Bridging the digital divide: Empowering the people

Interview with Professor M S Swaminathan, founder and chairman of the MS Swaminathan Research Foundation in India

Professor [Monkombu Sambasivan Swaminathan](#) is a man who has gifted much to the world. A world-renowned Indian agricultural scientist, he is widely known in his home country as the "[Father of the Green Revolution](#)".

Swaminathan earned this soubriquet following the groundbreaking work he did as a plant geneticist in the 1960s — work that led to the development of hybrid [wheat](#) seeds capable of producing [yields](#) three times higher than was previously possible.

This was nothing less than a gift of life for his countrymen who, in the aftermath of WWII, found themselves unable to grow enough food to feed their burgeoning population, and so had to live a "ship-to-mouth" existence, subsisting on food grains imported from the US.

Born in [Tamil Nadu](#) in 1925, Swaminathan obtained degrees in zoology and agricultural science, and then moved to New Delhi to study [cytogenetics](#); subsequently he undertook research in the Netherlands, at the UK's [Plant Breeding Institute](#), and then at the [University of Wisconsin](#).

At this point in his career Swaminathan could have settled for a comfortable academic life in the US. Instead he chose to return to India. As he [put it](#) in 1999 to *TIME* magazine, "I asked myself, why did I study genetics? It was to produce enough food in India. So I came back."

At the Indian Council of Agricultural Research ([ICAR](#)) in New Delhi, Swaminathan began to crossbreed local wheat varieties with seeds developed in Mexico by US agricultural guru [Norman Borlaug](#). The result: a wheat plant that yielded much more grain than traditional types. Scientists at International Rice Research Institute ([IRRI](#)) in the Philippines subsequently accomplished the same miracle for rice.

Having helped India to feed itself, once again Swaminathan could have opted to take things easy. Again, however, he chose not to rest on his laurels, but in 1989 used the prize money he had received for his important contribution to food science to found the Chennai-based M S Swaminathan Research Foundation ([MSSRF](#)). The goal: to facilitate "a job-led economic growth strategy in rural areas through harnessing science and technology for environmentally sustainable and socially equitable development".

In short, MSSRF was to be a platform for what Professor Swaminathan calls the "[Evergreen Revolution](#)"; a revolution that recognises the need to continue increasing food productivity, but insists that this should be done in a way that is "environmentally safe, economically viable and socially sustainable".

The initiative grew from Swaminathan's growing concern that the green revolution he had helped create was fast turning into a greed revolution; one, moreover, in which scientific knowledge was being used to benefit the few, not the many. It was also clear that this was being done in a way that was threatening both biodiversity and the environment.

As such, MSSRF was to prove an early proponent of the five foundations of sustainable development later agreed at the [World Summit on Sustainable Development](#), held in Johannesburg in 2002. These

five foundations are water, energy, health, agriculture, bio-diversity and ecosystem management (WEHAB)

MSSRF has launched a number of initiatives, including the biovillage initiative (designed to encourage the development of market driven non-farm enterprises that can migrate villagers from unskilled to skilled work, but in ways that ensure the sustainable use of natural resources), and the Village Knowledge Centres (VKCs) initiative.

Essentially, the aim of the VKC project is to take the biovillage concept a stage further, by helping rural Indians acquire the necessary skills to improve their economic situation. To this end, MSSRF provides Indian villages with knowledge that the local community needs, along with the necessary ICTs (Information and Communication Technologies) to enable them to access that knowledge when they need it. The aim is to bridge the digital divide, and alleviate the social exclusion and poverty associated with it.

As MSSRF distinguished fellow Subbiah Arunachalam puts it, "Professor Swaminathan started out using biology for human welfare, and is now pushing ICTs as a tool for progress."

The challenge, of course, was to find a way of getting modern communications technology into economically challenged, and often isolated, rural villages, where the necessary infrastructure was scant or entirely absent.

The solution was devised by Dr V Balaji, then head of the Informatics group at MSSRF, who proposed an ingenious combination of Internet and telephone technologies, accompanied by public address systems and notice boards able to relay important information to the people living in the village. This three-layered hub-and-spokes model involves a pyramidal arrangement of regional State Level Hubs, Village Resource Centres (VRCs), and then the VKCs themselves.

Thanks to the Indian Space Research Organisation, the MSSRF headquarters in Chennai has subsequently been connected to the VKCs by means of satellite communication. In addition, a number of community radio stations have been established.

But for a small non-profit organisation like MSSRF wiring up all of India's 637,000 villages represented a huge undertaking. To date — ten years later — MSSRF has created a dozen VRCs and about eighty VKCs, all in the southern part of India.

In 2004, therefore, Swaminathan decided to leverage his considerable reputation, and formidable diplomatic skills, to spearhead a national initiative aimed at combining the work of MSSRF with the various "telecentre" initiatives that had begun to mushroom around the country. This included commercial operations like ITI's e-chaupal program and the TARAhaat business enterprise, along with publicly-funded government initiatives like the Common Service Centres. Out of this grew Mission 2007: Every Village a Knowledge Centre.

Scaling issues aside, there was considerable benefit to combining forces in this way", says Balaji. "Mission 2007 is the only available forum to bring all the players together to discuss commonalities, and to avoid or even deter dubious investments (this is important because the new sun rise industry in India, namely construction, is engaged in the time-honoured art of land grabbing, and what better cover than offering information services to the poor, deprived rural families)."

And to stimulate grassroots activity, in 2003 MSSRF launched the Jamsetji Tata National Virtual Academy for Rural Prosperity (NVA). The task of NVA is to train at least one woman and one man

from each village in India in computer literacy and social skills so that they can manage knowledge centres and serve the local communities. In their turn they then train others and act as advocates for the VKCs — thereby providing horizontal transfer of knowledge.

From MSSRF's point of view, however, the technology is simply a tool. The primary aim is to provide villagers with information and skills, and so equip them to help themselves — by learning to read and write, by claiming the government grants and allowances that they are entitled to, by obtaining the medical help they need, or by setting up their own micro business.

Nor is the aim simply to provide access to the Web, most of which is in a foreign language, and irrelevant to the needs of Indian villagers. What is also needed is to provide villagers with local-specific information. Much of the energy of VKC staff, therefore, goes into what MSSRF calls "value addition" — creating local databases, translating information into local languages, developing multimedia resources for villagers without literacy skills, etc.

Providing local information, suggests [Alfonso Gumucio Dagron](#), a leading expert in development communication, and author of a 2001 report for the Rockefeller Foundation (*[Making Waves: Stories of Participatory Communication for Social Change](#)*), is absolutely essential: "There is one thing that we cannot separate from any ICT project in Third World countries: the development of local databases and local web pages that are relevant to the people and that take into account their daily needs, their culture and their language. If this is not embedded into a project, I doubt it will have any positive results for the community."

However, says Balaji, providing local information is not a simple process. "Content is a key issue that has never been addressed as seriously as it should have been. The techies and [NGO's](#) who drove the [ICT4D](#) processes assumed that there is a lot of development content in digital form, or that it can be created locally. Then they discovered that digital content aggregation is simply not there and the cost of creating it can outstrip most revenues or grants."

Moreover as the international intellectual property regimes have become increasingly draconian — and more and more information is available only to those able to pay for it — the need for locally-produced information that can be shared and used collaboratively is imperative.

For this reason, NVA has also taken on the role of creating village profiles, collecting details of major livestock populations, crops, monthly fish catches, prevailing diseases, etc. For without accurate data it is difficult to provide what is needed. By undertaking regular need assessments in this way, NVA is able to develop demand-driven content for participating villages.

In addition, it is important to encourage villagers to produce their own information. As the report on the Second South-South Exchange Travelling workshop [explains](#), an important role played by VKCs is to provide, "opportunities for individuals and communities to be information producers as well as consumers."

Here the results have been encouraging. Amongst other things, a number of community newspapers have been established — including *[Namma Ooru Seithi](#)* in [Pondicherry](#) and *Seithi Solai* in [Kannivadi](#) — as well as self-help groups in which villagers join together to create their own micro businesses.

"I am very much a follower of open content creation in support of rural knowledge centres of any kind and this is one lesson I have learnt: the cost of freely accessible and re-usable content can make a real difference to the long term sustainability of the rural knowledge centres," says Balaji. "The market-driven or connectivity-driven models have tended to marginalise the importance of common

content or have followed more a parallel economy approach of asking experts to generate 'commissioned' content that they can own!"

To this end, the VKC Movement has also partnered with the Open Knowledge Network (OKN), an international initiative that grew out of the Digital Opportunity Task Force (DOTForce) — set up by the G8 Heads of State to make a decisive contribution to bridging the digital divide. Indeed, the first OKN field trial was held in the villages of Pondicherry, in cooperation with the knowledge centre volunteers and OneWorld International.

The G8 Genoa Plan of Action called for "national and international effort to support local content and applications creation". OKN supports the creation and exchange of local content in local languages across the Southern Hemisphere, using a range of ICTs to eventually create a network that would connect the rural poor of the world and facilitate knowledge sharing among them. Nor is it any surprise that OKN stresses the use of Open Source tools, the use of open content licences, and the use of peer-to-peer techniques. Following its successful trial in India, OKN has subsequently been rolled out in a number of other developing countries in South Asia and Africa.

For anyone who takes an interest in the various open and free movements (e.g. Free and Open Source software, Open Access, Open Source Journalism, Creative Commons etc.) the emphasis placed on the mutual creation and sharing of content and know-how by the VKC initiative is striking. Indeed, it hard not to discern significance in the many parallels between the VKC Movement and these other movements, not least in their mutual stress on "bottom-up management", "collectively-owned assets", "collective action", peer-to-peer collaboration, etc.

Above all, what the VKC Movement appears to share with these other movements is a sense that today's unbridled market capitalism has become too crude a model for the needs of the 21st Century, reflecting as it does a mindset no longer able to collaborate in ways that enable social and scientific progress, or of facilitating the equitable sharing of the world's resources — or even of sustaining the planet that we all share.

It is no surprise, therefore, that the VKC Movement has become a model for other developing countries, and today people from all parts of the world visit MSSRF to learn more about its work. Each year, for instance, MSSRF hosts a South-South Exchange Travelling workshop, where practitioners from other developing countries can gather and learn from one another.

And in recognition of its valuable contribution, the VKC initiative has also won a number of international awards, including the 1999 Motorola Dispatch Solution Gold Award and, in 2001, the Stockholm Challenge Award.

Commenting on the VKC initiative in *Current Science*, in 2005, the former president of the US National Academy of Sciences, Bruce Alberts, said, "Unlike the projects of far too many NGOs and government aid agencies, this was clearly an effort that had been carefully designed with deep respect for the intelligence and values of its clients."

And key to its success, of course, was the guiding hand of Professor Swaminathan — a man with a tireless energy and a dedication to, as he puts it, "reaching the unreached."

In addition to his scientific work, and his work at MSSRF, Professor Swaminathan has also held many influential posts, including director-general of ICAR between 1970 and 1980, and of IRRI between 1982 and 1988. He was also chairman of the UN Science Advisory Committee (set up in 1980 to take

follow-up action on the Vienna Plan of Action) independent chairman of the [FAO Council](), and president of the [International Union for the Conservation of Nature and Natural Resources]().

Indeed, Swaminathan's efforts have been so considerable, and his influence so great, that in 1999 *TIME* magazine [declared]() him to be one of the twenty most influential Asians of the 20th century — one of only three from India, the others being [Mahatma Gandhi]() and [Rabindranath Tagore](). He has also been the recipient of many international awards, and has received 46 honorary doctorates from universities around the world.

And the work still goes on. Currently Swaminathan is president of the Nobel Peace Prize-winning [Pugwash Conferences on Science and World Affairs](), and he was recently nominated to the upper house of the Indian Parliament ([Rajya Sabha]()) — where we can be sure that he will seek to convince fellow-MPs and Ministers of the need to invest in rural knowledge centres, and support the NVA.

"At 80, M S retains all the energy and idealism of his youth," commented Alberts in 2005, "and he continues to inspire good behaviour and more idealism from millions of his fellow human beings on this Earth. For that, we can all be thankful."

Above all, he added, Swaminathan's many personal experiences, in India and elsewhere, allowed him "to develop a unique and powerful vision for how science can best be delivered to the poor."

In doing so, Swaminathan clearly understood before anyone else that solving the digital divide requires more than simply shipping cheap computers to the developing world, or providing Internet connectivity without relevant content. It is vital that ICTs are deployed as part of a carefully thought-out, and holistic, strategy; a strategy, that not only enables people to help themselves, but does so in a way that is sustainable. In other words, give people the technology, give them the connectivity, but make sure you do so in a way that empowers them.

Below Professor M S Swaminathan talks to Richard Poynder.

Reaching the unreached

RP: For the work you did as a plant geneticist in the 1960s you are widely known as the Father of the Green Revolution. Some might feel that after gifting the world in that way you earned yourself the right to take things easy. Far from slowing down, however, you went on to make many more important contributions to society, both on the Indian and the international stages. For the purpose of this interview I'm particularly interested in your decision — in 1988 — to found the non-profit M S Swaminathan Research Foundation. Why did you set up MSSRF?

MSS: I have been concerned for a long time about the growing gap between scientific know-how and field level do-how in agriculture in India. Unfortunately there is inadequate research on designing technology delivery systems which can reach the unreached.

That is why MSSRF was set-up, and it was done so initially with my own funds (from the World Food Prize I received, plus some other prize money). The aim was to ensure that small farm families get the benefit of technological and knowledge empowerment.

RP: And it takes a holistic approach to doing this doesn't it?

MSS: That's right. All MSSRF programmes are designed to be pro-nature, pro-poor and pro-women. The biovillage model of job-led economic growth is an example of how we have attempted to do that.

RP: Can you expand on that?

MSS: The aim is to create a self-sufficient and human-centric environment capable of providing sustainable livelihood systems based on technical knowledge and skills, and which includes a self-perpetuating community-based system of micro-credit, and access to markets.

RP: An approach, then, that assumes ecological stability, but which also provides access to technology and to markets.

MSS: Indeed. I discussed these concepts in an article I wrote for *The Economist* earlier this year. There I explained how MSSRF operationalises the concept of "do ecology".

RP: And you did this in the context of the December 2004 tsunami. Why?

MSS: The tsunami resulted in a severe loss of life and property along coastal Tamil Nadu, where I live. As I explained in the article, we have been trying to persuade coastal communities not to destroy the mangrove forests along the coast for 15 years. But their livelihood preoccupations did not allow them to heed that request. However, the tsunami miraculously changed their outlook.

RP: In what way?

MSS: As a result of the speed-breaker role played by the mangroves, villages adjoining (and shielded by) thick mangrove forests were saved from the fury of the tsunami. By contrast, in other nearby villages, where mangroves had been destroyed (either for fuel wood or aquaculture ponds), several hundred fisher people died.

This area, by the way, is near the temple town of Chidambaram, where centuries ago the temple builders chose a mangrove species as the temple tree. Following the tsunami, there was a sudden awareness of the reason for this choice, and local people now refer to mangroves as "life-savers".

So what we could not achieve despite 15 years of arguing that mangroves would serve as a bio-shield in the event of sea-level rise, was achieved in a day.

And the same tsunami brought home to farmers near the shore line the importance of conserving local land races of rice.

RP: The need for biodiversity?

MSS: Right. Because several thousand hectares of rice fields along the coast got inundated with sea water. But where most varieties perished, a few salt-resistant varieties withstood the inundation. As a result, conservation of local biodiversity got a shot in the arm, and now every farmer wishes to maintain a field gene bank (i.e. *in-situ* on-farm conservation) and a seed bank.

So, terrible as it was, the tragedy caused by the tsunami became an opportunity to prepare both fisher and farm communities to meet challenges linked to a rise in sea level. And as a result, the bio-shield and agro-biodiversity conservation movements in this area have now become community-driven.

RP: In short, people have to see the need for such things before they will embrace them. This is what you mean by "do ecology" is it?

MSS: Yes. "Do ecology" is triggered either by an ecological disaster or an economic opportunity. Preaching does not help. Enlightened self-interest, however, motivates people and leads to harmony with nature. There are many other such examples one could use.

RP: Beyond the impact of the tsunami?

MSS: Indeed. You can see the same phenomenon, for instance, in the green revolution areas of the Punjab. Thirty years ago, when I pointed out to Punjab farmers that the "green revolution" was becoming a "greed revolution", because of the excessive use of mineral fertilisers and the over-exploitation of ground water, they listened politely, but did not change course.

But the economics of unsustainable farming eventually became adverse, which led to farmer indebtedness, and occasional suicides.

Now, in a despairing mood, these farmers are ready to change, and the "climate" has become opportune for them to embrace conservation farming.

RP: What is needed, then, is for them to see that they have an economic stake in conservation. In your **Economist** *article you said that this is a developing world issue. In the developed world, by contrast, you say we need to focus on "don't ecology". What is "don't ecology"?*

MSS: Industrialised countries, which have high standards of living and a highly educated population, need to press ahead with "don't" regulations — by, for instance, placing restrictions on carbon emissions, and limiting the unsustainable consumption of other natural resources. Don't is easy: we can go to a court and stop the activities, but in the context of the developing world a more important concept is "do".

In a country like India for instance, — where 16 million children are added every year, and where 100 million people are looking for jobs today — a negative approach, and a negative ecology, will not help. It has to be a "do-ecology", not a "don't ecology."

In short, developing countries, with their pervasive poverty and expanding populations, should spread a "do-ecology" methodology that can confer tangible ecological and economic benefits to the people.

Village Knowledge Centres

RP: I want to focus in on the Village Knowledge Centre initiative launched by MSSRF in 1997. The aim is to provide ICTs to disadvantaged people living in Indian villages. The emphasis here is not so much on biotechnology, but on computer-based technology. Can you give me some background to the VKC initiative?

MSS: In 1991 we organised an interdisciplinary dialogue on biotechnology, which led to the establishment of a number of biovillages. Then in 1992 we organised a dialogue on ICT — under the generic title "New technologies: Reaching the Unreached". This led to the birth of the Village Knowledge Centre initiative (known in Hindi as Gyan Chaupals).

It then took us a few years to get funds to operationalise the concept but, as you say, we eventually started the programme in 1997, with financial support from IDRC [The International Development Research Centre] of Canada.

RP: What are the specific aims and objectives of the VKC initiative?

MSS: The aim from the beginning was to ensure social inclusion in providing access to technology.

RP: With an emphasis on self-help?

MSS: Yes. Our role is simply to provide the hardware and training, and then serve as helpers in getting the necessary information. There is also an emphasis on community, and we wanted to ensure that the VKCs are owned and managed by the community, not by us, and not by an individual or a family.

RP: As I understand it, while you are clearly seeking to address the digital divide, you do not view this essentially as a developed world vis-à-vis developing world issue, but an attempt to bridge an urban-rural divide that has opened up: While India as a nation has embraced technology very successfully, it has primarily been an urban phenomenon, and rural Indians have been excluded from the benefits?

MSS: That's right. The point is that beginning with the industrial revolution in Europe, the economic prosperity of nations has been greatly influenced by technological progress, and technology has been an important factor in the rich-poor and urban-rural divides in the past.

In India today, as in many other developing countries, both the rich-poor and urban-rural divides are increasing. It is our belief that knowledge connectivity can play an important role in bridging these divides.

RP: Ensuring that everyone can share in the benefits.

MSS: Indeed. The new information and communication technologies offer the possibility of creating a level playing field for both the rich and the poor, provided we know how to use them, and provided we have a commitment to gender and social equality.

RP: You talk about gender equality. In some villages VKCs are managed entirely by women — the VKC in Embalam for instance. The MSSRF brochure stresses this, saying: "We have observed that bridging the digital divide is a powerful method of bridging the gender divide." You believe that both issues need to be addressed together then?

MSS: Exactly. The major problem in villages is the suppression of the creativity and innovative spirit of women. VKC helps to unleash their creativity. Also, because of the male dominated nature of society, women suffer from a lack of self-esteem; managing a VKC helps to enhance the pride and self-esteem of women very considerably.

Human unity

RP: Clearly social inclusion is an important component of the VKC. But the aim is not just to provide information and technology, but to do so in ways that encourage equality of access, regardless of caste, religion, education etc. To this end, MSSRF has deliberately placed some VKCs in Dalit villages hasn't it?

MSS: We have. A fundamental principle of everything done by MSSRF is social inclusion in technology access. We do not tolerate any deviation from this basic principle, and it has had a very beneficial impact on the community.

Essentially, we see the VKCs playing an important part in strengthening the concept of human unity. Another MSSRF initiative, by the way, involves running Genome Clubs in rural schools. The aim is to bring home the point that the human genome teaches us that all human beings have the same genetic makeup, irrespective of religion, caste, colour, gender and political belief.

Likewise, many of our VKC managers are from the poorest sections of the community. Managing a VKC gives them considerable social prestige and self-esteem.

Mahatma Gandhi, by the way, believed that complete independence will come only if rural India progresses economically and socially. We want to harness technology as an ally in the movement for technological, economic and gender equity. So VKCs can help the underprivileged through several mechanisms. The aim is the technological empowerment of the poor.

Hubs and spokes

RP: The VKC system is based on a hubs-and-spokes arrangement: In addition to VKCs, there are Village Resource Centres (VRCs), and there are State Level Hubs. How does it all fit together?

MSS: The structure is the following:

- In each block (there are about 7,000 community development blocks in India) a Village Resource Centre is being created. These all have teleconferencing facilities and satellite connectivity, which is being provided with the help of the Indian Space Research Organisation (ISRO).

- Then in every village a Village Knowledge Centre is being established. This has Internet connectivity and, wherever possible, multimedia facilities. In order to achieve this we are concentrating initially on 240,000 Panchayats (local self-governing councils).

- Finally, the last mile and last person connectivity will be achieved by means of a combination of the Internet and community radio or cell phone.

Using this model the entire country will be covered under by means of the rural knowledge connectivity movement.

RP: So MSSRF is providing computers, Internet connectivity, telephones facilities, and community radio. Essentially you see these as tools for empowering Indian villages. But the primary objective, I guess, is information provision. What kind of information is being provided, and for what purposes?

MSS: Well, computers are extremely useful tools for spreading literacy, and for English language courses. But you are right: information is the key component. Essentially, this is agricultural, meteorological, and marketing information. In addition, we provide information about education and health care, loans, employment, government entitlements and local transport timetables.

RP: What does that mean in practice?

MSS: It means that underprivileged families are empowered — by, for instance, accessing information on their entitlements to various government programs designed to alleviate poverty and help the underprivileged. (There is a bewildering array of programmes provided by the Indian government, so providing information about them is hugely beneficial.). It also means that villagers can get, say, health care advice from local hospitals by e-mail.

In addition, farmers are able to get current produce prices on the Web, and so ensure that they get the right price for their produce. And it also means that they can post information on prices themselves. They can also get advice on growing local crops and protecting them from disease.

Likewise, wage-labourers can check to see that they are getting the right wages from their employer, and fishermen can get weather reports, and information about wave heights, and so avoid going out in dangerous seas. Similarly, villagers seeking work have access to employment opportunities.

RP: Can you give some specific examples of how VKCs have helped individuals?

MSS: Sure. One woman was saved from blindness, for instance, after the local VKC discovered that, for a limited period, a roving medical camp was offering free cataract operations. The VKC staff also established when it would be in the vicinity, and organised to have the cataract in the woman's eye removed.

In another case, a farmer was able to get help from his VKC when his cow was seriously ill. After searching the networked information sources for a local veterinary surgeon nearby, VKC staff were able to arrange for a vet to visit — just in time to save the cow. This was very significant for the farmer since he and his family depended on the income they got from selling the four gallons of milk their cow produced each day.

These examples, by the way, were cited in a *The New York Times* article.

RP: We discovered the stress you place on self-help. The VCKs also support local self-help groups and micro businesses don't they?

MSS: That's right. They can help micro businesses do their accounts for instance. And they can help villagers start up a business. In one village with a VKC, for instance, a group of women decided to start a small business enterprise manufacturing incense sticks. As a result of searches carried out by the VCK volunteers and project staff, the women were able to develop the necessary skills for packaging and marketing their own brand name of incense.

RP: In other words, VKCs help villagers to help themselves?

MSS: Exactly. They can facilitate small entrepreneurial activity and they can mobilise latent productive capacity among women, who live in a culture that traditionally has the tendency to marginalise them.

RP: As I understand it, this self-help ethos determines the kind of information made available too. That is, villagers decide what information they need, and in some cases they seek it out and collect it themselves. Essentially, the VKC initiative operates a bottom-up information model?

MSS: Yes. The bottom-up approach is achieved through a participatory rural appraisal on needs, problems and challenges. This includes a SWOT (Strengths, Weaknesses, Opportunities and Threats) analysis.

In addition, the women and men chosen to be trained in ICT are selected by the local communities. This means that the entire exercise becomes demand driven: volunteers go out and gather information, feed it into an intranet and provide access through nodes in different villages. Consequently, the content is be demand-driven and dynamic.

In addition, this raw information has value added to it — by, for instance, translating it into the local language, and making it available in a multimedia format so that illiterate people also access it.

RP: It is a compelling model. Indeed, I believe the VKCs were used to pilot the development of the Open Knowledge Network (OKN), which has a very similar philosophy. As the OKN web site puts it, "Poor people must be able to express and communicate locally relevant knowledge in local languages if they are to shape the decisions that affect their livelihoods."

MSS: Yes. It was our colleague Professor Arunachalam who brought MSSRF and OneWorld together to carry out the first pilot experiment of OKN in the villages of Pondicherry. Importantly, because of the participatory nature of the entire exercise, it creates a feeling of involvement among the local women and men. It also means that the gender differences in information needs are fully internalised in both content creation and capacity building.

RP: In 2003 MSSRF created an offshoot of the VKC initiative called the National Virtual Academy for Rural Prosperity. The purpose of the NVA is to act as an advocacy organisation for the VKC Movement isn't it?

MSS: The Jamsetji Tata National Virtual Academy and Rural Prosperity was established to give social and academic prestige to village knowledge workers. They are the torch bearers of the rural knowledge revolution. In addition, a Jamsetji Tata Training School has been established in order ensure the continuous upgrading of their competence

Mission 2007

RP: I'm conscious that India is a big country, and has around 637,000 villages. To date MSSRF has created only a dozen VRCs and about eighty VKCs. Clearly, the task of managing a national VKC initiative is too great for a small non-profit organisation. Fortunately, there are now a number of other 'telecentre' initiatives in India. For this reason in July 2004 you spearheaded a task force aimed at creating an umbrella organisation to bring all these different initiatives together — out of this was created Mission 2007: Every Village a Knowledge Centre. Can you say something about Mission 2007?

MSS: As you say, we started Mission 2007 four years ago, and we organised a National Alliance to implement the Mission. We believe in sharing knowledge and building partnerships. The National Alliance members include NGOs, government departments, corporations, industry associations, etc. We also have an international support group, thanks to a suggestion made by Ambassador Walter Fust of the Swiss Agency for Development and Cooperation (SDC).

RP: How successful has Mission 2007?

MSS: Well, as a result of the policy advocacy undertaken by the National Alliance there have been many significant developments. These include:

- The establishment of 100,000 rural Common Service Centres (CSC), with the necessary ICT hardware supplied by India's Department of Information Technology.

- The equipping of all 240,000 Panchayats with the necessary ICT hardware by the Ministry of Panchayati Raj.

- Initiatives by private organisations like ITC to expand the e-chaupal program to over 50,000 villages.

- The development of software in major Indian languages by the Azim Premji Foundation and Tata Consultancy Services.

- The inclusion of Knowledge Connectivity in the Bharat Nirman program (i.e. New deal for Rural India) by Indian government.

- The establishment of the Jamsetji Tata National Virtual Academy for Rural Prosperity and the election of rural women and men as Fellows of the Academy.

The next Annual Convention of Mission 2007 will take place at New Delhi between 1st and 3rd of August, 2007. There we shall review the entire progress and prepare a road map for accelerating progress in order to achieve the goal of eliminating the rural-urban digital divide in India.

RP: I'm conscious that these different initiatives all tend to adopt a different approach. Some, like e-choupal, for instance, are based on a commercial franchise model. As you say, there are also government-funded schemes like the Common Service Centres. I'm wondering what is distinctive about the MSSRF vision. In what ways, for instance, does it differ from the initiative launched by India's President Dr Abdul Klam: Providing Urban Amenities to Rural Areas, or PURA?

MSS: Our President Dr Abdul Kalam has been stressing the need for urban amenities for rural India for some time. This was also the aim of Jawaharlal Nehru when he promoted asset building and community development as a means to rural prosperity. It is clear that unless we provide appropriate medical, educational and other facilities in Indian villages, educated youth will not stay in them.

You know, Mahatma Gandhi said that the worst form of brain drain is the migration of educated people from the village to the city. PURA will help in limiting such migration. And the VKC movement is also an important part of this drive for rural regeneration.

RP: Looking back on progress so far, what has proved easier than you had anticipated, and what has proved harder?

MSS: The most encouraging part is the enthusiastic response of the poor to learning new technologies; in fact, rural women in particular take to new technologies like fish to water.

The obstacle is the bureaucratic mindset which looks upon the poor as "beneficiaries" of government programs, rather than as partners in sustainable development and rural prosperity. Consequently we are trying to shift the mindset from patronage to partnership.

RP: Is the VKC model relevant to other developing countries?

MSS: Absolutely. With suitable adaptation to local socio-cultural and agro-ecological conditions the VRC/ VKC model can be replicated in all countries.

For that reason, we plan to admit grassroots ICT workers from other countries as Fellows of the Jamsetji Tata National Virtual Academy at the August convocation in New Delhi.

Indeed, every year we organise a South-South Exchange Travelling Workshop, where about twenty ICT-enabled development practitioners from Africa, Asia and Latin America spend a week with our village communities and learn from one another.

Our VKCs and VRCs provide an excellent ambience for these workshops. A couple of years ago my colleague Professor Arunachalam was invited to Uganda to facilitate a similar workshop exclusively meant for African participants.

Top-down vs Bottom-up

RP: As you will know, initiatives to deploy ICTs in developing nations — generally referred to as ICT4D — are often criticised as being inappropriate. The last thing underprivileged people need, critics argue, is a computer. Rather than invest in costly ICTs, they add, it would be more helpful to provide food, shelter, health and education. Microsoft founder Bill Gates is one of those sceptics. As he once put it, "Do people have a clear view of what it means to live on $1 a day? About 99% of the benefits of having a PC come when you've provided reasonable health and literacy to the person who's going to sit down and use it." Indeed, a 2005 **Economist** [article](#) *pointed out that when the* [Copenhagen Consensus](#) *project came up with 17 priorities, spending more on ICTs was not even on the list. What are people missing when they dismiss the need for ICTs in this way?*

MSS: It is correct that some may say that bread is more important than computers in villages. In my view both are important. *Immediate alleviation of hunger should have overriding priority, but making hunger history is equally important.* This is where the knowledge and skill empowerment of the poor, and a paradigm shift from unskilled to skilled work, is so important: ICT helps people to leapfrog in areas relating to knowledge and skill empowerment.

RP: So while giving hungry people bread is necessary, it is not enough?

MSS: Exactly.

RP: You also need to give them marketable skills, so that in the future they can buy their own bread. Another frequent criticism, however, is that spending money on ICTs often leads to the so-called "rusting tractor" problem — i.e. equipment supplied is sometimes not used. Has that been MSSRF's experience at all? I know you have had to close some VKCs?

MSS: It is true that top-down approaches in the area of ICT for development can lead to putting computers in places where no one is interested in them. That is why a detailed discussion with the local community should precede the establishment of VKCs and VRCs.

It's also true that we had to close down three VKCs in the beginning. But this was not because the computers weren't being used and allowed to rust, but because there were attempts to exclude certain sections of village society from them, and some of the local volunteers were meddling with the equipment. But we took it in our stride, and treated it as part of the learning curve!

RP: The secret lies in <u>how</u> *you deploy technology then?*

MSS: Absolutely. That's the point.

RP: What are your views on the various schemes aimed at delivering $100 computers to people in developing countries? There is [Nicholas Negroponte's](#) [One Laptop Per Child](#) *scheme, for instance, as well as the more expensive* [computer](#) *being developed by the US computer company* [Intel](#).

MSS: If they bring down the cost of computers, they will clearly help to scale up programmes like Mission 2007, and more quickly. However, unless content creation and capacity building receive concurrent attention with the purchase of the hardware, such projects are unlikely to be of much use.

Intellectual Property

RP: We have stressed the important of information in this interview. Any mention of content today almost invariably leads to a discussion about intellectual property rights ([IPR](#)*), particularly in the context of the developing world. Critics argue, for instance, that The Agreement on Trade Related Aspects of Intellectual property Rights (*[TRIPS](#)*), which is administered by the World Trade*

Organisation ([WTO](#)), is forcing developing countries to buy into a global intellectual property system that disadvantages them. Certainly as net importers of knowledge and information, they would seem to have more to lose than they have to gain from stronger IPR. Would you agree?

MSS: [IPR](#) is certainly an obstacle to implementing the philosophy of social inclusion in access to technologies. This is why support for public good research and development is equally important. While on the one hand, some would like to see increasing privatisation of knowledge and technology, there are many others who are opting for the open access system of knowledge sharing.

RP: You use the phrase "open access". This is a term most frequently used today in the context of scholarly publishing, with Open Access advocates arguing that publicly-funded research should now be made freely available on the Web, not locked behind the subscription firewalls of commercial publishers. This may not directly impact the users of VKCs, but it presumably has significant implications for healthcare in developing nations. After all, if local doctors and health care practitioners are unable to access the latest information on cures and treatments they will not be able to help their patients so well). Do you have views on Open Access?

MSS: I fully believe in Open Access.

RP: You are a Fellow of many of the world's leading Science Academies — including the [Royal Society](#), the [US National Academy of Sciences](#), the [Russian Academy of Sciences](#) and the [Chinese Academy of Sciences](#). Would you be willing to use your undoubted stature to persuade these academies to proactively promote Open Access to scientific and scholarly literature?

MSS: I will do my best to persuade all academies to follow the principle of Open Access.

RP: I have a slightly different question about IPR. You are a plant geneticist: I understand that the two principal means for creating [transgenic](#) plants [have been patented](#), and the rights now belong to large US companies. Some claim that there are many similar patent problems affecting food science, and that once again it is developing nations that are disadvantaged as a result. How much of a problem do you believe this to be?

MSS: It is a problem. I believe we should create an International Patents Bank for Food, Health and Environmental Security, to which all scientists who see themselves as trustees of their intellectual property should assign their patents, thereby enabling them to be made available to the economically and socially underprivileged sections of the human family.

Global Alliance

RP: I want to broaden the discussion out a little if I may. I don't know how much interest you take in the various [free and open](#) movements, but it strikes me that there are interesting parallels in what you are trying to achieve with the VKCs, and what these various movements are trying to achieve in their respective arenas. I wonder, for instance, if this might suggest that at some point mankind forgot how to co-operate, or to share effectively. Since it seems likely that co-operation will be essential if we are to progress, and ensure that we don't destroy the planet, perhaps we are in the process of reinventing how to share, or devising new ways of doing so. Would you agree?

MSS: Maybe. Mahatma Gandhi said that we should behave as trustees and not as owners of both physical and intellectual wealth.

In my view it is criminal to make access to information and technologies which are of great importance to human health, nutrition and environmental security, exclusive. I believe there must be compulsory licensing of rights in all cases where the discovery is of great importance to the elimination of hunger and poverty, as well as health security (e.g., HIV AIDS, tuberculosis, malaria, etc.).

And this principle should also apply in the case of information and technologies able to mitigate the adverse impact of global warming and sea level rise.

RP: Here is my final question then: The 2005 World Summit on the Information Society ([WSIS](#)) was intended to address many of the issues we have been discussing. In your view did WSIS deal with the issue of the digital divide adequately? What should be the next step in terms of solving the digital divide at a global level?

MSS: Big gatherings like the World Summit on the Information Society are of limited use from the point of view of taking the technology to the unreached. They are useful as PR Exercises for ICT.

What we need right now is a coalition of everyone who is concerned with bridging the urban-rural digital divide. This is what we have tried to achieve in India through the formation of a national alliance — Mission 2007: Every Village a Knowledge Centre. Now we hope this national alliance can grow into a global alliance.

RP: The point here, I guess, is that these are problems that can only be dealt with at an international level. As you said in your **Economist** *article: "irrespective of political frontiers, our future is ecologically intertwined ... Both unsustainable life styles and unacceptable poverty must vanish, if humankind is to have a better common present and future." Thank you very much taking the time to discuss these issues with me.*