Smoke, mirrors and poverty: communication, biotechnological innovation and development

Other

SMOKE, MIRRORS AND POVERTY: COMMUNICATION, BIOTECHNOLOGICAL INNOVATION AND DEVELOPMENT.

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ABSTRACT

Communication is essential to making biotechnology and genomics relevant to developing countries and poor people. Few would disagree with that. But many are sceptical about public relations efforts to impose inappropriate technological 'solutions' on developing countries. This paper is a partial reflection on how PR and advocacy 'mixes' can be understood and whether they can be useful to innovation in developing country contexts.

This paper has several aims: First to consider why communication has become more important in the area of innovation and development; Second, we look at how two biotechnology related public-private partnerships have used public relations and advocacy to further innovation in development and pose some questions about complicated aspects of communication, technological innovation and development. We suggest that it is increasingly difficult to classify communication efforts associated with technology for development initiatives as PR or advocacy or according to the preconceived notions about who the messenger might be; Third we look at some of the methodological and theoretical implications of the analysis. Discourse analysis, which encourages us to unwrap layers of meaning in the text but which often treats texts in the abstract, unrelated to broader institutional developments or to 'evidence' of any kind, is of limited help in achieving a more grounded analysis of communication efforts. Communication and voice are essential 'capabilities' in development and we suggest that we need a more sophisticated approach to thinking about communication capabilities as technical, and social and political.

INTRODUCTION

During the past two decades, communication of various types has become more central to those studying innovation and development. There are multiple reasons for this which in no particular order include the following. First, most of those working in innovation economics and technology studies now fully accept the idea that the linear model of innovation is extremely limited and that non-linear communication between producers, consumers, researchers and developers is essential to productive innovation. To restate this perspective very briefly: the linear model whereby science seamlessly becomes technology that smoothly translates into products has been widely criticised and is now acknowledged to be a misrepresentation of the way most innovation happens (Dosi, 1998; Lundvall, 1992; Nelson, 1993). Most innovation does not start in the labs and even that which does depends on complex interactions between scientists, professionals such as agronomists or doctors and consumers and patients.

Moreover, strategies to create S&T and innovation capacity cannot simply involve investment in science and research in the hope that productive applications will emerge somewhere down the line (Dyker, 1997; Forbes and Wield, 2002; Chataway et al, 2005). Innovation and technological capacity depend crucially on creating shared learning about the particular challenges and tasks involved in particular productive activities. In brief then, multifaceted communication and participation of different stakeholders, including consumers is essential to successful innovation. Diagrams such as the following taken from Tidd et al emphasize the interactive nature of innovation:

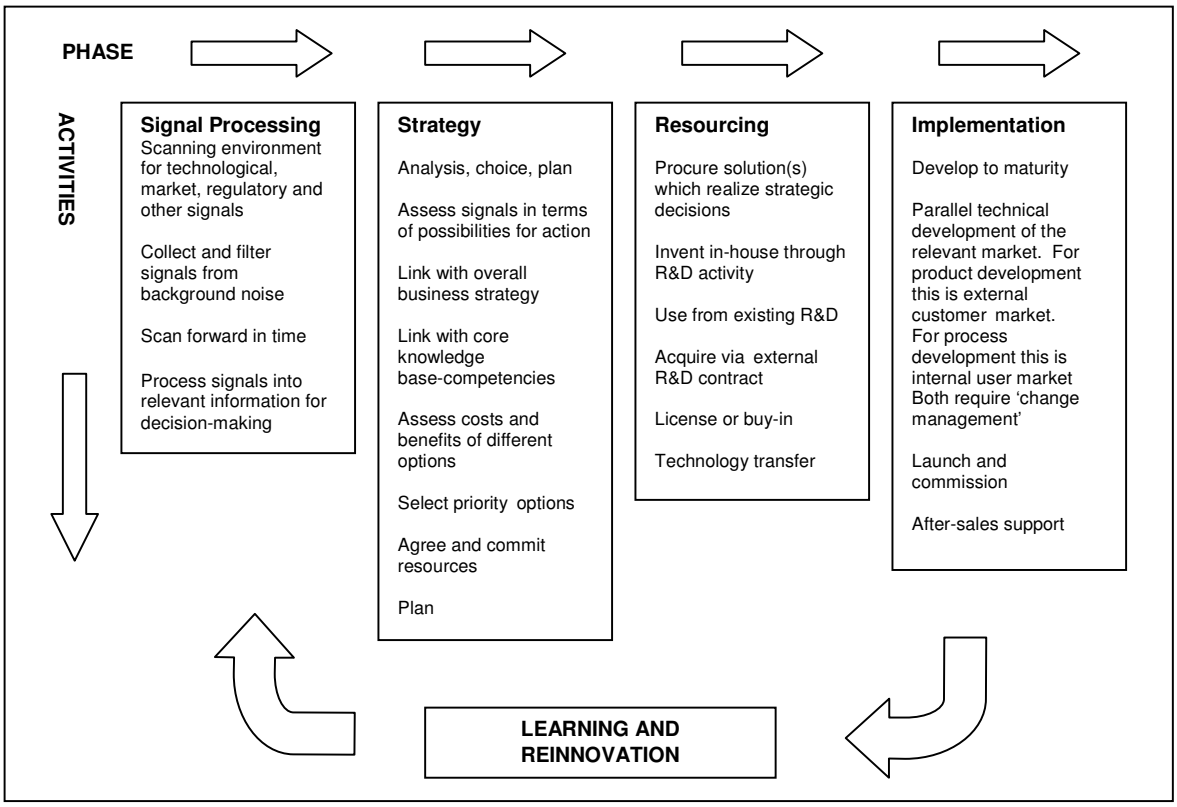

Figure 1 Routines underlying the process of innovation and management (J. Tidd et al, 2001)

Interaction of course requires communication: technical communication, both tacit and codified; marketing; public relations; and, in development contexts communication associated with participation interventions.

Second, in development work, advocacy is increasingly important as a development tool; most aid agencies and analysts now think that changing policy, resource flows and the broader political and economic environment through lobbying is far more effective than endless discrete lumps of aid bundled into projects.

The term advocacy is used to refer to a wide variety of activities. In an environment where funding for development projects increasingly flows from a complicated mixture of private and public sources, where political lobbying and media engagement with development on national and international stages is used to generate development funds[1], public relations and advocacy work is increasingly important in order to secure

[1] As Smith and Yanacopulos (2004) note for example the events of September 11 and the invasion of Iraq "have prompted increasingly public positioning, particularly by some governments, of development as a key weapon against global terrorism, requiring the media to interweave agendas of humanitarianism and war and in doing so, engage with the complexity and the politics of poverty and development" (Smith and Yanacopulos, 2004:657)

funds for development work (Mosse, 2004). This is a general trend within development but the trend certainly holds for development related innovation work with large product based health related public partnerships. As we will argue later in this paper, the International Aids Vaccine Initiative (IAVI) and some of the more recent agriculture biotechnology based PPPs use complicated mixes of advocacy and public relations to justify funding.

Participation is an essential ingredient in this communication mix. Bottom up communication, based on participation at grassroots level has to ensure that top-down lobbying efforts are relevant. Advocacy has to be rooted in the needs of the poor and participation is the only way to ensure that the voice of the poor is being heard. Even though there is now a strong critique of some of the more simplistic approaches to participation (Hickey and Mohan, 2005) multi-layered communication between policymakers, government and non-governmental organisation (NGO) managers and the targeted recipients of aid and development projects is widely accepted as a starting point for development efforts. Thus communication is important to development work in ways that it has not been in previous eras.

Moreover, in this new era development practitioners have become adept at packaging projects in terms of implications for policy rather than according to more concrete targets. This then becomes another way in which the communications game is played out in development (Mosse, 2004).

Third, science and technology have become lightning rods for a wide range of concerns connected to control, corporate power, governance and risk. This phenomenon has been the focus of a great deal of work by social scientists (Beck, 1992, 1999; Irwin, 1989; Wynne, 1996). This is particularly the case with biotechnology (Juma, 2005) and has meant that new innovations in this area tend to become embroiled in a 'war of words'. Communications strategies and capacities to deal with the politics of innovation have become important to those in favour of and those against the technology (Chataway et al, 2004).

Fourth, within social science itself there has of course been a seismic shift in importance attached to looking at communication as a result of post-modernism and other perspectives which highlight the importance of narratives and discourse. In the context of development studies this tradition has tended to be broadly dismissive of the 'discourse of development' (Crush, 1995; Sachs, 1992; Shiva, 1991). Many of the well known critiques are from macro and quite abstract perspectives. Their principle concern is to show that the discourse of development distorts the conflictual social, economic and political realities of poverty and processes for overcoming poverty. A major thrust of the critique is how standard development communication channels exclude the voices of the poor. We argue on the basis of examples in this paper and other work carried out by INNOGEN researchers that this critique does not capture the full complexity of many development initiatives and we return to this point in the conclusion.

Thus, in various ways communication is increasingly essential in the spheres of both innovation and development. At the same time, however, communication efforts, public relations and spin in particular are widely viewed with suspicion. It is ironic perhaps that at the same time that we have become increasingly cynical about 'spin' and public relations, advocacy has become the favoured development tool of many development

agencies. Advocacy is clearly popularly thought of as distinguishable from PR and as 'good communication'.

Yet, scratch the surface of what actually constitutes good communication and interesting observations, anomalies and a series of conflicting concepts come into play. PR type efforts in some instances do not seem so bad and advocacy not so straight forward. Judging communication efforts in relation to science, technology and innovation in developing countries is becoming more complex and we argue more necessary.

The following sections draw on work that we have done as part of INNOGEN associated research projects looking at North-South knowledge flows in biotechnology and genomics. The projects had quite a well defined focus looking at how public-private partnerships and networks contributed to capacity building in agricultural and health biotechnology in developing countries. We have documented the findings related to the central research questions in a number of places (Ayele and Wield, 2005; Chataway and Smith 2006; Chataway 2005; Harsh, 2005; Smith 2005). These publications do look at some aspects of communication (as examples: International Aids Vaccine Initiative's (IAVI) approach to knowledge management and the way in which the IAVI prioritises tacit knowledge as well as more formal codified knowledge and the relevance of communication and participation in governance of technology). However, they have only touched a set of issues to do with the way in which initiatives and projects we looked at used public relations and advocacy techniques to further their aims and objectives. From the beginning, it was clear that these types of communication were central to a number of the projects we looked at and in some cases were themselves the subject of heated debate and controversy. The following sections on IAVI and the tissue culture banana projects in Kenya try to explain why advocacy and PR are so important to these projects and try to ground a preliminary and partial analysis of how these initiatives use communication in a broader understanding of their organisational and institutional roots.

The International Aids Vaccine Initiative (IAVI): Innovation driven by communication

This section address some of the issues outlined above in relation to the International Aids Vaccine Initiative (IAVI). During the past 18 months INNOGEN researchers have done extensive fieldwork looking at whether and if so how, IAVI contributes to capacity in science, technology and innovation in developing countries[2].

IAVI; background and achievements.

IAVI is a large international public private partnership devoted to creating a preventative AIDS vaccine. Its headquarters are in New York and it works in 22 countries including those in which we did fieldwork in Kenya, Rwanda, Uganda, South Africa and India. Our aim in looking at IAVI was to look specifically at what IAVI was contributing to developing countries in the way of technological capacity building. So, our question was about whether IAVI is contributing to north-south technology knowledge flows in biotechnology

[2] Joanna Chataway, James Smith, Rebecca Hanlin, Aparna Joshi have all been involved in interviewing IAVI staff, staff from partner organisations and relevant policy and NGO people in India, Kenya, Rwanda, South Africa and Uganda.

and genomics. The smoke and mirrors title of this paper comes from a comment made by a Professor of international Public Health who when we told her what we were doing, said something along the lines of 'IAVI – its all smoke and mirrors – a techno-fix effort designed to enhance to careers of wealthy country scientists. Great PR work, some good science but not much real involvement from developing countries'.

Judging IAVI by previous efforts to create vaccines for the world's neglected majority one could be excused for thinking that it might be a Western dominated effort which, if it created a vaccine, might justify itself in the absence of having done any significant capacity building (Muraskin, 1998).

However, in the course of our work we became increasingly convinced that the case of IAVI offers a different model of vaccine development. We do not think that IAVI is just smoke and mirrors but we do think it uses public relations and advocacy in powerful ways. Our conclusions are that IAVI is complex and interesting and partly this is because, in important respects, IAVI is led by its communications strategy.

Although it has not yet achieved its central ambition of creating and distributing a vaccine, it has achieved three main things. First, it has raised very large sums of money, over $340 million by 2004. This money has been used to fund the development of promising vaccine candidates and to raise awareness about HIV/AIDS and the need for a vaccine. Second, and intimately connected to its first achievement, it has created widespread awareness of the potential impact of vaccines and the role that cutting edge science ad technology can play in the fight against AIDS in developing countries (Skolnik, 2003). It has put the possibility of an HIV/AIDS vaccine, and awareness of the need for very considerable investment, on the agenda of every development agency in rich countries, and has been very active in recent G8 related discussions about International Financing Facilities (IFFs) and so on.

Some of this work might best be labelled advocacy and some of it is clearly more accurately described as public relations. For example, in 2000 a photo of Seth Berkeley, IAVI's CEO, appeared on the cover of Newsweek magazine with a caption 'Can this man stop AIDS'. This is could be classified as public relations. IAVI's serious and considered consultations and inputs into discussions about advanced purchase agreements for AIDS/HIV vaccines is probably best labelled policy related advocacy. However one labels this type of activity, it is clearly different from the grassroots advocacy that many development initiatives claim to carry out. But IAVI has also been extremely active in 'grassroots advocacy'. Indeed, in order to carry out clinical trails in different locations it has had to do this work. It always works in partnership with local grassroots organisations and so has worked closely with local NGOs and community based health groups, in educating about HIV/AIDs in general, informing about vaccines work and carrying out and preparing communities for vaccine trials. It has a strong reputation for the integrity of its work at the grassroots level (Skolnik, 2003; Chataway and Smith, 2006). Although IAVI is clear about its mission, creating and distributing a vaccine, it is also clear that in order for it to fulfil its mission effectively, it must work in partnership with groups at all levels and in particular understand and work in conjunction with grassroots organisations.

IAVI has also invested very considerable amounts in infrastructure and in training in African countries and has contributed to capacity building in both Africa and India. We

have provided detail about capacity building in other publications (Chataway and Smith, 2006; Rosiello and Smith, 2005) but as summary examples IAVI has done the following:

- building and refurbishing of laboratories including a state of the art clinical unit at Uganda Viral Research Institute (UVRI) and substantial investment in the Kenya Aids Vaccine Initiative's (KAVI) infrastructure and equipment;
- creation of a large network of AIDS vaccine testing sites and the world's first consortium of laboratories for conducting validated HIV immune response assays;
- the provision of funding for running expenses and the training and updating of scientists' and technicians' knowledge including ongoing training courses on Good Clinical Laboratory Practice (GCLP). IAVI works with a core laboratory in London to ensure that sites are able to follow GCLP. Training is carried out in London and in local labs.

Thus in Africa then substantial amounts of money have been invested in infrastructure and in training (Chataway and Smith, 2006). IAVI has worked with speed and efficiency, combining focused activity with real evidence of capacity building and engagement with Southern partners. Importantly interviewees from Kenyan, Ugandan and Rwanda facilities all feel that largely as a result of engagement with IAVI they have the potential of turning their units into clinical trials centres of excellence dealing not only with HIV/AIDS vaccine but with a range of drug development projects. This is an unusual story then, of capacity building activity.

In India where technological capacity is relatively advanced there was still a need to provide access to the latest developments at an international level. In India (as in a number of other developing countries where IAVI is operational) a Memorandum of Understanding exists with ministries and research institutes and close relationships with NGOs and private sector companies are also pursued. Considerable effort has been put into bringing together policy makers and private sector companies in discussion about the role that Indian institutions could play in R&D efforts and in manufacturing efforts should a vaccine result.

Communications led strategy

An interesting question is why IAVI pursued this strategy. Why did it not just focus on creating a vaccine in the best labs in the world and in the shortest time? Given the urgency of the challenge IAVI confronts there would have been an argument for taking that approach. The answer seems not to be because in addition to scientific and PR and advocacy efforts, IAVI decided to be a good citizen in developing countries. The very hefty investment, the enormous effort involved in creating solid and meaningful partnerships in developing countries, is not an 'add on' to other efforts so much as it ia a consequence of taking communications extremely seriously and in some sense letting the communications concerns drive the work. IAVI is an organisation driven and dominated by its concern with communication. And that has led it in interesting directions with some very interesting results.

As mentioned, IAVI is headquartered in New York. Importantly, the majority of IAVI's Directors do not have research science backgrounds and a high proportion of IAVI managers have experience in advocacy and communications, many with mixed private and public sector backgrounds.

It started its work on vaccine development in Kenya. These efforts were between the Kenya partner (KAVI), the Oxford Medical Research Council laboratory and IAVI in New York. IAVI at that time did not have a regional office and it could well have been characterised as a US or 'Western' led effort. This danger was highlighted by an independent review (Skolnik, 2003). It quickly became apparent to IAVI that if it was to develop local support (which is absolutely essential if a vaccine is to be distributed effectively) it would have to work in such a way that it had local partnership at its core and prioritised local communications as well as lobbying efforts at the international level.

As a consequence of this desire to build real political demand and support from the grassroots level up, IAVI needed to make sure that efforts were seen as locally appropriate endeavours. The AIDS vaccine initiative needed to be owned by developing countries, and compromises and concessions to capacity building in developing countries had to be made. IAVI committed to that effort and let it influence the work it does in fundamental ways.

Commenting on the way in which operations were established in India, where an Memorandum of Understanding (MOU) was signed with two government bodies at the outset, one IAVI interviewee said "It's a partnership with governments and we always accept that…it's a three way partnership, NACO [the National Aids Control Organization] and ICMR [the Indian Council of Medical Research] and us and we are the junior partners and we accept that". The interviewee went to talk about the importance of relationships with NGOs and civil society, both for operational purposes and in terms of legitimacy, "…government told us quite early on that in India if there was significant opposition in civil society, it didn't really matter much what government wanted or didn't want, we wouldn't get to do it…India is a democratic country and that's clear".
The strategy of combining advocacy, PR (IAVI's CEO, Seth Berkeley meets regularly with India's political, community and medical leaders) and more participative approaches was highly successful in this case. Close relationships have been forged with community groups and NGOs and the emphasis on advocacy and relationship building is noted by an independent reviewer as having been particularly strong.

> One informant noted that, "If IAVI had not come, India would not have taken a vaccine initiative so soon and so strongly". Another said that "vaccines would have been a non-issue (in India) without IAVI." (Skolnik, 2003).

Apart from commitments to developing infrastructure in African countries, IAVI's communications focus has had other consequences. For example, in Africa IAVI conceptualizes the vaccine trials themselves as an advocacy programme. The trials provide a lot of publicity, drive state engagement, and provide communities with the opportunity to begin to engage with issues around their fundamental needs, their rights with respect to biomedical ethics, and essentially drive African demand for a vaccine, at a political if not an economic level. This is an important component of IAVI's work on access to a vaccine should it become available. One interviewee from the East Africa regional office said the following:

> …I bet you that is what he (interviewees' boss) is doing right now, that's why he is not in the office. He's sensitizing the community, and we define community very broadly, and sensitizing the community so that people are aware and people understand that people are aware and people understand that the vaccine does have a place in HIV prevention, and when it becomes available they will demand it from their governments and their governments will demand it at the United Nations, whatever forum is available to them to make these demands for an HIV vaccine. And its not stored on the shelf somewhere.

The interviewee went on to say that this view of advocacy and trials as building demand was related to decisions to locate trial sites in different African countries rather than just concentrating efforts. "Just being on the ground does create this awareness and hopefully…in the end it will create this demand."

IAVI's advocacy work and its role in stimulating awareness are widely acknowledged. An independent evaluation in 2003 said the following:

> "IAVI has helped to raise the political profile of HIV/AIDS. It has increased the attention of policy makers to the need for an AIDS vaccine that would meet the needs of developing countries and that would be available simultaneously throughout the world….IAVI has begun to involve developing country policy makers, scientists, and civil society in AIDS vaccine efforts in essential ways in which they never involved before. While doing all of this, IAVI has also been the world leader in providing information on AIDS vaccines" (Skolnik, 2003).

Whether or not IAVI succeeds in its overall mission or is judged over the longer term as a success will of course depend on many factors[3]. We would certainly not want to suggest that the IAVI approach is blueprint or that it is guaranteed success. The sources of risk and uncertainty are of course both scientific and social; overall success will depend on many factors. Even if a vaccine does result, the ability to deliver and distribute it will depend crucially on having viable health systems in poor countries which do not currently enjoy even the basics of healthcare provision. The point that is important for this paper however is that given the emphasis on communications, both of the public relations and advocacy seem to have pushed IAVI in the direction of real engagement with partners in developing countries and a broader approach to its partnerships than might have been expected[4].

[3] Some consider that IAVI's approach to intellectual property whereby IAVI insists on having controlling rights over projects that it invests in will hamper its success in the long run. Whether or not it is true, its important here to note that IAVI does stipulate boundaries within which communication takes place.

[4] In another paper, we've also written about how IAVI's approach to technical communication between partners and the priority it gives to 'tacit' knowledge communication has resulted in capacity building (Chataway and Smith, 2005)

Tissue Culture bananas: culturing advocacy?

Agricultural biotechnological innovation in developing countries is highly politicised. The debate about the appropriateness of agricultural biotechnology has become increasingly divisive and divided. At one end of the spectrum, international non-governmental organisations (NGOs) like Action Aid (2003) argue there are potentially no material benefits, only risks to be gained from agricultural biotechnologies in their current form. At the other end of the spectrum, scientists like Dr Florence Wambugu of Africa Harvest make bold claims: "in Africa GM food could almost literally weed out poverty". Operating in such contested terrains invariably involves developing an ability to exist within and alongside, reacting against where appropriate and supplementing where necessary, dominant discourses (Crush, 1995). The development and promotion of tissue culture (TC) banana technologies in east Africa is a case in point.

Tissue culture is a relatively unsophisticated biotechnology technique. It does not involve genetic engineering, but an ability to utilise the technique is an important building block towards more complex techniques such as genetic modification. Tissue culture do have inherent advantages. Besides acting as an indicator of innovative potential, techniques can speed up the plant breeding process and help to create improved varieties. Although not a sophisticated technology it does require specific laboratory conditions and training and therefore significant investment in infrastructure and capacity building. A set of projects in Kenya have applied tissue culture techniques to bananas.[5] The projects have had successes and failures and the outlook for tissue culture bananas in Kenya is still uncertain. One of the first – and certainly most visible - efforts to promote the idea of tissue culture bananas came from two Kenyan scientists, Wambugu and Kiome (2001). Their assessment of the potential benefits of the technology emphasised the importance of bananas in Kenyan agriculture and in particular the centrality of this crop to small holder farmers. This type of analysis can also be found in a study by Martin Qaim (1999). The Wambugu and Kiome study was sponsored by the International Service for the Acquisition of Agri-Biotechnology Applications (ISAAA) and fed into the IDRC and Rockefeller foundation-funded project: *Biotechnology to Benefit Small-Scale Banana Producers in Kenya.* In essence the work of Wambugu, Kiome and Qaim sought to frame a project that would promote TC banana technology. It is useful at this point to draw on Bruno Latour's ideas of 'projectization', of the idea that a project contextualises itself in particular ways (Latour, 1996). Latour talks of projects as 'fictions' existing within fictionalised worlds of their own creation. These worlds or contexts can be amplified or simplified or shaped to help promote the project. Alternatively they can be entirely absent, the result of projects being generated as a system of ideas within a contextless vacuum. The identification of absence as important too within development discourses is important here. By identifying absences, be they intellectual, technological or related to poverty, development justifies the wielding of its own dominant ideology of modernisation (Power, 2002). In this way, development theorists argue, particular packages of development interventions are prioritised and promoted by creating certain narratives that package projects as the most logical appropriate solution (Mosse, 2004; Crush, 1995; Ferguson, 1990).

[5] There is also a move towards applying tissue culture technologies to other crops, notably wattle for firewood.

In one of the INNOGEN working papers we have looked very carefully at both the Wambugu and Kiome and Qaim studies and it is clear that they significantly over estimated the importance of bananas in east African agriculture and in particular exaggerated the contribution of bananas to rural people's diets in Kenya (Smith,2004):

> Despite the many advantages of banana production, the majority of rural households only cultivate very few banana plants. Banana is almost never the primary crop, and in fact, agriculture as a whole is usually only one of several livelihood activities that a household engages in….it is clear the banana is not an important crop within the majority of agricultural systems…data from the Food and Agriculture Organisation indicates that the mean nutritional contribution of bananas has been in the order of 11-12 calories per capita per day over the past 25 years….It is likely that the poorest percentiles of rural households consume proportionately more bananas than the FAO figure, but it appears highly unlikely that the banana forms the main component of either their diet or their income. It seems that the project's [the tissue culture banana project] claim that it is an important crop for rural development, food security and income generation in Kenya appears to be based on poor data (Smith, 2004:10).

Having established the banana as an important crop in East African, the Wambugu and Kiome study goes on to document a very serious decline in yield[6], thereby creating what we coin a 'crisis narrative' and define as an attempt to paint a picture of "a situation that is inexorable, inevitable and above all cannot be managed with the existing portfolio of development interventions" (Smith, 2004:10).

On the basis of this analysis, advocates of tissue culture bananas raised money and technical input from a wide range of donors including the UK Department for International Development (DfID), the Canadian International Development Research Centre (IDRC), the World Bank, the Rockefeller Foundation and others.

No published peer reviewed papers seem to exist to document the impacts of TC banana projects in Kenya. It appears likely that, in part due to agricultural intensification (increased time spent on orchard management, irrigation etc), TC bananas do produce increased yield however if this is not quantifiable in the context of small-scale production and market access, it is difficult for donors to make informed decisions regarding how they spend their money. But the TC banana project's success does not rest entirely on its technology. In large part its success rests on how the technology is packaged, how the ideas the project rests on are *packaged* and *transmitted*. Bruno Latour expresses project design as not inherently successful but rather as a consequence of a project's 'ability to continue *recruiting* support and so impose … [their] growing coherence on those who argue about them or impose them' (Latour, 1996: 78, cited in Mosse, 2004). Projects require interpretative or epistemic communities to enroll support. Clearly the TC banana project, regardless of its technological merits, has gained donor support. The success of a project is to gain support from a range of actors however, and the TC

[6] It is important to note that both broad data on banana yields in Kenya and data gained from speaking to many small-scale farmers in the areas surrounding Nairobi do not in any way back up the disastrous declines in yield documented by Wambugu and Kiome (Food and Agriculture Organisation Data, 2004).

banana project also recognizes this. The project has also been particularly successful and innovative in recruiting small-scale farmers.

One of the interesting things about the tissue culture banana work in Kenya is that communication between providers and users of technology was structured into the projects. Organisations such as the ISAAA and the African Agricultural Technology Fund (AATF) and the Kenyan Agricultural Research Institute (KARI) are structured to provide important links between technologists and farmers – they are designed to link supply and demand, production and consumption of technology. Kenya demonstrates a complex set of institutional arrangements to support and disseminate agricultural biotechnologies – both political and practical – and the tissue culture banana projects are deeply embedded in this infrastructure, another example of the interpretative communities necessary to make development projects, and technological projects, work.

Despite this, we have found a mixed reaction amongst farmers involved in the projects and documented considerable disappointment from many of them. Many farmers adopted the tissue culture bananas in the wake of a collapse in the market for coffee. There has been active pursuit of farmers through linkages between Catholic dioceses and even through scouring of newspapers – one farmer reported an article in a local newspaper about his failed crops being picked up by agricultural extension workers who suggested banana plantlets as an alternative.

However, even though TC bananas were judged to be of higher quality and to have delivered a durable good product problems with growth cycles of tissue culture bananas and lack of marketing outlets meant that farmers had gluts of bananas that there were unable to sell or consume and initially in the Kenyan context small farmers had difficulty in coping with TC bananas (Smith, 2004). Their difficulties related to the fact that the TC bananas all arrived at one time and local markets became flooded. Quotes from interviews with small farmers carried out for this research included the following: ‘TC bananas are not meant for local cultivation’, ‘Kenya needs some mechanism to add value to its bananas’, ‘No one thought ahead about surplus bananas.’. Lack of private sector engagement in developing regional or export markets was therefore seemingly a problem in the Kenyan context. Finally, farmers who planted TC bananas were encouraged to greatly increase their investment in banana growing, this involved not only purchasing the TC plantlets (c. $1.50-2.00 per plantlet) but also introducing more labour and capital intensive orchard management practices such as weeding, irrigation and intercropping. Without viable markets this clearly left farmers in a vulnerable position.

Two points are important to take from this example. The first concerns the difficulties in constructing communication channels that go beyond simply ‘technology transfer’ paradigms so that new technology drives development ‘solutions’ to a more integrated systemic approach that considers farmers’ options and opportunities in a more holistic way. Had initial scoping studies gone beyond promoting R&D into TC bananas as a solution, and incorporated a more rounded look at production and marketing constraints, problems may have been identified earlier. In an effort to build on a promising technology and raise money, proponents of TC bananas seemingly both overestimated their importance in terms of subsistence and diet and ignored some of the production and marketing constraints. In this case despite the fact that the projects did plan

communications with farmers, these efforts seem to echo some of the common limitations of traditional extension work with small farmers. Essentially, TC bananas were pushed as a technology solution and not examined sufficiently from a demand perspective.

It is important to note that this 'technology push' approach is very common in developing and distributing technology for development and particularly so in efforts related to agricultural technologies. Clark et al caricature the usual approach in technology co-operation in the following way:

- Science and technology research activity should be conducted primarily in the Northern countries with results then transferred to the South for implementation purposes;
- Research and development are separate activities and should not be integrated in development assistance activity;
- Technical research should be sharply distinguished from socio-economic and policy research; and
- Interdisciplinary research is scientifically suspect and should therefore be discouraged (Clark et al, 2002).

With this in mind the TC banana project work, while flawed, is a huge step forward. The communications and technology support infrastructure around these TC banana projects, the involvement of farmer groups and unions and policy people may mean that the projects do lead to positive outcomes for farmers. In the wake of initial difficulties this communications work may lead to the development of a physical marketing infrastructure which involves the local private sector and provides farmers with processing and marketing opportunities (Karembu, 2004). As Andy Hall points out in a recent article innovation projects have a multitude of different starting points and work according to a wide variety of institutional cultures and organisational requirements. The point is to understand what is needed to contribute to their useful evolution (Hall, 2005). Understanding how communications strategies can contribute to the useful construction and evolution of projects and initiatives seems crucial.

Conclusion.

The point in offering these two portrayals is not to encourage comparisons between them; clearly the projects have more differences than similarities. Rather, we hoped that these pictures of projects concerned with communication would provide an interesting starting point for building up institutionally rooted analysis of communications efforts in biotechnology related innovation for development work.

One thing these examples have shown is that the distinction between public relations and advocacy is complex and the lines are not so easily drawn. Whilst there is cynicism about public relations and spin, the need for powerful and effective communication is clear. An increasingly competitive funding environment means that organisations seeking to promote science, technology and innovation for development purposes need to engage in high profile communication efforts to persuade donors[7]. At the same time 'bottom-up' communications efforts or more horizontal efforts are increasingly recognized as essential components of successful science, technology and innovation programmes. Many initiatives now claim to incorporate both, some with more effectiveness than others. Social scientists and analysts have relatively little understanding of the way organisations, networks involved in innovation or opposing certain types of innovation are using communication techniques.

Three areas seem particularly important for further consideration.

First, understanding and evaluating the success of communications efforts in relation to innovation and development is an area where more work needs to be done. Discourse analysis provides us with sophisticated tools with which to trace the rise and fall of arguments and the coalition of actors around narratives and themes. But simply tracing discourses and texts and pointing to contradictions with reality is of limited interest and use. It is obvious that all complex organisations, projects and initiatives operate with private and public faces and that as Brunsson points out (Brunsson, 1989) all require a degree of hypocrisy to function at all. Analysis of discourse and narratives if not deployed in conjunction with more grounded analysis of institutional development assume the hows and whys of particular examples and simply provide more detailed accounts of how organisations, initiatives and projects portray themselves, rather than more interesting and enlightening accounts of how and why they use communication and narratives to facilitate courses of action.

From a slightly different but relevant perspective, in presenting their work on the public faces of development, Smith and Yanacopulos (2004) locate their efforts in relation to previous work on representation and development. They say

'We present the case for the development of an invigorated and more politically and socially engaged body of work in this area. Attention is focused on the ways the public

[7] The campaign leading up to the G8 Gleneagles Summit is an example of the way in which development efforts in general are now very closely integrally linked to communication efforts. The Gleneagles Summit and the Commission for Africa have also provided a focal point for fundraisers concerned with science, technology and innovation with a flurry of meetings and reports coming out in 2005.

faces of development are integral to relationships between north and south…as well as being rooted in complex social, political, economic and cultural structures themselves. Thus research into the public faces is more than just a study of representations or stereotypes – whilst representation and stereotypes are one element of the public faces of development, its is their connection to the types of relationships forged between individuals and communities in the north, and poor individuals and communities in the south, and the ways these relationships are mediated and produced by diverse organisations, interests and contexts that form the focus [for work being presented] (Smith and Yanacopulos, 2004:658).

In looking at the impact of communication on innovation and technology based development efforts we need more integrated perspectives which open up the criteria by which initiatives are understood and evaluated. IAVI can in part be understood as a product of the narratives or, in Latour's language, fictions it has woven and deployed. However in part it is an outcome of its substantive and concrete commitments to the development of physical and human capabilities[8] and the interaction between the communications efforts and broader institutional dynamics. The outcome of IAVI's activities in sub-Saharan Africa will depend on the complex interaction of institutional evolution and the evolution of strands of arguments and coalitions supporting them. The same is true for the TC banana projects in Kenya. We need to develop methodological and theoretical approaches that capture this complexity. Perhaps as David Mosse suggests sociological approaches which ground texts and discourses associated with projects and initiatives in context are needed (Mosse, 2004). Work carried out in looking at the way agro-chemical and biotechnology companies develop their strategies might be thought as an example of this approach (Chataway, Tait and Wield, 2004).

There is a growing body of work looking at communications for social change and development (www.communicationforsocialchange.org) which contributes to this effort. Interestingly this work by communication experts stresses the importance of looking at the context in which communications is evolving, including deregulation of communication itself, the growing number of private and public sector bodies involved in development and the evolution of communications strategies themselves. Careful consideration of this literature can help us shed light on the way in which communication strategies are being and should be incorporated into science, technology and innovation related development work.

A second important thing to note is the relationship and perhaps overlap between 'successful' approaches to innovation and favoured approaches to communication. James Deane (2004) and Denise Gray-Felder (2003), two prominent people in the field of communications, highlight the importance of communication efforts representing a substantive dialogue over time rather than being discrete additions to projects. The tissue culture project work in Kenya demonstrates the importance of this. Gray-Felder in a document outlining the work of an initiative called Communication for Social Change outlines the direction in which they would like to see communications evolve including the following points:

[8] Perry 6, at a recent INNOGEN seminar on Governance and Risk pointed to a more general critique of discourse analysis saying 'it is history that creates ideas and not ideas that creates history'.

- Away from people as the objects for change … and on to people and communities as the agents of their own change
- Away from designing, testing and delivering messages…and on to supporting dialogue and debate on the key issues of concern
- Away from the conveying of information from technical experts… and on to sensitively placing that information into the dialogue and debate
- Away from a focus on individual behaviors…and on to social norms, policies, culture and a supportive environment

(www.communicationforsocialchange.org)

Understanding the overlaps, interactions and distinctiveness of communications in relation to other facets of initiatives and the critical role that communication strategies can play as elements of projects and initiatives can help us sharpen analysis of initiatives.

Third, traditionally in science, technology and innovation studies, capacities and capabilities are looked at in quite narrow and technical terms. The are looked at in terms of how and why people gain mastery over a set of techniques and technologies. In development more broadly, capabilities have a different meaning. The work of Amartya Sen (Sen, 1999) for instance gives capabilities a central position in defining the purpose of development; capabilities constitute the freedoms which define development. Yet, these examples of communications in biotechnology related development projects make it clear that communication is a capability that spans both the more technical and the developmental senses of that term. Indeed the building up of technical capabilities and broader political interaction capabilities depend on each other and communications efforts discussed here are integral to allowing this to happen.

In the INNOGEN studies on North-South knowledge flows we have documented the ways in which projects and initiatives have contributed to the development of concrete human science and technology related capabilities and physical infrastructure (Chataway and Smith 2006, Smith 2004). But as this paper has shown we have become aware that these capabilities are closely linked to issues connected to the broader set of capabilities – issues of how communications are constructed and whose voice gets heard. This has made us aware that there is a need to bring together these two strands of thought about capabilities in ways that enable us to make better sense of how capabilities are created and sustained, and for what purpose.

Bibliography

Action Aid (2003) 'GM Crops – Going Against the Grain'. Action Aid Report.

A. Ayele and D. Wield (2005) Science and Technology Capacity Building and Partnership in African Agriculture: Perspectives on Mali and Egypt, Journal of International Development Vol 17, No. 5.

U. Beck (1992) Risk Society: Towards a New Modernity, Sage. London.

U. Beck (1999) World Risk Society, Polity Press, London.

N. Brunsson (1989) The Organization of Hypocrisy. Talk, decisions and actions in organizations. John Wiley, London.

J. Chataway (2005) Is it possible to create pro-poor agriculture-related biotechnology? Journal of International Development, Vol. 17, No.5

J. Chataway and J. Smith. (2006) The International Aids Vaccine Initiative: Is it getting new science and technology to world's neglected majority? Forthcoming in World Development, Vol. 34, Issue 1.

J. Chataway, J. Smith and D. Wield (2005) Partnerships for Building Science and Technology Capacity Building in Africa, *Paper prepared for the Africa–Canada–UK Exploration: Building Science and Technology Capacity with African Partners 30 January – 1 February 2005Canada House, London, UK. Available on www.scidev.net*

J. Chataway, J. Tait and D. Wield (2004) Understanding Companies' R&D Strategies in Agro-biotechnology: Trajectories and Blindspots. Research Policy, Vol 33, No, 6-7

N. Clark, B. Yoganand and A. Hall (2002) New Science, capacity development and institutional change: the case of the Andhra Pradesh-Netherlands Biotechnology Programme (APNLBP). International Journal of Technology Management and Sustainable Development.

J. Crush (1995) Power of Development. Routledge, New York.

J Deane (2004). The Context of Communication for Development, 2004. Paper prepared for the 9th United Nations Roundtable on Communication for Development, 6-9 September 2004 FAO Rome. www.communicationforsocialchange.org

G. Dosi et al, (1998) Technical Change and Economic Theory. Pinter Publishers. London and New York

D. Dyker (1997) The Technology of Transition. Science and Technology Policies for Transition Countries, Central European University Press. Budapest.

J Ferguson (1990) ***The Anti-politics Machine: "Development", Depoliticization, and Bureaucratic Power in Lesotho,*** Cambridge, Cambridge University Press.

N. Forbes and D. Wield (2002) From Followers to Leaders. Managing technology and innovation. Routledge. London and New York.

D. Gray-Felder (2003) www.communicationforsocialchange.org

M. Harsh (2005) Formal and Informal governance of agri-biotechnology in Kenya: participation and accountability in controversy surrounding the draft biosafety bill. Journal of International Development, Vol 17, No. 5

A. Hall (2005) Capacity building for agricultural biotechnology in developing countries: an innovation systems view of what it is and how to develop it. Journal of International Development, Vol. 17, No.5

S. Hickey and G. Mohan (2005) Relocating participation within a radical politics of development. Development and Change.

A. Irwin (1989) Deciding about risk: Expert Testimony and the Regulation of Hazard in Environmental Threats: Analysis, Perception, Management, Belhaven, London.

B. Latour (1996) *Aramis or the Love of Technology,* Harvard University Press, Cambridge.

C. Juma (2005). Biotechnology in the Global Communication Ecology. http://usinfo.state.gov/journals/ites/0903/ijee/juma.htm

M. Karembu (2004) Biotechnology Transfer Strategies: Some lessons for policy in taking products to farmers in East Africa. Paper presented at ESRC Science in Society/INNOGEN Workshop on Technology based Public-Private Partnerships and Innovation Systems in Africa, London, 19 November.

B-A. Lundvall (1992) National Innovation Systems: Theory of Innovation and Interactive Learning. Frances Pinter. London.

D. Mosse (2004) Cultivating Development. An Ethnography of Aid Policy and Practice. Pluto Press, London.

G. Mythen (2004) Ulrich Beck: A critical introduction to the risk society. Pluto Press, London.

R. Nelson, (ed) 1993. National Innovation Systems, A Comparative Analysis. Oxford University Press. Oxford.

New Scientist, 'Feeding Africa', 27 May 2000, pp.

M. Power (2002) *Rethinking Development Geographies,* Routledge, London.

M Qaim, (1999) **Assessing the Impact of Banana Biotechnology in Kenya**, New York, ISAAA Brief No 10.

W. Sachs (1992) The Development Dictionary. Zed Books. London.

A. Sen (1999) Development as Freedom, Oxford University Press, Oxford.

V. Shiva (1991) The Violence of the Green Revolution, Zed Books, London

R. Skolnik (2003) Independent Evaluation of the International AIDS Vaccine Initiative. April. Available on the IAVI website: www.iavi.org

J. Smith (2005) Context-bound Knowledge Production, Capacity Building and New Product Networks, Journal of International Development, Vol. 17, No.5.

J. Smith (2004) 'The Anti-Politics Gene': Biotechnology, Ideology and Innovation Systems in Kenya. INNOGEN Working Paper No.31
M. Smith and H. Yanacopulos (2004) The Public Faces of Development: An Introduction. Journal of International Development, 16, pp.657-664

J. Tidd, J. Bessant and K. Pavitt (2001) Managing Innovation: Integrating technological, market and organizational change, Wiley, Chichester.

F.M. Wambugu and R.M. Kiome (2001) The benefits of biotechnology for small-scale banana producers in Kenya, ISAAA, Brief 22.

B. Wynne (1996) May the sheep safely graze? A reflexive view of the expert-lay knowledge divide in S. Lash, B. Szerszynski and B. Wynne (eds) Risk, Environment and Modernity: Towards a New Ecology, Sage, London.