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***Viewpoint* – Ignorance, Error and Myth in South Asian Irrigation: Critical Reflections on Experience**

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ABSTRACT: As a researcher in South Asia in the early 1970s, I was allowed to be seduced by the (then) neglected topic of water management and small-scale irrigation, which opened the door to a whole orchard of low-hanging fruit, much of it to be plucked simply by wandering around. This led later to time working on canal and other irrigation with the Ford Foundation in Delhi. There I was bemused by the close agreement of the World Bank and the Indian Government, dishonest research, and absurdly impractical policies, until I began to understand the relationships and interests at play, my earlier naiveté justifying a consultant saying "you have to understand, this is India". This was an India I did not wish to recognise. With hindsight, I regret my reticence and timidity: whistleblowers are needed.

KEYWORDS: canal irrigation, critical reflection, error, ignorance, myth, research, water management, World Bank, India, Sri Lanka

THE EXPERIENCE

In recounting experiences of three and four decades ago, I recognise the fallibility of memory, and the ease with which we reconstruct events and experiences to flatter ourselves, show others in a less favourable light, and fit the occasion and audience. What follows is vulnerable to such distortions. Reader be warned!

The theme that weaves through these reflections is how with irrigation we learn and mislearn, our blind spots, errors and myths, how these are generated and sustained professionally, personally and institutionally, and the implications of these for practice. It draws on experiences in South Asia as a field researcher over two years in the early 1970s and then with the Ford Foundation in Delhi for three and a half years in the early 1980s.

With hindsight I can see that I have been fortunate in the freedom and opportunities I have had during my professional life. This has allowed me to change organisations, activities and topics. I owe this to a tolerant and adaptable family, a base in the Institute of Development Studies, Sussex which allowed me to work with other organisations and in other countries, and a series of mentors, managers, funders and colleagues who gave me space and freedom to be a nomad, succumbing to the lure and excitement of emerging topics, abandoning plans, and doing things I had not planned to do. Without that freedom I would never have become involved in water management and irrigation.

The first experience in 1973-4 was with research on the green revolution or lack of it with rice in southeast Sri Lanka and South India. I was a member of a team recruited by Benny Farmer, the then Director of the Centre of South Asian Studies at Cambridge (Farmer, 1977). I was to work mainly on agricultural extension and research. A major questionnaire survey was managed by colleagues. I soon ran into difficulties with agricultural extension. Field staff were unwilling to share the reality of their lives and work, in part because they falsified their diaries. Agricultural extension was anyway well worked over as a subject, fashionable but less important than many believed, and less than thrilling. In

contrast, we quickly found that water mattered much more to farmers than agricultural advice, and water supply and distribution were surprisingly full of intriguing gaps in knowledge. To my good fortune Benny Farmer, Barbara Harriss, John Harriss, Hiran Dias, Nanjamma Chinnappa and others on the project allowed me, even encouraged me, to try to find out and understand more about what we loosely called water management, in this case village-level minor irrigation and individual farmer lift irrigation. I was free to do almost anything and spent months wandering around, observing and asking questions in villages, and benefitting from brainstorming with my generous colleagues and from their insights and ideas. They helped me to learn about how the water-related practices in the villages we were studying in India varied to an extraordinary degree.

This led later in 1981-4 to appointment as a Programme Officer/Project Specialist with the Ford Foundation in Delhi including responsibilities for irrigation, this now including canal irrigation, shared with others (Norman Collins and Roberto Lenton who in turn managed our rural development group, and David Seckler and Deep Joshi). This gave exceptional access to Indian policy-makers, the World Bank and other aid agencies, research organisations, and researchers. I was invited to workshops and conferences, and had time and opportunities to wander around and to write. As a grant-making programme officer I was hopeless, and probably the lowest performer the Ford Foundation had ever had. But as the last Project Specialist (the designation was being abolished) I had scope to spend time on other things. I was also the social scientist in the three-person team that produced the report that was the basis for setting up IIMI (the International Irrigation Management Institute). Later, based on those years in India, I wrote *Managing Canal Irrigation: Practical Analysis from South Asia* (1988), in which learning, ignorance, blind spots, and error and myth, were major themes. I had been simply astonished by what I had come to learn about these and professional and personal motivations and mindsets. What follows here draws on and supplements some sections of that book with more personal experiences, some of which it did not seem fitting to write about at the time.

LEARNING, IGNORANCE AND BLIND SPOTS

Let me take learning first, because it is through learning that ignorance and blind spots come to light.

Of course learning comes from many sources and experiences. But on reflection I am struck by how much of mine came from ground-truthing. This was through wandering around with more curiosity than agenda, observing and being inquisitive, asking questions and listening, but not doing these in depth with anything like the sustained intensity of a social anthropologist but rather looking for surprises and making comparisons, albeit superficial ones.

In the 1970s research on the lack of a green revolution in rice cultivation, my learning owed much to the contributions of others – the 'investigators' who learnt a lot on the side while carrying out the questionnaire survey, and John Harriss who had many deeper insights. He and I shared a fascination with comparisons between the 12 Indian villages in which research was carried out. Each of them had a different system for acquiring, distributing and allocating minor irrigation water, and each differed in its groundwater conditions. We came to realise that had I, or we, studied only one village, we would have supposed that its system was the norm when in fact it was unique. The norm was uniqueness in diversity. (From my days as a history student, I remembered how the stereotype of the Norman manor in England was for long based on one example, following which a succession of scholars announced that they had found an interesting 'exception', leading at last to the insight that 'exceptions' were the norm.)

Two experiences, almost epiphanies, stand out. The first was a wonderful day in the early 1970s with Madduma Bandara in a tank command near Kataragama in Sri Lanka. We paddled through the flooded paddy fields and followed the water to see where it went. We found to our surprise that water in the drains was reused, in fact sometimes more than once. Farmers built brushwood weirs to raise the water level in the drains so that they could supply their fields. And so one could understand why, when there was continuous flow and generous water in the head reaches, irrigation systems planned to be

long and thin became in practice short and fat. And water use efficiency had, we realised then, to take account of this unplanned reuse.

The second was in the early 1980s, wandering around in Uttar Pradesh on different occasions with Tushaar Shah, Niranjana Pant and Deep Joshi, finding out about lift irrigation. We stumbled on water markets: some farmers sold pumped water to their neighbours. This raised a host of questions about power supplies, costs, competition, reliability and pricing. As an economist Tushaar was enthralled and never looked back. He opened up the subject and soon became, and has remained, the leading authority on water markets in India (see for example Shah, 1993).

After we had tumbled to how widespread water markets were, we went casually and unannounced to an accessible and much visited World Bank tube well designed to supply water to perhaps 50 to 100 farmers. We found that unlike the many other World Bank tube wells that had been installed in UP, this one shared the exceptionally reliable around-the-clock electricity supply of Lucknow. Moreover, the subsidised water supply had undercut the local water market with unknown effects on farmers with wells who sold water. And being unofficial wanderers we learnt more bad news about unreliability of water supply, defective construction and so on, all likely to be missed by brief official visitors who would then leave with falsely favourable impressions. So this World Bank tube well was a specimen in the family of much visited 'islands of salvation'. Unperceived by Bank staff, when these tube wells were plonked down all over the Gangetic basin they were duplicating, displacing and undermining existing water markets and livelihoods. One can only speculate whether, had these negative externalities been factored into the World Bank's project appraisal, there could or would have been any such World Bank programme at all; and without the programme, how much unaccounted, out of sight damage would have been averted, and how many millions of dollars saved.

That these findings about drainage water reuse and water markets were new to us must appear quite extraordinary today. But they point to a lesson about ignorance, and not knowing what one does not know. They underline the enduring importance of unstructured visits, curiosity and observation. Had we been informed by consultants' evaluations or officially orchestrated tours or conventional categories or questionnaire surveys based on the professional knowledge of the time, we would almost certainly have been denied these discoveries.

Some ignorance, we came to learn, clustered as blind spots. In the early 1980s, two of these came to stand out. The first and more important was main system management on canal irrigation systems. Repeatedly, evidence pointed to this as a priority for improving performance: farmers raised it again and again; and oversupply of water in head reaches and little and unreliable supply or none at all in lower reaches was an endemic pathology. On the larger canal systems in India this affected the productivity of water and land on millions of hectares and raised big issues of equity. Yet main system management was not a priority: in the professional training of irrigation engineers and their textbooks it was no more than an insignificant aside; engineers' skills, mindsets, and personal financial interests through corruption all attracted them to construction, and not management. And lenders and donors also liked construction because it was easier to disburse large sums quickly on infrastructure which was also more physical and visible than management. So main system management was still in the early 1980s largely a blind spot and an area to explore and try to bring more into the light. Almost inevitably it had to be a wave of the future.

A second blind spot was irrigation at night. On major and medium systems especially at tail ends, and with electricity-powered pump sets with irregular power supplies this was when much irrigation took place. Wandering around was less convenient at night, and I did little of it: research at night means lack of sleep, discomfort including cold, difficulty seeing things, some danger such as slipping and falling, snakes... and risks of violence when illicit activities were encountered. So for years I kept a box labelled *Irrigation at night* and collected and filled it with quotes, anecdotes and snippets from here and there until I could write an article and book chapter (Chambers, 1986, 1988). I calculated that on

major and medium irrigation in India about 40 per cent of irrigation water was either applied or wasted during the hours of darkness. Irrigation at night appeared then to be an important subject and one about which little systematic was known. But I am not aware of any impact that either the article or the book chapter may have had. To my knowledge there has been hardly any follow up. I mention this because not all ignorance is wilful or of disreputable provenance: some is sustained by simple inconvenience.

THE ORIGINS AND RESILIENCE OF ERROR

With so much freedom both in the earlier South India and Sri Lanka field research and in the later years with the Ford Foundation, there was time and opportunity for flexible opportunism and for reflection, combined with privileged access, allowing critical participant observation of policy and practice. Again and again this revealed not just ignorance but stubbornly buttressed and defended fortresses of error. This had several dimensions.

Some of the resilience of error was sustained and reinforced by repetition and uncritical publication. Here are two examples: the first is embedded false statistics, the second is much frequented and cited 'islands of salvation'.

A case of false statistics was the area that was waterlogged under canal irrigation in India. This was repeatedly quoted as 6 million hectares.¹ In the early 1980s the then Secretary for Irrigation told me that when a parliamentarian asked what this figure was based on, he traced it to a Five Year Plan which in turn cited a publication of the Administrative Staff College of India. He sent for a copy of that to be hand-carried by air from Hyderabad to Delhi, only to find that it in turn cited the National Agricultural Commission of 1976, at which point he gave up. Having more time I indulged in statistical archaeology and found that the National Agricultural Commission was citing the 1972 Irrigation Commission. There the figure included 1.85 million hectares in West Bengal where it must have been mainly from flooding as the net canal irrigated area in 1997-8 was only 0.96 million hectares, only half the area reported waterlogged. The lesson was to doubt simple, memorable statistics that many embed and believe through repetition, and to dig down into their archaeology.

The second was frequently visited 'islands of salvation' which were then repeatedly cited and quoted backwards and forwards as personal experience to give and reinforce misleading impressions of feasibility and actual or potential scale. Three stood out: Sukhomajri (Seckler and Joshi, 1982) in Haryana where my Ford Foundation colleagues facilitated a remarkable degree of equity through allocating tradeable water rights to the landless – it received so much attention that for a time the Ford Foundation rented a place to stay in nearby Chandigarh; the Gram Gourav Pratishtan (GGP), an NGO in Maharashtra with a charismatic initiator and patron, Solanki – the GGP allocated water on a per capita basis (enough for half an acre of irrigation per family member); and most markedly and misleadingly of all, Mohini² in Gujarat, where a high profile cooperative system was rewarded with and sustained by a specially reliable water supply and other privileged access. Mohini generated a widely publicised, and almost totally false, impression that there were many water cooperatives in Gujarat and that these provided a model replicable elsewhere.³ I confess that was seduced by Sukhomajri and the GGP and urged their adoption elsewhere. Both were much visited: when I went to Sukhomajri I was in trouble because I took the best guide, denying him to a large party of important officials whom I then bumped

¹ I came to wonder whether there was something particularly memorable, or even transferable, about the 6 million figure, as it was used also by environmentalists for some aspect of land degradation. More detail and references can be found in *Managing Canal Irrigation*, Chapter 1.

² For more on Mohini see *Managing Canal Irrigation*, pp. 59-62

³ Robert Repetto (1986: 33) wrote that "In Gujarat State in India, the irrigation agency sells water volumetrically in bulk to cooperatives, which distribute it and collect fees from their members".

into doing their circuit with a lower status guide; and the Sukhomajri primary school had a small forest of Eucalyptus planted by distinguished visitors whose memorial plaques were a who's who of the agricultural establishment of India and of international organisations. The Sukhomajri and GGP approaches never spread.⁴ Both were far too idealistic, sharing water democratically in ways that could not be reproduced. But for a time, in writing after writing, in workshop after workshop, in conference after conference, in keynote address after keynote address, they were cited as feasible ways forward to a fairer and better future. For myself, I was part of all this, and far too naïve in my optimism. Such is the power of repetition, reinforcement and wishful thinking.

WARABANDI: POWER, IGNORANCE AND ERROR

One advantage of unstructured visits in various states in India was the beginnings of an understanding of water distribution systems on major canal irrigation. The most famous and widely lauded distribution system was *warabandi*, designed into the large systems of Northwest (NW) India. David Seckler went into this in detail. We came to learn that *warabandi* was in part a myth, as its practice diverged from its elegant theory. But that only adds to the force of what follows. In the theory of *warabandi* continuous and constant flows through outlets are shared between farmers day and night for fixed periods during each week. The time allocated to each farmer is proportional to landholding size. *Warabandi* depends on four conditions: a steady supply assured by fixed outlet apertures well below an assured canal full supply level combined with rotation between distributaries and minors for periods of whole weeks; channels to supply water to individual farmers' fields; low rainfall; and identified land tenure for the allocation of timings and turns. These conditions can be found in NW India but probably nowhere else in India. The first in particular, was critically missing outside the NW as most systems elsewhere had gated outlets and relatively low canal water levels. Where this is the case, constant flows through outlets cannot realistically be assured and the system, if adopted, would be unmanageable and a complete nonsense.

As a system, though, *warabandi* was regarded as exemplary. A booklet by a distinguished engineer, S.P. Malhotra (1982), describing its seductively elegant mathematics was accessible and had attracted attention. So *warabandi* was on the agenda of a two-day workshop of the highest level irrigation engineers in the country to discuss policy for the next Five Year Plan. As a courtesy I was invited. To my amazement, horror and disbelief (and self-doubt – surely they *must* know more than me, and know what they are talking about, and who am I, an ignorant unspecialised social scientist from another country, to say anything...?) they believed or talked as if they believed that *warabandi* could be spread throughout India. I felt they must surely know something that I did not. I may have tried to speak up, but if I did it had no effect. I do not recollect any other voice being raised. A collective delusory consensus prevailed. A target was set of 8 million hectares to be achieved in the Seventh Five-Year Plan period. And the outcome was major investment in metal *warabandi* boards giving fantasy timings erected to rust and decay all over India as monuments to top-down ignorance and folly.

This paragraph above is what I wrote in the first draft of this essay. Gil Levine made a wise comment on the draft: "I do think that the knowledge and understanding that many in both the donor/lender and recipient sides have is better than would appear, but the institutional imperatives are such that they effectively mask much of this understanding".

This gave me pause for thought and prompts another explanation: that some or many of those present in the meeting did indeed know that *warabandi* would not work outside the NW. But they may

⁴ However, the Centre for Science and the Environment in New Delhi kept a watching brief on this project and published brief reports on what they found in 1994, 1998, 2002 and 2007, concluding that Sukhomajri became a prosperous village, with household incomes double the average in Haryana as a whole, and was able to sustain that prosperity over time while at the same time adapting to profound institutional and environmental changes. Though not replicable, the changes in Sukhomajri were then deep, lasting and positive (Roberto Lenton, pers. comm.).

also have known the World Bank loans (and patronage – see below) were at stake, that big budgets were projected, that departmental status and prestige were at stake, even perhaps that the 8 million ha had already been mooted and agreed. To raise questions would have been to rock the boat and perhaps even to prejudice one's career and prospects.

Whatever the truth, and it is unknowable, the cognitive and behavioural lock-in of some combination of ignorance, power, prudence, deference, institutional politics and/or tacit connivance over warabandi was far from limited to the senior engineers of the Government. It was also reinforced by the World Bank and its interest in making loans, and its commitment to timed turns in irrigation.

The visit of Daniel Benor, the charismatic and highly influential consultant to the World Bank, came to be, for me, a spectacular eye-opener. Benor was highly respected as a major authority and international figure for his propagation round the world of the disastrous routinised Training and Visit (T&V) system of agricultural extension. As that was gradually being exposed and abandoned as a costly failure, he moved on to irrigation, where the rigid, mechanistic and timed warabandi system had much in common with T&V, Roberto Lenton and I were invited to join him on a field visit to Andhra Pradesh. I think only I could go. I was flattered and went hoping to learn from him. One day stands out vividly. Benor would only speak with farmers, not officials. Time and time again he questioned a farmer and soon the farmer would be saying that, yes, what they needed was timed turns between farmers on their irrigation systems. I was impressed and in awe of his empathy and ability to relate to farmers, and to their unanimity in coming to realise that they wanted timed turns. Only later did I learn, from Robert Wade what must have been happening. Robert had found during his fieldwork in Andhra Pradesh how for occasions like this farmers would be coached by officials for hours beforehand on what they were to say, and that above all they must agree with whatever the important visitor wanted to hear. These farmers, carefully chosen and coached, knew what was expected of them, and agreed as soon as they could with what they could tell Benor wanted. These interviews were followed in the evening by a roundup meeting with about 100 farmers. Benor said how impressed he was that they all wanted to rotate water supplies below the outlet. Then one farmer stood up at the back and objected. The problem was not rotation, he said: it was of getting water in the first place. The tail ends did not get water. "Sit down" he was told. Courageous man, held his ground. "Sit down", he was told again.

The farmer was right. Many leads were telling us that management of canal main systems was a massive blind spot and priority. The overriding need was more equitable, predictable and reliable distribution of water above the outlet. But Benor and the Bank did not seem to want to know about main system management (though this began to change while I was with the Ford Foundation). They had their solution and some were not interested in farmers' problems. I had to conclude too, that, perhaps even more than the senior engineers, Benor simply did not know about the necessary physical conditions for timed rotations to be workable. We were concluding that the major problem and opportunity on canal irrigation systems was not distribution in the chak below the outlet but management of the main system to assure a reliable water supply, especially to the tail ends.

DESIGNING RESEARCH TO 'SUCCEED'

My self-doubt and disbelief were also deep when it came to related research conducted for the World Bank by a consultancy firm, WAPCOS. I had difficulty believing what I found.

The background is that both the World Bank and senior officials wanted construction programmes with big budgets. Their motivations varied. No doubt there was an element of engineering professionalism preferring and valuing construction over system management. More important, perhaps, in the World Bank there were incentives of prestige and promotion in making bigger loans. For

their part, senior Government officials were all in favour of budgets of construction programmes with their high expenditures and opportunities for patronage and corruption.⁵

But there was less and less scope for construction of new systems: the better sites had been taken, and major construction, apart from the notorious and contentious Narmada project, was going out of favour. A growing impediment within the Bank itself was the strong movement, courageously led by the redoubtable gladiator Michael Cernea, for adequate safeguards and compensation for those displaced by dams. So some other way of continuing investment in construction had to be found. A solution was sought in building structures below the outlet. This fitted nicely with the related World Bank interest in rotating water supplies to farmers. The proposal, then, was to build structures so that water supplies could be rotated between new sub-chaks of 8 hectares each. But research was needed to justify this. So WAPCOS, a large consultancy firm that did much work for Government and the Bank, was commissioned to establish what benefits there might be from such a system comparing it with current practice. They did this on two systems in Madhya Pradesh.

Their report of 1979 or 1980 was not easily accessible. Its conclusions were summarised in the public domain (Chadha, 1980: 388) as reduction in the time taken to irrigate the entire chak – 5 to 14 days compared with 20 to 45 days for normal chaks without sub-chaks, and yields 70 to 137 per cent higher than under normal outlets. The field studies

demonstrated dramatically the effect of delivering water through Government constructed channels up to smaller chaks (of 8 ha in this case)... Our recommendations, supported by field studies carried out as part of consultancy services are for 8 ha subchaks... It is a matter of happiness that Govt. of India also accepted these findings and have issued new guidelines on the subject. I do not recollect how I eventually got hold of a copy of the full report. As soon as I had it I spent two whole days analysing the data. It took so long because I could not believe what I was finding. I went over the data again and again. Each time my findings held up (Chadha, 1980).

The evidence in the report in no way justified its conclusions, Chadha's recommendations or the Government policy. None of the alleged benefits were supported: neither acceptance by farmers, nor reduced time taken to irrigate the whole chak, nor yield, nor uniformity of yield could be attributed to rotation of water between the sub-chaks. The data had been generated, manipulated and interpreted in ways which were at best careless, naïve or unprofessional but at worst and most probably knowingly dishonest and designed to mislead.⁶

The research was designed, implemented and analysed to ensure that the intervention was a 'success'. The full detail is tedious. But for the record some of the main flaws and biases were:

- There were three intervention chaks and eleven controls. Of the three intervention chaks, two were eliminated, one because it received very little water, and one because of a severe gall midge attack. None of the 11 controls was eliminated.⁷
- The single surviving intervention chak, Koliary, on which all the conclusions were then based had these special conditions (among others):
 - Location near the administrative headquarters in Raipur

⁵ I do not wish to imply that all officials were directly corrupt. However, Robert Wade's (1982) seminal article exposed the widespread and deeply rooted system. Construction generated huge rents (as much as 50 per cent of the budget). Irrigation officials bought their posts, priced according to their perceived potential pickings. At one time a donor could not understand a 3-month standstill in an aid process, as I recollect, for rehabilitation of tanks in Tamil Nadu. The reason I learnt was that the engineers who could bid for the post of managing the project considered that the rents had been overestimated and the post overpriced.

⁶ For a fuller and slightly more qualified analysis see my book *Managing Canal Irrigation*, pp. 54-59.

⁷ For a more nuanced and qualified analysis see *Managing Canal Irrigation*, p. 56. The main points do, however, stand.

- Location at the head of a minor itself at the head of a distributary at the head of the system, and so with exceptionally privileged access to water
- Farmers were assured a reliable water supply if they would adopt high-yielding practices, including chemical fertiliser inputs.
- Bank loans, fertiliser and HYV seeds were arranged and assured

These were enough to demolish any credibility in the report. I was incredulous and nonplussed that at any self-respecting firm could be so unprofessional or that the Bank or the government could accept 'results' which were so patently and transparently bogus.

What the data from the 11 control chaks showed, reinforced by Koliary and together with a broader survey analysed by Roberto Lenton (1983), did show was quite different. It was that yield varied with position on the main system. The conclusion justified by the data was not benefits from rotation below the chak (treatment of Koliary was so exceptional that if rotation between sub-chaks had had adverse effects these would probably have been masked by other special conditions), but the priority of improving management and water distribution on the main system. That was not what WAPCOS had been funded to find. That was not the tune the piper was paid to play.

I wrote up my (I thought devastating) analysis and sent it to the Bank and to WAPCOS. It was greeted with the proverbial deafening silence. But I persisted and eventually a discussion was arranged. Only WAPCOS was there. After a superficial exchange, it was suggested that I go into more detail with a single staff member. So we went into another room. It was impossible to engage seriously. He kept sliding off the point. Then after a bit he said to me: "you have to understand, this is India".

As for the Bank it never did engage and for whatever reasons (prudence, social, political, other priorities... see below) I gave up but in a rather academic way put it all in *Managing Canal Irrigation*, published some five years later. There was no comeback. I doubt whether any of those concerned ever read it. They would by then anyway have moved on to other things.

There are three footnotes. First, by extraordinary coincidence, one Saturday afternoon I was stranded in Raipur for a few hours between trains. I decided to try to find the officer in charge of Command Area Development, and tracked him down in his home. He was welcoming and delighted to talk. He went out of his way to tell me how he had supervised the research and given special treatment to the Koliary chak, ensuring its water supply, and making sure that the bank loans, the HYV seeds and the fertiliser were all available to all the farmers. He was proud that he had made the research a success.

The second footnote is that ten years earlier in the Philippines Tom Wickham and others had conducted professionally rigorous research on a similar intervention of subdivision and rotation between sub-chaks. They found yield differences between treatment and controls were not significant (Wickham et al., 1974; Lazaro and Wickham, 1976; Wickham and Valera, 1978). Nowhere could I find any reference to this highly relevant research with its unwelcome finding. I concluded later: "the investigation seems to have set out from the start not to learn but to 'succeed'; not, that is, to conduct a scientific investigation of causality, but to show that the chosen intervention made things better" (Chambers, 1988: 59).

I could have been bolder and left out 'seems to have'. Others might have been more outspoken and said that it was grossly unprofessional by all concerned, a case of wilfully generating false findings to justify a costly and dysfunctional project that was likely to be against the interests of India. The 'matter of happiness' about the findings was however shared by WAPCOS, Government of India officials, and the World Bank. WAPCOS had done their duty and gratified the Bank and the Government, no doubt assuring future contracts. The Bank was justified in making large loans, good for disbursement and for careers. And the Government was able to continue construction with its patronage and ample scope for rents. Win-win. What a system!

The third footnote is whimsical. When angry I sublimate through verse. This experience provoked:

How to Succeed with Irrigation Action Research (Delhi early 1980s):

Rural development's all the rage
And irrigation's reached the stage
when funds will flow if you can say
action research is on the way.
The title's new, the techniques old
The pickings rich for all the bold

Success eludes none but those fools
Who do not heed some simple rules.
Reconnaissance you do not need.
Prepare your programme with all speed.
For what to test no need to care
Choose any dogma that you hear

Field levelling and OFD,
8 hectare chaks, warabandi
lining the channels or rotation
conjunctive use, participation –
pick any action that you will
If fashionable, it fits the bill

To choose the site, criteria
Are simple, obvious and clear.
The most important one by far's
a tarmac road for motor cars.
As well, it must be close to town
for rapid transit up and down.

Make sure the water flow is steady.
Have you staff there always ready.
If water's short at system level
get it first and let the devil
take the hindmost at the tail.
For science, your interests must prevail.

Make sure the biggest farmers gain
Their PR's needed to explain
to VIPs on their brief stops
the splendid impact on their crops.
(Small farmers should not be a worry
No one will meet them in a hurry)

Recruit the bankers to your team
and organise a credit stream
Good fertiliser, HYVs
and pesticides are sure to please.
And if you want to get first prize
why then it's best to subsidise

So when it comes to harvest day
you'll be all right – thanks NPK!
Crop-cutters, here's the patch of field

where you will get the highest yield.
 And none will say you are a liar
 if you make it even higher.

If any area does badly
 cut it out, reject it gladly.
 Say special factors made it fail –
 a water shortage, pests or hail.
 The only truth there is to tell
 is found in places which do well.

So all is fine. You have succeeded.
 The will to win was what was needed.
 The yields are treble, water half
 you at the back, what makes you laugh? –
 the farmers, they are satisfied.
 It shows how very hard you tried

Thus is achieved the vital task.
 In praise and glory humbly bask.
 Honoured for service and devotion
 Who knows? You may now get promotion.
 If others fail to replicate
 Poor honest fools, that is their fate

POLITICAL ECONOMY AND 'THE SYSTEM' OF PROFESSIONAL, SOCIAL AND PERSONAL RELATIONS

In Delhi it took me quite a long time to fathom how the system worked. On a personal and social level there was a self-sustaining nexus of professional, social and personal relations, with a political economy linked to careers and income. Let me explain.

For a long time I was bemused to understand how and why the World Bank and the Indian Government always seemed to agree on irrigation policy and projects, and why they would virtually connive in what seemed wilful ignorance and myth as if they did not want to know the truth. Being as I was both close and yet outside, I could see that this seemed to apply to almost every aspect of irrigation policy. This was not just over warabandi, or the programme for infrastructure in the chak below the outlet. Another example came from two consultant engineers of impeccable integrity who did work for the Ford Foundation. They found falsification or a false calculation in the figures used to justify raising the level of the Sardar Sarovar Dam. How could this happen? Who else knew about this? Who knew but did not want it to be known that they knew? How could people get away with such things?⁸

Gradually I came to see significant influences, and now five stand out:

1. The most obvious was the common interest in large loans. Having a big budget and being able to disburse it in a timely fashion was good for both World Bank and GOI staff. This was a major driver.

⁸ Their finding was less surprising in the light of the subsequent Independent Review of the Sardar Sarovar dam in the Narmada valley led by Bradford Morse (Morse and Berger, 1992). They concluded that the Bank had seriously violated its own policies, that these violations had devastating human and environmental consequences, and that it was difficult to escape the conclusion that there had been gross delinquency (pp. 233-234 and passim). The Morse review led to setting up the Inspection Panel of the World Bank, which provided a mechanism to avoid repetitions of the Narmada case by giving voice to people who would be harmed by such violations (Roberto Lenton, pers. comm.).

2. Officials gain in status and power by working on secondment to the World Bank or on a World Bank project. They would proudly give me their cards with World Bank printed on them. I overheard officials asserting their power to get things done by saying "The World Bank is coming". On one possibly apocryphal occasion a Bank official and his opposite number were arguing and disagreeing in front of other Indian staff. In a tea interval the Indian said to the Bank person: "for goodness sake. You are weakening. Don't"! He must have needed to be seen to be dominated and overruled by the Bank. Such tacit or explicit understandings may be widespread but I have never seen them noted in the literature.
3. Much less obvious was the patronage of World Bank consultancy or employment. World Bank fees or salaries were much higher than those of the Government so it could pay personally to get a good reputation and then employment with the Bank. Also significant was the prospect of consultancy after retirement from Government service. I only realised this when I was invited to a Bank retreat of its staff together with consultants who were commissioned for work on rural development. A significant proportion of those present had been at the top of the irrigation hierarchy during the last two or three years of their careers and on retirement had been hired by the Bank. One could understand that others at the senior policy level with similar hopes would be inclined to agree with whatever the Bank wanted.
4. Then there were institutional interests affecting us all to some degree. Our organisations needed good working relations with others. In the Ford Foundation we had a lot of independence and support from whoever was the Representative, but all the same it did matter that we got on well with the Government. There was always the lurking possibility of causing an upset and having to answer for it.
5. Finally, there was a social dimension of dinner and cocktail parties, children at the same school, friendships and the Ford Foundation swimming pool. The prevalence and significance of dinner parties is easy to exaggerate – it is in my experience an overblown stereotype; but cocktail parties could be important for the wider mix of actors they brought together, the ease of meeting and talking across levels in hierarchies, and the opportunities for networking and informal communication. Schools were also important among expatriates. Many in the Bank, the Ford Foundation, and bilateral and international agencies, had children who went to the American School (as two of ours did – the third went to the English school) and through the children, their friends and parties, relationships and friendships developed also between their parents. Then for us there was the Ford Foundation pool on Lodi Estate. The World Bank offices were next door and World Bank staff – some of them at least – had access to the pool. We and our families often met there in the early evening for a swim and chat. So out of this came a sense of community and a reluctance, on my part at least, to be too proactive in confronting myth and error. I too was part of the system.

SO WHAT? REFLECTIONS ON REALISM AND HOW TO MAKE A DIFFERENCE

These experiences point to how power, budgets, professional training and orientation, personal careers and incomes, and social, institutional and political interests and constraints can interweave and interlock with ignorance, not knowing what is not known, and not wanting to know, and telling power what it wants to hear. This matters because in irrigation, as in other fields, ignorance, error and myth can lead to massive misallocation of resources, as they did with irrigation in India in the early 1980s.

How in conditions like these does one find out and learn, uncover blind spots, and make a difference?

On finding out and discovering and uncovering blind spots, what I learnt was the value of wandering around, and what we learnt as a result about both canal and lift irrigation. Such wandering around is

best unannounced and done without ceremony. Governments, aid agencies, NGOs and many academics are hopeless in the extent to which they fail to recognise and practise this. They allow their staff to be overloaded and tied down in their offices, and trapped in capital cities by meetings, administrative procedures, visitors, workshops and much else, and so to be out of touch and out of date. Time and resources have to be ring fenced for unstructured visits. This is as vital for good development practice as it is impeded by the current results-based culture, among aid agencies at least. As it is, such opportunities for learning are largely confined to consultants and junior researchers.

On influencing policy and practice the lesson was the lack of straight lines. There are tangled webs of intertwining interests, commitments, perceptions and misperceptions, tacit unspoken understandings, diplomatic silences, and unseen processes. I was one of those arguing for priority to main system management, and writing about it. But I do not feel there was much direct success. In the Ford Foundation we could have indirect influence by negotiating and making grants for research, by writing, and by discussions with a wide range of actors, but these were at several stages removed from major decisions and actions. A minor wrinkle on this to be noted with a wry smile was that because we had ourselves some limited patronage through grants, our views were sometimes treated with unwonted respect and deference: people would tell me how valuable and insightful they had found my writing. On two occasions a consultant who worked for the Foundation gave keynote speeches to which I listened nodding with appreciation for their sound sentiments until I realised that he was parroting verbatim whole chunks of my writing (was this plagiarism or flattery?), but this at least gave them a wider circulation and authority.

The scope for influence through negotiating grants seemed obvious but could be constrained. The best grantees were already overcommitted with projects. Grantees who had been over-persuaded could drag their feet. And in practice in those days grants would overrun. Or what happened would differ from what we had expected. The elastic between local priorities and those of the Ford Foundation could also be overextended. The Foundation had women's participation as a priority. Roberto Lenton and I visited the Mahi Kadana project in Gujarat with this high on our agenda. The engineers who greeted us had organised a day's visit around *their* agenda – rising water tables. We stared in dismay at seriously saline soils and wondered how they could conceivably be linked with women's empowerment. Somehow a project was put together, but I did not envy Lincoln Chen, the Representative, having to justify it in New York.

Probably the biggest opportunity for influence I had was as the social scientist on the three-person team set up to consider (this was a third attempt) an international organisation in the CGIAR to be concerned with irrigation. The leader was Ernst Schulze who had a physical and agricultural sciences background, and the other member Philip Kirpich, an engineer. It seemed to me vital that any such institute should have a strong social science orientation, and give some priority to main system management on large gravity irrigation schemes. The three of us got on well but I sensed a danger of too strong a technical orientation. I remember the last days of drafting in Wageningen. I had gone into special training so that I would be fit and alert and able if necessary to outwork and outdraft the others on that final push. For whatever reasons, the report got a fair wind, and IIMI⁹ was set up in Sri Lanka.

⁹ There was much debate about what IIMI should be called. It became a bit of a cliffhanger.

So we can't have Service, and Centre's out
 we're feeling nervous, time's running out
 let's call the brute an Institute
 but that won't do - an institute's too formal too
 Consortium? Consociation? Cadre? Cluster? Federation?
 Core? Or Corps? Or Core Corps? No - it's more like Archipelago
 Headquarters, Focus, Node or Hub are too damned central, that's the rub
 Bureau's too office-bound, the field is where we find all truth revealed
 and Agency's a private eye or CIA, a public spy

Tom Wickham was the first Director-General, and Roberto became the second Director-General and David Seckler the third. And they did indeed have a huge and formative influence through their position.

For realism, reflexivity is one key and being aware and critical of social, political and personal factors which distort perceptions, policies and practice. If perceptions are to be realistic, if policies are to be well informed, and if practice is to be good, self-critical awareness is vital. I do not think we are at all good at this in development practice.

Finally, to bring realism and influence together to make a difference for the better, a key ingredient is honesty and courage. Here with hindsight I regret my reticence and timidity. My failures stand out. I did not confront power face-to-face. Had I been a different person, I would have been more aggressive. I would have rocked the boat. But then I was a staff member of the Ford Foundation, which had its own political position to protect, and what I found out and came to understand was not part of any formal terms of reference that I had. But I could and should have spoken up about warabandi. I could and should have confronted Benor. I could and should have persisted in exposing fraudulent research. It is very late – three decades too late – to say all this. I only hope that it will encourage others to be bolder so that policies and practice can be better grounded in realities and so that they better offset the professional, institutional and personal forces that so easily distort perceptions and generate and sustain misleading and damaging myths. We need not just to struggle to know reality. We need whistleblowers. And we need them to blow more and a good deal louder than I did.

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REFERENCES

- Chadha, O.P. 1981. Irrigation system management and research priorities. In Tamil Nadu Agricultural University (Ed), *Field research methodologies for improved irrigation system management*, pp. 65-75.
- Chambers, R. 1986. Canal irrigation at night. *Irrigation and Drainage Systems* 1(1): 45-74.
- Chambers, R. 1988 *Managing canal irrigation: Practical analysis from South Asia*. Delhi: Oxford and IBH, and Cambridge, UK: Cambridge University Press.
- Farmer, B.H. (Ed). 1977. *Green Revolution? Technology and change in rice-growing areas of Tamil Nadu and Sri Lanka*. London and Basingstoke: Macmillan.
- Lazaro, R.C. and Wickham, T.H. 1976. Improvement of canal irrigation systems' facilities: Technical and management concepts. In *Proceedings of a Workshop on Implementing Public Irrigation Programmes*, Honolulu: East-West Center.
- Lenton, L. 1983. *Management tools for improving irrigation performance*. Discussion Paper No. 5. New Delhi: Ford Foundation.
- Lenton, R. 1986. On the Development and use of improved methodologies for irrigation management. In Nobe, K.C. and Sampath, R.K. (Eds), *Irrigation management in developing countries*, pp. 47-66. Studies in Water Policy and Management No. 8. Boulder and London: Westview Press.
- Malhotra, S.P. 1982. *The warabandi system and its infrastructure*. Publication No. 157. New Delhi: CBIP.
- Morse, B. and Berger, T. 1992. *Sardar Sarovar: Report of the Independent Review*. Ottawa: Resource Futures International Inc.

The situation's really grim I do not feel my mind's in trim
INTRIM!? Thanks Freud. You're just in time to give the name and one last rhyme
International Network for Training and Research in Irrigation Management

- Repetto, R. 1986. *Skimming the water: Rent-seeking and the performance of public irrigation systems*. Washington, DC: World Resources Institute.
- Seckler, D. and Joshi, D. 1982. Sukhomajri: Water management in India. *Bulletin of Atomic Scientists* 38(3): 26-30.
- Shah, T. 1993. *Groundwater markets and irrigation development: Political economy and practical policy*. Bombay, Delhi, Calcutta, Madras: Oxford University Press.
- Wade, R. 1982. The system of administrative and political corruption: Canal irrigation in South India. *Journal of Development Studies* 18(3): 287-328.
- Wade, R. and Chambers, R. 1980. Managing the main system: Canal irrigation's blind spot. *Economic and Political Weekly* 15(39): A107-A112.
- Wickham, T.; Giron, D.; Valera, A. and Mejia, A. 1974. A field comparison of rotational and continuous irrigation in the Upper Pampanga River Project. Paper presented at the Saturday seminar, 3 August 1994, IRRI, Philippines.
- Wickham, T. and Valera, A. 1978. Practices and accountability for better water management. In International Rice Research Institute (Ed), *Irrigation policy and management in Southeast Asia*, pp. 61-75. Los Baños: IRRI.

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