

**Revisiting Dharampal: Reflections on history of technology in
contemporary India**

C. Shambu Prasad¹

for

ENGAGING WITH INDIAN CIVILIZATION

Seminar in remembrance of historian & philosopher Dharampal

10th February 2007, 10 am to 6 pm, CSDS Seminar Room

I

This seminar has given me an opportunity to revisit Dharampalji's work and explore some connections in history of technology that I think can and needs to be made. I last met Dharampalji three years back but remembered his work on at least two occasions prior to his demise in October. I am part of a newly formed group called 'knowledge in civil society' and the group recollected his work at least two times prior to paying homage to him in its meeting in November. A soil microbiologist from ICRI SAT (International Crop Research Institute on Semi Arid Tropics) and a member of the sub group on sustainable agriculture wanted to know from other members of the electronic group if anyone had information and details on high rice productivity in Chengalpattu that he heard of. Eventually Chitra Krishnan, a person who knew Dharampal sent him some material from an old PPST² bulletin. The grateful ICRI SAT scientist was wondering if there were inscriptions or some pictorial evidence that he could use while communicating to agricultural scientists whom he was training on organic farming methods.

¹ Associate Professor, Xavier Institute of Management, Bhubaneswar 751013. shambu@ximb.ac.in, shambuprasad@gmail.com

² Patriotic and People Oriented Science and Technology Foundation a group of scientists and activists who perhaps took to Dharampal's work in the late eighties most enthusiastically and brought out a bulletin intermittently for over a decade from 1980 and had organized the Traditional Sciences and Technologies conferences at Bombay, Madras and Varanasi from 1993 – 1997.

The second instance was when we decided to undertake a study on dissent in Indian agriculture. We were keen to work out a genealogy of dissent in Indian agriculture that would cover British sources focusing on dissenting minutes but also through the work of others such as J C Kumarappa, Sam Higginbottom and Albert Howard and we engaged the services of by extending the work of a PhD scholar who worked on the history of agricultural science in Madras presidency. Some of these we hoped would help us open up possibilities for agricultural research today that have generally been ignored. In the process we came across and had a chance to revisit Dharampal's work and shared with the group the lovely introduction by Claude Alvares to Dharampal's collected works.

Later when the group 'knowledge in civil society' – a network of activists and academics interested in issues of science, technology and society studies or science studies for short was looking at a logo for its letterhead a design chose itself (see Fig 1). It immediately reminded me of 'oceanic circles' a phrase that we heard about for this first time from Dharampal representing Gandhi's vision of a decentralised polity.³

In this structure composed of innumerable villages, there will be ever-widening, never-ascending circles. Life will not be a pyramid with the apex sustained by the bottom. But it will be an oceanic circle whose centre will be the individual always ready to perish for the village, the latter ready to perish for the circle of villages, till at last the whole becomes one life composed of individuals, never aggressive in their arrogance, but ever humble, sharing the majesty of the oceanic circle of which they are integral units. (Gandhi in *harijan* H, 28-7-1946, p. 236)

For Gandhi the local was not an insulated entity but the first and innermost part of a spiral and the artist had captured it (see picture below). The idea of the

³ Dharampal wrote about this in his Pune lectures. "In a sense, the polity which such data suggests is the kind of polity that Mahatma Gandhi tried to spell out in his idea of the oceanic circles, where the innermost circle retained the utmost internal autonomy, and only such fiscal, moral and other support was extended by them to the outer circles, essential for performing those residual tasks which could not clearly be performed at any local level." Collected Works of Dharampal Vol5: 37.

oceanic circles has inspired several people. Elisabeth Borgesse used this phrase as a way to govern the oceans as a global resource. Closer home it was in association with Dharampal that a few young student - – researcher – activists started a group called the ‘Oceanic Circles’ in the late 1990s to take up the work of bringing the treasure that Dharampal had at Sewagram to the outside world. I was a passive beneficiary of the group. While we could not carry forward the work of transcribing his archives in good measure as some of us had planned, I was benefited by some very insightful and yet to be published work on Gandhi by Dharampal through this group.



Fig.1: Logo of Knowledge in Civil society that resembles conception of knowledge spread as oceanic circles from several centres.

These incidents seem to me to indicate that there is a space where Dharampalji's work rightly belongs and shall continue to be celebrated, namely 'knowledge in civil society'. The description of him as a historian and Gandhian perhaps does injustice to what he perhaps represented – a great dissenting scholar and a diminishing tribe of the 'organic intellectual' of whom we see so little of nowadays. That some of his major works appeared while engaging with constructive work, he was the General Secretary of the Association of Voluntary Agencies for Rural Development (AVARD) when he worked on the Pachayati Raj system and much of his later works were shaped by civil society concerns on India's polity.

Even as I would like to remember Dharampalji in primarily that role I am confronted with a few facts about how the academia has ignored him. If one were to classify the people who have taken forward his thought and work within academia one confronts a rather strange paradox. His greatest followers were people with some sort of affiliation to the Indian Institute of Technology IITs, primarily IIT alumni and those outside the academia largely comprising activists. A look at the list of talks that Samanvaya has put together in their website www.dharampal.net confirms that the person whom we refer to as a historian was never called upon to speak at the Indian history congress (IHC) even during the NDA regime where there was much debate on rewriting Indian history. I suspect if any of the paper presenters at any of the IHC ever referred to his work even if to be critical of his work. Probably not.

While his work covers and provides insights in social history, material culture, history of science and technology and colonialism, I wonder If I had my social science PhD from JNU or Delhi University I would have never had a chance to refer to Dharampal. As a social scientist I would have celebrated Edward Said's orientalism and perhaps even Needham's study on Chinese science and technology. but would have been constrained to see Dharampal's insights on colonialism in the same light as Said or his work on technology as Needham's. I was recently looking at the courses offered at the only specialized centre we have on science policy in India where of course history of science and technology is thought. There is no mention about Dharampal's works.⁴

You might then try and situate his work within 'alternate history'. I looked at the work of the famous sub-altern historian Shahid Amin's titled 'Alternative histories' a few years ago wherein he mapped a 'perspective' on Indian

⁴ The importance of including alternative views in text books and curricula cannot be under emphasised. I had for instance discovered that the premium institute on design in the country while situated at Ahmedabad, a centre for much of Gandhi's activities, had no copy of the classic book on weaving that the khadi movement had brought out in 1948 even though the institute of design teaches students textiles and crafts work.

historiography and explored it as a part of the larger 'South South dialogue'.⁵ I found no mention of Dharampal's work even as a point of critique or departure whether official nationalist or sub-altern. As some of us are aware Dharampal had plans to have a centre for Indian ocean studies where perspectives of the non-west could be shared by scholars outside India as well. As a researcher and from the academia it is of concern to me that I find Dharampalji's work quoted and discussed more in *Hinduism Today* than in teaching in social science universities.⁶ I think this silence of the academia needs to be explored further and I am glad that seminars such as these provide opportunities for reflecting and resituating Dharampalji's work.

Perhaps a starting point for such an exercise is to explore Dharampal's influences in one's own work. I would like to share how I think I have been influenced by his method and approach to history of science and technology even if I had not in my thesis quoted his collected works. I also submit that the way his work and thoughts have been extended need to go beyond the grand narratives of history and civilisational sweeps, important as they are, to smaller and situated programmes rooted in questions that engage dissenters, young and old, in contemporary India.

The seminar gave me an opportunity to revisit some of his works and explore some connections. A thought that came to me repeatedly is that much debates surrounding his work have been engulfed by strong ideological positions of the left versus the Right or as others would like to term it 'we' versus the 'secularists'. I think there have been historical reasons for individuals and groups taking positions on the left or right of the political spectrum. I often feel a generation of activists and academics have wasted their genuine contribution towards

⁵ See Amin, Shahid. 2002. *Writing Alternative Histories: A View from India*. Sephis/CSSC Occasional Papers Series.

⁶ I might add that to this general trend of the university silence of Dharampal's work is the exception of Prof G S R Krishnan at the University of Bangalore and it being listed as one of the texts for courses in Central University of Hyderabad's science, technology and society. Some newer faculty in JNU and Delhi University I am told have been using Dharampal's books in their teaching. Humanities courses at the IITs have generally been open to teaching Dharampal.

alternative scientific imaginations in India by vociferously engaging in debates on western versus traditional science etc and seeking to place complex societal realities within this left-right divide. Speaking for a generation below forty I do think that Dharampal's work needs to be reinterpreted beyond these boxes and allows for much creative reinterpretation that it is indeed surprising that so little of it has happened. An interesting lead in such creative possibilities emerges from SIDH and its lovely document 'Developing Learning Communities: Beyond Empowerment'.⁷ The efforts of organizations such as SIDH I think need to be extended into the academia in creating similar learning communities around Dharampal's work and thoughts.

I also believe that the epithet to describe him – 'historian and Gandhian scholar' hides a rather curious paradox. Two of his major streams of work could be classified as those on history and those on Gandhi. While the former is well known the latter is lesser known partly because his work on Gandhi got published only recently. His works on Gandhi and history of technology have never seen together. He had tremendous insights on both but perhaps never connected the two together explicitly. We find some glimpses of this in his book on indigenous education Beautiful tree where he relates Gandhiji's statement on India being more educated fifty years back or in the civil disobedience and Indian tradition book where he creatively traces the origins of non-cooperation in Indian tradition and not necessarily as a western import. However seeing the two streams together seems to offer some interesting insights. Gandhi as Dharampal would say was no historian but had a great sense of history.

I would like to see Dharampal as one of the greatest proponent of the importance of non-linear history of technology in pluralistic societies such as India. We probably need a different reading to link up several parts and insights of Dharampalji's work. This reinterpretation of Dharampal needs to be situated

⁷ Pimpale, Sheela. 2005. Developing Learning Communities: Beyond Empowerment. Paris: UNESCO. <http://unesdoc.unesco.org/images/0014/001421/142118e.pdf>

within the search for alternatives and dissenting imaginations of science and society. I wonder if there has been work on his art and practice of 'making history' as Claude would put it. Or if there is a Dharampal method of enquiry that has been documented and researched. We probably have very few glimpses of his style of working from Claude Alvares's introduction to his collected works but I suppose we need to wait for a full fledged biography of Dharampal or greater investigation into his *method* of understanding and writing history. Till such time a few speculations are possible.

Before I get into my own explorations into the Dharampalian method I would like to briefly reflect on history writing by him and others familiar with his work.

II

Dharampal's approach to History and historiography: *Sense of history and the role of the historian*

I think one of the crucial ingredients of Dharampal's method was the recognition that current Indian history has been based on selectivity of records and thus history writing necessarily suffers from biases in the selections.

The scholars, however, seem to have forgotten the origin of the writing of current Indian history. The history, the beliefs and the notions which prevail amongst the scholars and the intelligentsia themselves are based on a particular selectivity of these very records. Vol4: 250

That he realised that different interpretations are possible through a diligent search was something that he seems to encourage each one of us to do. His familiarity with the British archival material is perhaps second to none and in this he could easily point to us some of the shortcomings of archival research done in some of the Indian archives. We in our group benefited immensely from this

practical insight and consciously sought other material in our exploration on indigenous textiles.

However, and I think this to be very important, he never believed the British archives had all the answers. One was always amazed at the tentativeness of Dharampalji in his work and even in conversations with several 'perhaps', 'maybes' and 'probablys' in stating his opinions. In fact the genre of his writings stands out for their structure. His books would comprise largely of brilliant and good introductions to the work that was invariably followed by a reproduction of the sources in full. It is almost as though he is inviting the reader and other scholars by saying this is what I have to say and I have interpreted the documents why don't you try your own and look at these documents. It is thus a real pity that scholars and historians have largely ignored the engagement with the documents themselves.

The other aspect about his making history is the methodological openness and even directive to search for other sources of history – oral and non English. He in fact believed this to be critical to our understanding of Indian society:

“ If we investigate these (archival) records on similar aspects further, on the basis of what is available in our archaeological, inscriptional and other historical sources, and what is still retained in the memory and consciousness of our people, we ought to be able to reconstruct our social and cultural past, and hopefully to mould our state and society accordingly.” (vol1: 4)

He often modestly claimed unfamiliarity with some of the material in Indian languages but would encourage us to pursue them. Some of my friends who were better with Indian languages were able to for instance read literary texts in Telugu in newer light and revisited them. Visvanatha Satyanarayana the author of the famous novel *Veyi Padugulu* was one of them. Dharampal was, if I am not wrong, aware of and had read P V Narasimha Rao's translation of it in Hindi. Other images of Indian society were indeed possible through these engagements. There was in some sense the possibility of a dialogue between

various forms of understanding Indian society from the purely archival in English language, to literary and other language material, to anthropological insights and gleaning of worldviews by interacting with practitioners or in work with them and a novice. I can for example recollect how Dharampal's work on textiles corroborated with Uzramma's reading of archival material from the British and Indian archives that went along with Srinivas and Ramakrishna's readings of telugu literature that went along with engagement with practitioners in textiles and iron smelting and the 'folk' or 'non-classical' view of the arts from Ravindra Sharma in Kalashram. Novices like me steeped in 'modernity' would often wonder how these could all go together. The unfortunate thing though was that the dialogues between these various modes of understanding Indian society were rarely combined either in space and time where one could see the connections in one place.

Something unique that he probably gave to many intending to practice history is what I would like to believe was the role of the historian. I think he believed that the role of the historian in India was to explore not just written or even oral sources but to provide if need be evidence on how scholars and leaders in India need to have a 'sense of history'. And it is in this that he made better sense of Gandhi than most others. While he understood that Gandhi was no historian he recognised Gandhi's amazing sense of history which he felt many modern day Indians lacked. Historians were often quite pedantic in their overanalysis of events and unable to combine other aspects of social life into their historiography.

In a very insightful foreword to Dharampal's 'Civil Disobedience and the Indian tradition' Jayaprakash Narayan comments on the Indian elite's slavish imitation of the west and indulgence in self-denigration as psychological barriers to nation building. He attributes this to 'a lack of sufficient knowledge about our history, particularly of the people's social, political and economic life.' He further adds that, 'One of the faults of our forefathers was their lack of sense of history, and

their proneness to present even historical fact in the guise of mythology. As a result, even after long years of modern historical research, in India and abroad, our knowledge happens to be limited—particularly in the field of social history.’ JP then goes on to introduce Dharampal’s work connecting Satyagraha and the Indian tradition showing how Gandhi was an important exception to this trend. JP’s pithy summary of Dharampal’s work on Gandhi and Indian historiography needs revisiting. He says, “

Shri Dharampal discusses the origins of Gandhiji’s ideas of *Satyagraha* and throws some new light on the subject. A point that emerges clearly from the discussion is that the primary source of inspiration behind Gandhiji’s science of *Satyagraha* was India’s age-old traditional ruler-ruled relationship of which Gandhiji’s was well aware. In view of his explicit acknowledgement in *Hind Swaraj* of his debt to that tradition, it is rather surprising that none of his biographers or commentators, while they ranged far and wide in search of the origins, gave any attention to Gandhiji’s own words. **But Shri Dharampal’s findings show that Gandhiji, though not a student of history, had a much deeper insight into it than most historians.** Undoubtedly it was this intuitive quality that was one of the secrets of his extraordinary success as a leader of the people. (Vol 2: 4) (emphasis added).

Dharampal’s ending note in *civil Disobedience* is instructive for the connections I propose to make on science, Gandhi and historiography. He says

Thus, while it is admitted that non-cooperation and civil disobedience are legitimate and valid when used against foreign rule, they are treated as illegitimate and invalid when used against indigenous governments and authorities. It is in this context that various leaders of India (not to mention teachers of history, political theory, etc.), while in general standing for an eventually classless and egalitarian society and a welfare state, have in effect allowed themselves to become the new defendants of the infallibility of the present state system. Such a doctrine—and more so, support for it—not only goes against all that Gandhiji advocated and did during his long public life, it is also contrary to the very psyche of the Indian people which has traditionally sustained the practice of non-cooperation and civil disobedience. (vol2:52)

I would like to argue that replace the word state with science and the picture remains as relevant today.

Reflecting on Dharampal's method Claude Alvares believes that Dharampal's 'unmaking of the English-generated history of Indian society has created a serious enough gap today in the discipline. The legitimacy of English or colonial dominated perceptions and biases about Indian society has been grievously undermined, but the academic tradition has been unable to take up the challenge of generating an organised indigenous view to take its place.' He also adds that the materials for a far more authentic history of science and technology in India are indeed now available as a result of his pioneering work, but the competent scholar who can handle it all in one neat canvas has yet to arrive. Till such time as the challenge is taken up, however, we will continue to replicate, uncritically, in the minds of generation after generation, the British (or European) sponsored view of Indian society and its institutions. (Vol 1:3)

Before I embark on how I and a few others of my generation of researcher-activists have benefited by the Dharampal method I would like to acknowledge the discussions by Navjyoti Singh and Ashis Nandy for their comments on the distinction between history and *itihaas* on how concepts such as social history perhaps do not quite capture the range of meanings that the latter has, on how history as an enterprise is often seen as an enterprise of tragic narratives instead of a recollection of how justice would take place. Dharampal clearly in that sense was more a political thinker than an archivist and this distinction should not be lost sight of. However I do find that similar debates exist even in disciplines such as history of technology where scholars trying to interpret events with a larger frame have to contend with historians who have often spent lifetimes studying a particular artefact.⁸

⁸ See Bijker 2002 for a debate between Bijker and Pinch 2001 in response to Nick Clayton's critique on their approach to the bicycle that he felt was incorrect as a specialist historian on the bicycle.

III

Applying Dharampal's method to Science in the Khadi Movement

I think it is this connection with Gandhi and historiography of science and technology that Dharampal pointed that needs to be explored further. Those of us who have interacted with him would agree with me that Dharampalji shared an amazing understanding of Gandhi like few others. It is quite probable that my simultaneous interests on Gandhi and history of technology helped me make connections and in a sense play with his two major streams of work. While looking at some of work on Gandhi's views on science that was part of my thesis I realised how much I actually owe Dharampal indirectly for indicating that such play between history of technology and Gandhiana was indeed worthwhile.⁹

Our early interactions with him while working on indigenous textiles I think gave us important insights into two things - the wealth of the archives and more importantly a mental filter on where to and what to look for. Considering that textiles was an activity that the British were keenly involved in the wealth of the archives was perhaps not unexpected. However most historical studies focused on the grand narratives of commerce, deindustrialization and colonialism and ignored other motivations for exploring history. We for instance were looking at the archives to see if we could use Forbes Watson's work or George Watt's Dictionary of Economic Products of India for learning about recipes on natural dyeing and other textile processes. In this search discussions with many economic historians proved inadequate. Dharampal would lead us to interesting snippets such as the letter written by a woman spinner in Bengal in 1828 that he told us was reproduced by *Young India* or Borpujari's thesis on cotton trade even as the East India company was establishing itself.

⁹ See Shambu Prasad 2002 and 2001 for details.

The healthy scepticism on existing sources forced us in some sense look for other sources or even dissenting elements in existing sources. To add to this was his valuable insight on the British 'process of making extinct' of how for the British by the 1820s or so, most of the non-European world had become, at least in European theory and most conventional history texts, if not actually in practice, 'backward and barbarian' (vol1:3).

I think these insights helped young scholars and activist-constructivists such as us who were foraying into the discipline of history of technology. Later these insights were indeed critical when I was putting together the bits and pieces of information that we had collected on cotton varieties and how actually the disjunct between cotton growing, spinning and weaving processes during British rule actually enabled the characterization of Indian cotton as inferior. We also realized that the process started by the British over a long period of hundred odd years had been accelerated since independence on some of these false notions of the supposed inferiority of Indian cotton. A social history of cotton showed that it was not due to inherent technical defects of desi cotton that found it being branded inferior but a combination of factors involving poor trade and marketing processes and the unsuitability of Indian cotton varieties to textile machinery that were developed primarily on American cotton.¹⁰

In all of this we were drawing upon what one might say Dharampal's method of interpreting history in a non-linear fashion by posing different questions and seeking to draw connections and have a sense of history. Our work with the artisanal communities revealed that peoples' view of their own history has diverged from the view held by intellectuals and academics. We found that though the producer communities seemed to have retained links with their identities as part of the castes or jatis, they had broken off their affiliations to the corresponding professions, skills, and occupations. They proudly relate their descent from mythological figures of the hoary past, but are unaware of the

¹⁰ See Shambu Prasad 2001 for details on the cotton story.

circumstances of recent history by reason of which their occupations declined. It is because producer communities are unaware of their technical histories; they are not able to see a future for their professions. This absence of a sense of history has undermined their confidence in charting their own course. This gap was also evident to us when we found that the technical or professional element was missing in articulations of weavers' politics. The weavers' for instance were unaware of much of the developments in the khadi sector, where there has been substantial work in generating non-English technical literature.

The cotton story drew me towards Gandhi and the khadi movement. The fact that what we had painstakingly realized through archival search was in some sense understood by Gandhi's workers in khadi in some sense intuitively through practice forced me into the khadi archive looking for leads in the cotton story. Reading *Young India* in 1994-95, on a small fellowship incidentally from the CSDS, revealed to me fascinating insights on Gandhi, the freedom movement and also history of technology. Here was a political journal that also carried detailed reports on tree growing of cotton, how to card and the like by a Gandhian that I later went on to write a brief biography of – Maganlal Gandhi.

¹¹Dharampal's critical insights on Gandhi and thorough knowledge on Gandhi's collected works was very useful in providing me with clues on the institutions that Gandhi started. While the more popular ones such as the Congress which he transformed radically have been studied, Dharampal provided us with clues on how he had inspired thousands of people across the country to start their own ashrams and how some institutions such as the Gandhi Seva Sangh had indeed played important supportive roles in the freedom struggle and the planning for independent India. I still recall how his recalling the change of the Gandhi Seva Sangh in 1940 to a Post Graduate Institute for research that Gandhi suggested was something that was not followed by congress leaders then or historians later on. That Gandhi had a vision for post graduation and research provided what one might say vital clues on the hitherto un-researched areas of Gandhi and science.

¹¹ For the relation between Maganlal and Gandhi see Shambu Prasad C 2002b.

So too the fact that much of Gandhi's attention from the early 1930s were focused more on building institutions that would work for independent India and not just for political freedom. The latter as Dharampal would tell us was a matter of time; however the preparation for independent India was something that congress leaders were just not oriented on. His writings on Gandhi also forced me to connect Gandhi with his co-workers and his conception and design of institutions. I was able to follow some of this up in my thesis but what really struck me was that here was a person who had been researched so much by Indians and others and yet there were so many gaps in some of these dimensions that Dharampal had told us about.

I was surprised to actually find that the meticulous minutes of the meetings of organizations such as the All India Spinners Association (AISA) or All India Village Industries Association (AIVIA) at the Teen Murti archives was hardly used by scholars of various hues, even if only to debunk them. Or that little was ever written about Gandhian institutions such as the Gandhi Seva Sangh and even the ashrams and their designs. To this and much else in my thesis on Gandhi and the khadi movement I perhaps owe an indirect debt to Dharampalji.

Not being trained as a professional historian perhaps had its advantage in terms of greater openness to methods that were heterodox. I would like to finally reflect on some of these approaches to history of technology.

Non linear readings of history of technology: S&T could be otherwise

I would like to speak about two insights that I came across from outside the Indian context that I have found useful. The first is from a talk by Prof Wiebe Bijker, a leading historian of technology and one of the proponents of the Social Construction of Technology (SCOT) approach with fascinating stories on the development of the bicycle, bakelite and fluorescent lamps. Wiebe is one of the active members of our 'knowledge in civil society' group and has been an active

participant and resource person in some of our dialogue forum discussions on scholar – researchers from science studies and activists working on diverse areas of water management, sustainable agriculture, textiles etc. At a recent policy workshop we had with some civil society organizations in Orissa and students and faculty at the Xavier Institute of Management he shared with the groups that were not very familiar with science studies a simple definition that I have since found very useful. He said that the key points about science studies was that Science and technology are made by humans (and not discovered in Nature), science and technology are thoroughly political and importantly that ***science and technology could be otherwise.***

I think as researchers and activists this engagement on how S&T could be in societies such as India is and should be a critical area in the history of technology whether as social historians or as technologists. That countries like India could have other routes towards science and technology that need not be western imports but negotiated and even contested domain between what exists and those technologies that seeks to make extinct. Laying bare the contours of the discourse is something that social historians need to engage with in a dialogue with technologists and activists. Such an exploration of ‘roads not taken’ in the history of technology is something that Indian historians need to engage with greater vigour and creativity than they have perhaps hitherto done. We were able to pursue that question of seeking and charting the contours of ‘science and technology could be otherwise’ from history and other sources. History might not have all the answers and might require other modes of investigation. One of our friends, Chitra Krishnan working on tank irrigation and design principles that were behind some of the success of traditional technologies had after an elaborate search of the archives, inscriptions had to settle for a technical simulation of the grand anicut in a laboratory. Chitra had followed Dharampal’s articles and books closely and was the one who gave the ICRIASAT scientist the article on paddy growing in Chengalpattu. She perhaps did not, like me quote Dharampalji

chapter and verse in her thesis, but pursued the same question that Dharampalji provides us clues with – how could S&T in India be otherwise?

In both our works we read and saw historiography of science in India in a non-linear way and were guided in some sense by a view that pluralist India requires non-linear readings of history of science. Such non linear readings are in fact better positioned to give shape to a more rooted science and technology amongst people. In fact civil society experience coupled with looking at trajectories of science and technology missed out in the past can indeed provide practical answers to current problems.

Genealogies of creative scientific dissent can be charted by exploring western sources and dissenting views of western science within the west as well. A recent study on non-linear history of the radio that I came across has insights that are relevant to technological choices in India today whether traditional or modern. “These fascinating stories are rarely told because they tend to fall into the cracks between history and engineering curricula. *Somebody* ought to tell these stories, though, since in so doing, many commonly-asked questions (“why don’t they do it this way?”) get answered automatically (“they used to, but it caused key body parts to fall off”). This highly nonlinear history of radio touches briefly on just some of the main stories, and provides pointers to the literature for those who want to probe further.”¹² Manuel De Landa, the author of thousand years of nonlinear history pushes us understand that history is not linear; instead it is developed by jumping back and forth among centuries. Dharampal clearly showed us how this approach is worth and even necessary in the Indian context. This seminar and a remembrance of him is an opportunity for us to continue engagement with the craft and art of such a great practitioner and I hope that the universities and history departments would at least give the method its due having ignored the person over the years.

¹² <http://smirc.stanford.edu/papers/chapter1.pdf>

References

Bijker, Wiebe and Trevor Pinch. 2002. SCOT answers: Other Questions! Response to Nick Clayton, "S.C.O.T. Does it answer?" *Technology and Culture*. Volume 43, Number 2, April 2002, pp. 361-369.

Borgesse, Elisabeth Mann. 1998. *The Oceanic Circle: Governing the Seas as a Global Resource*. Tokyo, Japan: United Nations University.

Dharampal. 2000. *Collected Works of Dharampal*. Volumes 1-5. Mapusa, Goa: Other India Press.

Landa, Manuel de. 1997. *Thousand Years of Nonlinear History*. New York: Zone Books.

Shambu Prasad C. 2002a. *Exploring Gandhian Science: A Case Study of the Khadi Movement*. PhD thesis submitted to Indian Institute of Technology, Delhi. Delhi: Department of Humanities and Social Sciences, IIT Delhi.

2002b. 'Gandhi and Mahatma: Khadi Science and the Gandhian Scientist'. In Bindu Puri ed. *Mahatma Gandhi and his Contemporaries*. Shimla: Indian Institute of Advanced Studies.

2001. 'Towards an Understanding of Gandhian Science'. *Economic and Political Weekly*. Sept. 29. 3721-32.

1999. 'Suicide Deaths and the Quality of Indian Cotton: Perspectives from the History of Technology and the Khadi Movement'. *Economic and Political Weekly*. Jan. 30 Feb. 5: PE 12-21.