

Innovative Indo-US Collaborations – Missed Opportunities

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It is a paradox of Indian development that while it boasts of one of the largest scientific manpower in the world, studies on science are indeed far and few between. The rich and growing practice of the science technology and society studies (STS or science studies) approach has not reflected sufficiently in debates on science and technology in India. To put it simply the approach of science studies is not anti-science and does not debate the importance of science and technology for development. However it does argue, drawing from diverse disciplinary streams such as the history, sociology and philosophy of science and technology that science and technology are made by humans and not 'discovered in nature'; that science and technology are political and are shaped by social actors. Further, that the practice of science policy in India needs to be more democratic like most other institutions and need not be privileged. More importantly, all these perspectives should help us work towards better science policy making by exploring whether science and technology in a particular context could indeed be otherwise. Or rather are there other ways of achieving the same objectives and if there are instances in the history of science and technology in a particular place or community practices that can lead to newer insights and different approaches for complex problems such as for instance the farming crisis in India.¹

In this paper I follow the science studies approach and pose this question about the Indo US Knowledge Initiative on Agriculture (or KIA for short). I would not like to apriori dismiss the possibility that all collaborations between two nations with unequal power relations are futile. I would rather like to ask, 'if indeed such collaborations are desirable, what it would take, how do we go about it and what lessons if any can we learn from past attempts?'. Put differently, how can the agenda of such collaborations be more broadbased and better informed not just by debates in parliament but also by diverse experiences on agricultural research that seeks to include farmers and other stakeholders in the agricultural innovation system in India?

I take as my starting point three initiatives that have sought to look at agricultural research differently globally. I then use these trends and opportunities to link up with two very interesting Indo US collaborations separated by more than 90 years but which could indeed reveal to us two very fascinating facets to the answer on how else could agricultural science and technology be in India. The first of these initiatives was by an American, a pioneer on agricultural research in India who has been completely ignored by the Indian agricultural establishment – Sam Higginbottom. The other relates to the spread of the System of Rice Intensification or SRI in India where the Indo US collaboration has been very innovative, effective and almost invisible. The paper does not claim that either of these initiatives has all the answers to current day problems but I suggest that these innovative collaborations represent missed opportunities providing us with critical insights on probably what kind of initiatives are better positioned to answer the farming crisis in India and how might one proceed in this regard.

I

Even a cursory reading of the KIA documents would reveal that it misses a key operative word, namely the farmer or his/her viewpoint. There is no reference to the ongoing farming crisis that has seen several thousand farmers' death through suicide in the past decade. While the viability of farming with increasing input costs and unremunerative markets have been the concern of

¹ I thank Prof Wiebe Bijker of the University of Maastricht for explicating this insight on science studies recently in a policy workshop on research and technology for development.

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most researchers addressing the farming crisis, there seems to be little rethinking on whether this supply based strategy of providing technologies would indeed succeed in the current context. As some scholars have pointed out a big difference between the green revolution then and the proposed evergreen revolution is on the unfavourable balance of international trade in agriculture and the increased role of private players in shaping the agricultural agenda of nations in the era of globalisation.²

Does this indeed reflect current thinking on the subject? Not quite if we look at some of the debates on institutional learning and change (or ILAC) in international research centres, the UN Millenium task force on innovation or even the thinking of institutions such as the World Bank on innovation systems thinking in agriculture (World Bank 2006). The question really is how does the KIA link or relate to some of these international debates? Why is it that for instance while the ongoing National Agricultural Innovation Project (NAIP) funded by the World Bank involving the ICAR clearly mentions the possibility and need for greater role for civil society and farmers associations, the KIA sees none. NAIP sees itself, atleast on paper, in the role of facilitating agricultural transformation in support of poverty alleviation through collaborations with other actors in the agricultural innovation system such as farmers and civil society.³ The governing structure of KIA has one entry for Non governmental organisations from the USA. Are there indeed no NGOs in India that are stakeholders in Indian agriculture?

The Institutional Learning And Change initiative among the international agricultural research centres argues that If agricultural research organizations are to be more successful in reducing poverty and increasing the sustainability of production, they must become less isolated, more interconnected and more responsive to emerging needs. In so doing, they must transform themselves into learning organizations, more in touch with field realities and better able to learn and to change. Traditional transfer-of-technology approaches to agricultural research can no longer keep pace with the complex, diverse, risk-prone and dynamic situations faced by poor farmers. Most agricultural research centres were set up with relatively simple goals: to assure food supplies in the developing world using agricultural science to increase the productivity of major food crops. However, as development goals and processes have become more complex and better understood, the research agenda of the Centers has expanded to include the goals of agricultural productivity, environmental sustainability, and a more explicit focus on poverty reduction that recognizes the multidimensional nature of the livelihoods of poor people. Most agricultural research centres are struggling to address this expanded agenda with an institutional design intended for a narrower and simpler task (Watt et al 2003). Coming back to the KIA it is indeed surprising that institutional mechanisms for poverty reduction or environmental sustainability find hardly any mention in the KIA even as the Millenium Development Goals are invoked.⁴

There are other international trends on research and technology for development that the KIA does not seem to sufficiently engage with. One of these is the RTD studies that have been developed in the EU-ACP context that provides for very clear briefs on the importance of policy dialogue in science and technology (. The other is the explicit recognition for university reform models by the UN Task Force on Science, Technology and Innovation. In the latest report of the United Nations, the Millennium Report on how to take forward the Millennium Development Goals, the task force (no 10) that looked at science and innovation (UN Millennium Project. 2005)

² See Pal 2006 for details on trade liberalisation in current day context and Raina (2006) and Purkayastha (2006) for the difference between green revolution earlier and now.

³ See www.naip.icar.org.in for more details on the NAIP project.

⁴ The only mention in the Work Plan of KIA on poverty is the technical part of water poverty mapping. The Draft Indian proposal on human capacity development sees socially responsive graduate students as the 8th or second last outcome.

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had made a special mention about the Earth Institute in Costa Rica to indicate how universities throughout the world are undergoing reform and seeking new models to address challenges of sustainable development and 'creating agents of change'.⁵ The report also mentions in its section on investing in education in science and technology the need for forging partnerships with nongovernmental organizations. These insights are clearly not reflected in the KIA.

II

The Earth University had developed a distinctive and novel curriculum that emphasizes agriculture as a human activity, holistic integration of many academic disciplines, understanding the changing and globalizing world and a philosophy of learning by doing. While the Earth University as a model does not figure in the discourse on reforms of Indian agriculture, an interesting question to ask in the Indian context is whether India had developed its own versions of 'Earth Institutes'. A forgotten history of agricultural science reveals that such models were attempted not in Costa Rica but right in India and through a rather different kind of Indo US collaboration. Sam Higginbottom's efforts at the Allahabad Agricultural University in the early quarter of the twentieth century assume significance. This was one Indo – US collaboration in agriculture that derived from experiences that Higginbottom, the American Presbyterian had from many agricultural colleges in America but assumed quite a different form in Allahabad than the latter land grant universities and the Training and Visit extension models that have been the basis of agricultural universities in India since independence.

Higginbottom was not the first American agriculturist in India nor was the Allahabad Agricultural Institute (AAI) that he established in 1910 the first agricultural college. There were American cotton planters who were brought to India to 'reform' Indian agriculture in the late eighteenth and early nineteenth century with disastrous results. So too the imperial government had earlier set up two other agricultural colleges before AAI at Madras as early as 1876 and in Pune in 1879 to cater to the production of staff for the agricultural service or revenue officials. However Higginbottom was following neither of the examples and his initiative was rooted in a critique on public research in agriculture in India and an alternate scientific practice. Higginbottom's focus was not to produce staff for the agricultural colleges but to equip India with scientifically trained farmers. By the thirties, AAI had established itself as one of the finest agricultural colleges in India with pioneering research in farm implements, the first ever degree course in agricultural engineering, one of the earliest schemes of extension projects and a women's programme in home science. The college also innovated in having a strong social science programme with the famous Charlotte Wisser (Behind Mud Walls) teaching rural sociology in the agricultural university. It was far more comprehensive than any of the other agricultural schools in India then that were almost exclusively teaching centres with little or no contact with villagers or any appreciation of problems facing farmers. The institute provided practical training aimed at producing good farmers. The institute and Higginbottom were involved in one of the earliest programmes on rural development in India at Gwalior and Ujjain (Hess 1967, Wallach 1996).

He modelled his agricultural college in the lines of Ohio State University, his alma mater, and briefly taught at the Bihar Agricultural University but realised that none of his students wanted to be farmers. He hoped at least to train his graduates to listen to the farmers he hoped they would serve and his anguish is reflected in his testimony to the Royal Commission on Agriculture in 1928, "That is our greatest trouble, we know so little about village life, and if that were not the

⁵ Over a four-year period, the EARTH program includes work experience, community experience, entrepreneurial projects, and an internship. Work experience, taking place on EARTH's teaching farms, gives students the opportunity to understand what happens day to day on a farm. Students work with members of the community to plan, organize, and execute projects for the benefit of the community and local rural farmers. This program is designed to promote an understanding of everyday rural family life. UN Millennium Project 2005: 97.

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case we would not be having this Commission sitting here to-day and making inquiries into these matters."

Higginbottom's work did not receive state attention during the colonial regime and finds no mention in the (official) comprehensive history of agriculture in India (Randhawa 1986). It however caught the imagination of Gandhi who found in Higginbottom and his work the kind of agricultural education that India needed. Their correspondence and interaction is interesting for it reveals a trajectory of agricultural science that has been ignored in India. They first met at the lecture series held on the occasion of the laying of the foundation stone of the Benares Hindu University in February 1916, a talk of Gandhi that was historic for he had outlined a vision for the Indian National Congress that was revolutionary and shocking to the members at the same time. Gandhi was in fact asked to discontinue his speech by the chair Annie Beasant who felt it was hurting the sensibilities of some of the princes and educated class who were sitting there. Ironically Gandhi found more in common with Higginbottom's outlook on India's future than the leaders of Congress. Gandhi and Higginbottom were in regular correspondence since about the means to deal with poverty in India. Later in 1934 when Gandhi visited Bihar following the devastating earthquake, Gandhi wrote to Higginbottom seeking his assistance. His letter indicates the regard Gandhi had for him and also the need for work on science by civil society. 'Come, see the afflicted area and tell us ... how (to) drain water-logged areas, how (to) remove the sand which covers our fair fields. Of course the Government and the people are working in unison. But you know my regard for your expert knowledge. Even if you do not show us anything new, I personally will have the satisfaction of knowing that you have seen the area.'⁶

Gandhi had wished that Higginbottom head the agriculture wing of the Congress, an offer that the latter had to decline given the political climate of the times. Gandhi however saw Higginbottom as a part of his dissenting tradition of scientific intervention with a pro-poor focus.⁷ He made Higginbottom one of the scientific members of the Board of Advisors when he constituted the AIVIA in 1934 and sought and valued his advice for scientific experts who could serve village India, establish a dairy farm etc. Some of the other people who were inspired by Higginbottom's work include Leonard Elmhirst, the founder of the Darlington Hall in Devon in the 1920s that has now become a centre for ecological studies and the Schumacher College. Elmhirst was influenced by Higginbottom's work in innovative agriculture, among the peasants of north India that partly inspired Leonard's life-long commitment to land renewal and rural industry. This interest took him to Cornell, USA, to study agriculture (Bakshi 2002).

The above brief sketch of Higginbottom's involvement in agriculture indicates the networks that went along with some of the earlier Indo US collaborations. These networks were keen on bridging the gap between the researcher and the farmer a gap that people like Higginbottom and others felt was more important than yield gaps between laboratory and land. A discussion on the Land Grant Universities and it being the precursor and model for agricultural universities is beyond the scope of this paper. What is of interest is the novel initiative in improving human capacities in agriculture that has strong resonances with current suggestions on agricultural university reform such as the Earth Institute that Sam Higginbottom attempted. There are indeed models of improving human capacities in agriculture that KIA can benefit from if only the agenda is broadbased.

⁶ Gandhi to Higginbottom, March 21, 1934. also see <http://www.mkgandhi.org/letters/chrchmisn/higginbottom.htm>

⁷ One finds elements of such constructive dissent in Albert Howard's Agricultural Testament (1940) as well. The pioneer of the organic agriculture movement in India had sought to see agriculture as an art. He argued for a new type of research investigator who needed to be both a farmer and a scientist. Howard was sensitive to the over specialisation in agriculture and predicted the increasing distance between the laboratory and the farmers' field that has become one of the serious problems with agricultural research.

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From this brief discussion on an early Indo US collaboration we move to a silent collaboration that has been happening over the last few years in India, namely the System of Rice Intensification or SRI in India. As a system of growing rice SRI offers several benefits in terms of water saving, seeds, less chemical inputs and to top this all with high yields. India has been a late starter on SRI, a system that was developed in Madagascar in the late 1980s and has since been in practice in over 40 nations across the globe. Behind this rapid spread in less than decade since it has been tried outside of Madagascar is no multinational company but the work of CIIFAD and Norman Uphoff in particular. The agenda of taking a new system (not technology) to the rest of the world has not received great publicity but has been silently happening through some systematic efforts that has seen collaboration between Indian and American scientists. Uphoff visited India, a big rice producing country, several times before but started speaking about SRI to agricultural scientists and officials since 2002. While the response of research scientists of ICAR had been lukewarm, states that were facing water crises such as Tamil Nadu and Andhra Pradesh were keen to try out newer options to save rice crops. The results have been fascinating with several states in India having experience on SRI and seeing this as a way out the agricultural crisis and debt trap.⁸

Equally interesting and relevant for the discussion on KIA is the process of the spread of SRI. The Cornell International Institute for Food, Agriculture and Development (CIIFAD) has not only been at the forefront due to the consistent and committed effort of its erstwhile director Norman Uphoff, but has in the process established newer 'institutions' for agricultural research. Senior state level officials in TN and AP were sponsored for learning about SRI not to Cornell in USA but to Sri Lanka where a farmer scientist (Premaratne) has done excellent research and training on the skill intensive system of rice growing (see Shambu Prasad 2006 for details on SRI in India). That such a facilitated south –south learning was seen as more effective than an exposure and seminar visit to US indicates a different kind of imagination. The visit had transformed a skeptical plant breeder, Dr Alapati Satyanarayana, the then Director of Extension of the Acharya NG Ranga Agricultural University (ANGRAU) into an ardent protagonist and champion of SRI in India and the world. Not only did this institution lead to technology transfer but also led to newer knowledge in the new global commons. Satyanarayana was later to be an important contributor to the debates on SRI in 2004 also referred to as 'Rice Wars'. The work of CIIFAD was not merely transfer a technology that was environmentally sustainable and at the same time improving agricultural productivity but agreeing to and participating in a vision that allowed for co-production of knowledge. Unfortunately the paradigm of KIA still seems stuck in the transfer of technology mode with unidirectional flow of knowledge from US to India or scientist to farmer.

The story of SRI in India has shown that it is indeed possible and desirable to see knowledge differently. Behind the success of SRI has been the deliberate effort by CIIFAD and Uphoff to maintain knowledge in public domain.⁹ Several farmers, agricultural scientists and citizen sector promoters have accessed information from the internet, sought clarifications and insights from Norman Uphoff and have received immediate responses clarifying their doubts, learning from the field insights and sharing them with an ever increasing network of SRI practitioners. The process clearly has shown that it is indeed possible even today for knowledge flows to occur that can benefit farmers without going through the formal, expensive and often discriminatory intellectual

⁸ See Shambu Prasad 2006 for a detailed account on the evolution of SRI in India.

⁹ The CIIFAD website hosted jointly with Association Tefy Saina the civil society organization that was responsible for SRI in Madagascar is an excellent example of knowledge management in the public domain and knowledge as global commons. It illustrates that partnerships are essential and these need not always be PPP, that civil society has a big role in agricultural development and greater spread is achieved by providing space for discussions between farmers and scientists of various nationalities on equal terms. See <http://ciifad.cornell.edu/sri/> for more details. The organization of material on the website is a good case study on the global commons.

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property regime. The SRI story offers hope not just for distressed rice farmers in AP and TN but also to many stakeholders in the agricultural innovation system in India.

SRI has demonstrated also that to be effective in today's globalised world, global networks help if they are representative and transparent. These innovation networks cannot be restricted to Indo-US bilateral relations alone and need to be seen as part of a new global commons. These often invisible networks that comprise sub-networks such as Cornell alumni show that there is more to improving agricultural productivity than repeating the mantra of PPP or public private partnerships.

Recently the practice of SRI has thrown newer challenges on agricultural research. Norman Uphoff and his colleagues have shown that SRI represents an alternative paradigm of researching agriculture and understanding plants and their ecosystem that gives a greater role for soil biology and root systems research than has hitherto been done. Extending the principles Uphoff has been speaking about the need for a post modern agriculture based on a newer outlook that takes cognizance of recent crises in energy and soils. The language, vision and action plans for a 'postmodern agriculture' seem vastly different from the evergreen revolution model that the KIA seems to implicitly work with. KIA clearly needs to engage with such alternate imaginations of agricultural research even if it does not accept it (Uphoff 2006, Uphoff et. al. 2006).

The examples briefly sketched above are not meant to be replicable in the strict sense of the term. They could even be treated as exemplary or indicative of exemplars and not common knowledge. However what they amply illustrate is the following.

1. Science and technology are important for development.
2. There have been historical and contemporary efforts that have shown different ways of doing the same.
3. These initiatives have not been narrow in their vision but have been clear on the role of farmers in agricultural development.
4. These initiatives have believed in knowledge being in the public (not public sector) domain and have not been constrained by oppressive IPR regimes and lastly
5. The vision of KIA seems to have learnt little from the history of Indo US collaborations and is clearly in light of revision if not complete overhaul based on the above historical evidence as well as recent trends in thinking on agricultural research.

References

Bakshi, Rajni. 2002. The Road to Darlington. *IndiaTogether*. April 2002.
<http://www.indiatogether.org/opinions/smacher1.htm>

Bijker, Wiebe E., Chris Leonards and Ger Wackers. 2001. Research and Technology for Development (RTD) through a EU-ACP Policy Dialogue: Scientific background, Methodology, and Toolbox. Maastricht: University of Maastricht. <http://arno.unimaas.nl/show.cgi?fid=1998>

Hess, Gary R. 1967. *Sam Higginbottom of Allahabad*. Charlottesville: University of Virginia Press.

Pal, Parthapratim. 2006. Trade Liberalization and Poverty Alleviation under the Current Multilateral Trade regime. Discussion paper for National Conference on Promoting Fair Trade in India organized by International Resource for Fair Trade, Nov 13th and 14th at Secunderabad. <http://www.profit.org.in/prof-pal-discussion-paper.doc>

Purkaysatha, Prabir. 2006. Indo-US Agriculture Initiative: Handing Indian Agriculture to Monsanto. *Peoples Democracy*. Vol 30(9). Feb. 26. www.pd.cpim.org/2006/0226/02262006_snd.htm

Raina, Rajeswari S. 2006. Indo-US Knowledge Initiative: Need for Public Debate. *Economic and Political Weekly*. April 29.

"Innovative Indo-US Collaborations - Missed Opportunities": C. Shambu Prasad, XIM-B
Paper for national workshop on 'Indo-US Knowledge Initiative on Agriculture-Whither
Indian Farmer?', November 8-9, 2006, Hyderabad

Randhawa, M.S. 1986. *History of Agriculture in India*. New Delhi: ICAR.

Shambu Prasad, C. 2006. System of Rice Intensification in India: Innovation History and Institutional Challenges. Published by WWF International – ICRISAT Dialogue Project and Xavier Institute of Management, Bhubaneswar. Available at http://www.cgiar-ilac.org/downloads/references/SRI_India_innovation_institutions.pdf

UN Millennium Project. 2005, *Innovation: Applying Knowledge in Development*. London: Earthscan and United Nations Development Programme.

Uphoff, N. 2006. Envisioning 'Post-modern Agriculture'. Discussion paper for the Panel Discussion on 'Post-Modern Agriculture' on 16th November, 2006, Hyderabad organized by the Knowledge in Civil Society Forum and WASSAN, Secunderabad.

Uphoff, N., A. S. Ball, E. Fernandes, H. Herren, O. Husson, M. Laing, C. P. Palm, J. Pretty, P. A. Sanchez, N. Sanginga, and J. Thies, eds. 2006. *Biological Approaches to Sustainable Soil Systems*. CRC Press, Boca Raton, FL

Wallach, B. 1996. *Losing Asia: Modernization and the Culture of Development*. Baltimore and London: The Johns Hopkins University Press.

Watts J, Mackay R, Horton D, Hall A, Douthwaite B, Chambers R and Acosta A. 2003. Institutional learning and change: An introduction. ISNAR Discussion Paper no. 03-10. The Hague: Netherlands.

World Bank. 2006. Enhancing agricultural innovation: How to go beyond strengthening agricultural research systems. Economic sector Work Report, The World Bank, Washington DC.