaps have aimed to leave the reader with a somewhat greater appreciation of the scientific achievements that gave Einstein's rise to world-wide fame its first impulse.

In the 'Hinge of Fate', we finally meet the Einstein that is really the subject of Clark's biography. World War I has just ended. The English scientist Eddington has done a famous experiment that supports the German Einstein's general theory of relativity. Suddenly he is famous. It is of course not uncommon for a scientist to rise into the limelight when news of his achievements makes it to the papers; but he usually fades out soon afterward. Einstein, however, shot up with such extraordinary rapidity and force that he acquired escape velocity and stayed in the limelight for the rest of his life. Partially this was because his theory, though incompre-

hensible to all but a few in his worldwide following, was about something that everybody, at some level, thinks about – space and time. Partially it was because of the dramatic circumstances of Eddington's experiment. (And partially, no doubt, it was because the theory and the man behind it struck the fancy of one or two important newspapermen.)

This is also the most bourgeois phase of Einstein's life. He has almost accepted his German origins. He lives a happy life with his second wife Elsa. His most important scientific work is behind him, though he continues to work as hard as ever.

The first rumblings of discontent can be heard in the next phase of Einstein's life, described in 'The Age of Einstein'. Germany is in a state of revolt against the decisions made against it following the first world war. Nazism is on the rise. The Jews are the scapegoats. Chaim Weizmann makes Zionism a powerful new force in world politics. Einstein, as one of the most famous Jews in the world, is roped in to support this movement. At the same time, he is actively, though not always effectively, involved with the League of Nations as a famous pacifist. Towards the end of this part of the book, when Hitler becomes Chancellor of Germany, Einstein leaves Germany for good, and after some time arrives in the United States of America, never to leave it.

There is little in this section about the birth of quantum mechanics and Einstein's struggle



against it. But here we have less to complain about, since the political animal that Einstein has become is perhaps more interesting than Einstein the scientist-past-his-prime. Clark describes this phase of Einstein's life vividly. On the one hand, we see the power of his fame, and on the other we see how naive and idealistic he is in his politics. As an important world figure, he finds himself in the company of men and women who intuitively understand and use human strengths and weaknesses, while he, more often than not, blunders. Clark argues that Einstein's contribution to the peace movement following World War-I was in the end of little significance. In Zionism, his support was important, though it is almost certain that Israel would have been founded even without it.

The last part of the book, 'The Illustrious Immigrant', describes Einstein's years in America. Hitler's atrocities against Jews and his maniacal war-mongering make Einstein renounce his pacifism. His support for Zionism is at its strongest – he realizes that Jews, even if they don't feel particularly Jewish, must have a home. After World War II begins, he hears rumours that the Germans may be close to realizing the potential of his famous formula $E = mc^2$ and making an atom bomb. He writes what is perhaps his most famous non-scientific document – the letter to President Roosevelt urging him to develop the atom bomb in the US. Clark tells us that he wrote not one but three letters to Roosevelt;

the first was rather uncommitted, but the third was to a large extent responsible for the Manhattan Project, which was to culminate in 'The Fat Boy' and 'The Little Man', the atoms bombs that were dropped on Hiroshima and Nagasaki and ended World War-II. For this reason, Einstein is often regarded as the father of the bomb. Clark does a good job of discussing the pros and cons of this point of view. In fact he is probably at his best when writing about Einstein's involvement in the bomb.

After the end of the war, Einstein lives on for about a decade. He is now a sage-like figure, a living monument. He continues to struggle to find a view of physics that unifies all its aspects, refusing to accept the later developments in quantum mechanics, the field theories that underlie particle physics today. To the end he keeps the apartness that mark out everything important that he ever did or attempted to do.

Clark does not discuss Einstein's personal life in great detail. And, as stated earlier, his effort to describe Einstein's science is not fully successful. What he succeeds in doing is bringing to us Einstein the public figure – the legend who has been voted the Man of the Millennium.

Bikram Phookun, Lecturer, St Stephen's College, Delhi 110 007 and Visitor, Raman Research Institute, Bangalore 560 080, India. Email: bikram@rri.ernet.in.