

A technology-nontechnology alliance: does it really work towards learning?

Dr. Ajanta Sen Poovaiah, International Coordinator, Project Solar Eclipse (www.colorsofindia.com), in principal collaboration with Falmouth College of Arts (FCA), UK and Indian Institute of Technology (IIT) Bombay, India and

Prof. Ravi Poovaiah, Senior Faculty, Industrial Design Center (IDC), Indian Institute of Technology (IIT) Bombay, India

A

Introduction:

The new media technologies represent a major paradigm shift in the way we are able to communicate today - from the erstwhile one-way medias represented by print, film and television to an essentially computing-driven *two-way communication process* expressed via the multimedia and the Web. Any two-way communication, by definition, pre-supposes an alliance without which the communication/exchange would become one-way and would remain incomplete. Hence, the key to the success of the new media technologies in future will be conditioned to a very large extent by our understanding, or the lack of it, of the process of that alliance.

One of the elements to be factored into an alliance, and again conditioned to a large extent by who will represent the proposed partnership, is the matter of the timing. Raising the key question: when is the best time to draw a partner into an alliance? It is our contention here that any technology initiative that claims to be developing a prototype for the lay user needs to strike a strategic alliance with its non-technology partner not after all the technology experimentation has taken place, but alongside the period of experimentation and development of that prototype. The feedback process ensuing between the user and the technology-developer will then be concomitant, and could prove to be far more valuable in terms of resource optimization because the requisite mindset shifts will happen simultaneously, than, if one had to ensure entire changes only after post-experimentation. Here is a case study of such an alliance conducted under the aegis of the Solar Project, and seeks to outline the modules of communication built into this new media technology experimentation.

B

The crux of the Project Solar Eclipse initiative:

Project Solar Eclipse was initiated between UK and India with a pilot event during the fall of '97. The Project has since come to be considered seminal in its role in enabling two or more user groups at dispersed locations around the globe to connect up, interact, exchange ideas and collaborate on actual hands-on projects across 'events'. These 'events' have been driven largely by the computer-mediated technologies, in a combination of these technologies' communication and distribution capabilities.

Two factors envisaged right at the outset that had gone on to **strengthen** the Project's base were:

- (a) the project's ability to envisage the potentials of breakdown of the emerging technologies - untested as they usually remain in their initial phases. And hence, consciously choosing to use both sets of technologies - the *emerging* ones (the Internet) and the *conventional* ones (telephone, fax and email) - in parallel and to great effect;
- (b) the combined use of *synchronous (online)* and *asynchronous (offline)* communication (rather than depend on online communication all the time), to offset the costs of online transactions and exchanges as well as to leverage the role of offline communication towards research and creativity-driven matters that could typically require more time, privacy and deliberation.

The project's avowed **mandates** have been the following:

(i) to involve "*new audiences*" or the so-called '*technologically illiterate*' into the folds of the technology by making the Internet work in a friendly, inviting and intuitive manner. Typically, "new audiences" (coined as a terminology by us) to represent those who have been excluded from the technology's use either for want of resources or because they have approached the technology with a sense of intimidation and fear. Examples of such user groups: children, street children, artists, artisans, dyslexics, housewives and such:

(ii) to experiment with the innate ability of the Net to be *interactive* and *collaborative*, rather than use it merely as a repository of information. In that sense, the need to leverage the Net for 'creating' rather than just informing ourselves;

(iii) to extend the domain of the '*virtual*' into the '*physical*' through a set of activities that are able to express themselves in both these regards rather than being restricted to the virtual, as is usually the case. This would also open up the option of the parallel use of mediums of expression (such as arts, crafts, music, etc.,) as well as materials (paints, videos, photography, etc.,);

(iv) and finally, to make the Net *cross-culturally viable*, and in that sense be able to extend the use of the Net to large swathes of users across the world by developing interfaces that will cut across any dominant or any local language dependency.

C

The Solar Project-Udayachal Primary School initiative - a case study:

The partners in this case were two individual setups - a technology one viz., Project Solar Eclipse'99 and a non-technology one, viz., the Udayachal Primary School:

As already mentioned, the *Solar Eclipse '99 Project* (<http://www.colorsofindia.com/story>), conceived in late 1997, is an international cross-cultural Web initiative towards exploring design and technology devices that could make the Web come 'alive'. One of the intentions being to make the Net effectively available to the so-called 'technology unsavvy' through easy front-end interfaces. The project is essentially cross-cultural in essence, functioning within the framework of collaborating online and offline with different countries in order to work on different learning-driven themes such as sundials, solar eclipse, festivals, love letters and love stories, shapes and structures and so on. The principal partners within the Solar Eclipse'99 Project have been the Indian Institute of Technology (IIT), Bombay, India and the Falmouth College of Arts (FCA), a design university in the UK. In keeping with its mandates, the Project seeks to involve such user groups as children, artists, craftspeople, dyslexics, streetchildren and anybody who may be involved with wanting to make learning an exciting activity. This is where schools such as the Udayachal go to form an important constituency for the Solar Eclipse Project. Needless to say, the Project draws heavily for its content, design and technology inputs from expertise located in scientists, industrial designers, visual communicators, programmers, and such.

The Udayachal Primary School (<http://www.godrej.com/school>) is a model institution of learning for children in Mumbai, India, and founded by a progressive industrial family, the Godrej, as a facility extended to the employees of their industrial conglomerate. It carries a reputation for having created and maintained a high quality experimental-driven learning environment for its children covering the age groups of five to ten.

Of utmost relevance here remains the fact that the main constituency driving the school's achievements and creativity is its singular vision to make every activity on the school's premises worthwhile for its children rather than for its adults. Which could occasionally require having to override/deviate from the rigid scheduling of school activities (organised around pre-set curriculum/syllabus) in order to accommodate the accidental appearance of a meaningful activity such as an Internet project here or a Peace project there.

While these two setups have collaborated across a few 'events', each time working on creativity-driven exercises with different

global setups, many of them being schools from UK. For the purpose of this particular case study, we will focus on an 'event' entitled "Love: Stories and Letters" which had a cross-cultural partnership with the City Gallery, Leicestershire, UK, and the Hazel Primary School meant for economically disadvantaged children. The Leicester side of the partnership additionally referred to the 'event' as a "Story without an End" because one of their story tellers had captivated them with a "story without an end". The City Gallery, Leicester eventually hosted a beautiful touring exhibition based on the entire outcome of this cross-cultural collaboration. While the 'event' itself took place in the early December of '99, the touring exhibition happened around July '00.

D

Important attributes of the Solar Project-Udayachal-Leicester partnership:

(i) At one level such a partnership serves as an example of an Internet (new media technology) project that *questions the conventional and the rather misplaced notion* that technology (or at least the use of technology) needs to remain in very specialised hands. The Project goes on to bridge the gap between *a child's innate ability to adapt to new technologies*, on the one hand, and the widespread lack of opportunities confronting children and similar user groups in areas of technology applications, on the other.

(ii) At another level, this is also a project that stands as an exemplar of what could happen when institutions, such as primary schools, take the initiative into uncharted areas of learning and learning-related activities, rather than wait to be stewarded through these. either by the government, the industry or by Godfather institutions. As it happens, in the case of the Udayachal-Solar Project, the gains for the primary school had far outstripped the risks of having undertaken bold initiatives towards creating learning opportunities for children and their teachers. But, at the time of taking the plunge there was no way for the school to know about the outcome.

E

The trigger:

While it is fortunate that there are certain synergies that have occurred between these two setups, the question that one really needs to ask here is: how did two apparently divergent sets of institutions - a primary school on the one hand and an Internet project based in an advanced school of technology on the other - and representing the two extreme ends of the learning spectrum, get to converge to create meaningful applications in technology? Sometimes, the simplest forms of communications channels can open up windows to the most extraordinary opportunities. In this case, it wasn't just a set of children receiving the opportunity to

interface with technology. Equally, it had to do with a technology project bristling with Web experimentation and eagerly awaiting to test out its technology applications on users not yet exposed to technology.

So, at a certain fortuitous point in time, to be able to find just the right alliance in a primary school already carrying a legacy of experimental teaching, is what had added true value to the Solar Eclipse'99 Project's mandates.

The trigger itself was the chance meeting between an Internet Manager from the Godrej industry where the primary school is based, and the Coordinator of the Solar Project located at IIT, Bombay, at an e-commerce seminar organised by IIT, Bombay in January 2000. All it needed was a small discussion of each other's areas of interest for its net outcome to show up across at least three successful project alliances - centred around the themes of the sundial, the total solar eclipse of Aug'99 and the theme of love stories and love letters - all of these across the course of a single year (1999). With the promise of yet another alliance across the theme of "Heaven on Earth", whereby, children will, in future, create speculative architectural designs based on their personal concepts of heaven and its beauty. Slated to be held in a few months from now, "Heaven on Earth" will attempt to connect up children via the Net across countries as culturally and locationally divergent as UK, Mexico, India, USA, South Africa and Australia. In other words, for a 'people's technology' to find the right partners, one would need to have one's ears close to the ground. Sitting in the laboratory's ivory towers could mean bypassing the most elemental or informal of communications channels.

F

The use of the Internet for the case study:

(a) technology-related issues:

Starting with the pilot 'event' of the Solar Project, it has been the practice of the Project to create a dedicated website revolving around each of the 'events'. This, with the purpose of testing the project's mandates.

For the 'event' of the lovestory and love letters, the following sites were designed:

<http://www.colorsofindia.com/story> to represent the children in India and designed by the co-author of this paper, Prof. Ravi Poovaiah of the Indian Institute of Technology, Bombay .

And the <http://www.design.dmu.ac.uk/storywithoutend>, designed by the

DeMontford University, Leicester in active collaboration with Leicester's City Gallery.

On all occasions, including the Bombay-Leicester 'event', the websites have been informed by an overall plan of action that have sought to include within the Web, one or more of the following web components - each one progressively more

sophisticated in its scope than its predecessor, in its step towards increased human communication and interaction. These have been introduced in different layers for the websites:

(i) an *information* layer on the site to brief the viewer or participant about the 'event' or the theme/subject matter at hand, moving on into

(ii) introducing an element of *interactivity* into the site in order to make the site's information-component more interesting and more animated, and thereby, more effective; and then moving on further into

(iii) introducing a *collaborative environment* into the site through softwares that we have devised for the purpose, and which are meant to allow the participating partners to work with each other on the Net over pre-designated tasks (such as actually build a sundial on the ground as we, indeed, have at one of our 'events'); and lastly

(iv) introducing a *time-line documentation* of the activities that have dynamically evolved during the progress of the collaborative effort. This has been done through a web/HTML diary with a view to enabling the collaborating partners to go back in time over their activities on the Internet's collaborative work space, and be able to derive the most out of their efforts.

It needs to be mentioned here that the Solar Project has been in the practice of using the HTML diary long before it's popular use in the last couple of years.

(v) and finally, in keeping with the idiom of the Web and its unique ability for dynamism, a constant updating of information generated (in terms of the children's activities) and made available online with the progress of the 'event(s)'.

(b) information and activities-related issues :

All Solar Project-related site(s) are usually updated with information on the following sections:

. the 'events' schedules to allow the smooth functioning of the 'event(s)'

. a comprehensive list of participants from all the collaborating partners, in an attempt to introduce all of these members to one another across the Web, usually by means of photographs of the participating children, and wherever possible with those of the adults (or on occasions, even caricatures of some of the participating partners, more as a creative exercise)

. a series of activity modules, which for the occasion of the 'event' on Love Story and Love letters were as follows:

. beginnings of stories by children to be completed by their counterparts in the collaborating country

. endings of stories by children meant to be started off by their counterparts in the collaborating country

. their own stories about love,

. their drawings of things they love,

. their opinions on children from the twinning city/other city

G

- . letters exchanged on the occasion of the 'event' between the children of UK and India
- . other activities such as calligraphy, paintings, drawings, singing (including a song composed for the occasion) and skits - all of them designed to express the theme of love

What does all this do for its partners?

The benefits have moved both ways in the alliance. While such an 'unlikely' alliance could actually offer a technology project valuable insights into the ground responses evoked in a given user group towards its experimentation - in this case the user group of children and to an extent their teachers. Such a technology alliance could equally afford a non-technology group an authentic first hand view on how cutting-edge technology unfolds in its development cycles to typically work in reality.

We cite a few of the ground realities/responses from either sides of the alliance, apropos the technology uses on this project:

(i) Since the project uses both synchronous (online) as well as asynchronous (offline) modes of communication, it threw up certain learning opportunities for both children and the technologists.

For the children, here was an opportunity to effectively understand the difference between the concepts of 'online' and 'offline', and their relative uses and merits. It simultaneously gave them an insight into the rather difficult concept of international time zones (GMTvsIST), the time lag of five and a half hours involved therein, and what that could mean on the ground.

'Online', it meant that on an early cold December morning, children in UK have arrived in their designated project room.

Barely out of bed and breakfast, as yet to gain their voices, they are greeted by a chirpy "good afternoon" by a bunch of kids in India completely charged-up post-lunch, half way through their day and with one foot already awaiting end of school hour.

Further, upon learning about their counterparts in India dressed in shorts and tee shirts, the UK children wonder incredulously how anybody can wear anything else but heavy woolens and mittens on a cold December morning.

The first hand feel of this time lag, afforded by the computer's Internet 'chat' as well as by teleconferencing, was probably far more valuable than what the children would have learnt through their geography books about time-differences.

In another instance in mid-March, which is late winter in UK, children in UK and in India have made sundials. One such sundial, made by children in India, are out of leaves of the palm tree.

When the children exchange news across the Internet chat about their respective experimentation, the children in the UK wonder if the sundial has been checked out in the sun. To which the children in India quip that although it were just two in the afternoon in UK, it was already past seven in the evening in India and hence past sundown. However, the children in UK continue to

urge their counterparts in India to test all their sundials in the sun, something the English kids were not privileged to do, since the sun seldom shone on a March sky in UK.

For the technologists, it meant that they could now get to check out the ground realities of bandwidths, whether Internet Service Providers (ISPs) actually delivered on the promised speeds, whether the interfaces designed to access the chat mode as well as to make it 'kid-safe' actually worked, whether the cables could prevent time-lags during the passage of information, whether the computers would have to constantly 'refreshed' and 'reloaded' in order to maintain continuity in the 'chat' mode of communication, and whether the telephone-conferencing itself would be able to hold out against the disturbances in airwaves.

(ii) Since the project uses parallel communication modes - both conventional (telephone, fax, email) as well as the emerging ones (the Internet), rather than just bank on the emerging ones - *the children* got to understand the relative uses and the merits of the different modes. Including a detailed understanding of the technology-principles innate to the functioning of each one of these. E.g., the fact that the fax worked on air waves and the computer on cables and the Net on cables and airwaves and so on, made the reflect on certain principles of science more than the conventional books on the sciences would have done. Also, to be able to assess each of the technology modes against the factor of whether they worked best as online or as offline support. For example, the telephone was obviously too online a device to be used as anything else whereas the email to offline, and the fax a bit of this and a bit of that. Not to mention the way that the respective technologies have developed across time (over the last hundred years) and the way the history of technology had close association with forwarding or undermining a country's development curve.

For the technologists it meant first hand opportunities for trial and error into assessing the exact technology modes as an optimal function for exact occasions. For example, if a certain information base was needed to be constructed before the actual online 'event', then would it not be more optimal to use the emails and their attachment facilities, rather than waste resources on expensive 'chat' modes? And would it not be better to use the fax for instant text and graphic despatches rather than wait for the Internet connections to work optimally before an email attachment could be expected to reach its destination, or before the Web could bypass bandwidth hiccups to download images within a reasonable period of time? Without 'shop-floor' assessments, there could be no way of checking out the veracity of technology claims made on paper.

(iii) In a cross-cultural technology project such as this, the most valuable lessons are yet to be listed here. These are lessons more in attitudes than actual technology breakthroughs.

In a globalised, homogenised world, with children from big metropolises constantly under the threat of cultural onslaughts from dominant cultures (such as American ways), the Internet's communications abilities at cost-effective rates could indeed be leveraged in more than one ways.

One of them would be to make the otherwise unimaginable proposition of making different countries with their respective cultural diversities actually arrive at the doorstep of our children. And allowing them a good view of the cultural wealth, especially inherent to the countries less known to them. To that extent, it is the cross-cultural communications potentials of the Internet that could stand to be its best learning-driven feature in the years to come. And a feature that has remained grossly understated in the wave of the technology's currently more racy features such as its ability for instant and fast communications.

Since the potentials of the Internet to communicate cross-culturally at highly cost-effective ways remained a key mandate for both the partners, the Udayachal-Solar Project itself derived a lot of its working/collaborative ethos from the metaphor of 'we are the world' and a world where we don't crush each other. This has almost become the anthem for this project's alliance partners.

Which means that apart from making the interactions on the project into a worthwhile learning platform for our children, it could also help us connect up with other countries and cultures in an easy, unaffected way, without making them feel intimidated by the fact that for this project at least, it is India that has taken the technology lead to make the project happen. And so, the obvious mind-clashes that could have underlined the project's interactions with a technologically advanced country such as the UK or even the USA, has managed to become completely irrelevant, compared to a much larger project issue as cross-cultural collaboration.

For the children, this has meant joyous discoveries such as the following:

That they could directly ask children from another culture questions without fear or favour, since the technology 'hides' some of those features that could go to 'bias' children from being completely free and uninhibited with each other.

And in asking these questions, they would realise that in spite of the large distances that separated them, some of their questions remained universal. Such as questions on whether they had too much homework, or whether their mothers scolded them if they left their homeworks incomplete, or whether they loved icecreams and chips and burgers and 'junk' food. The universality of their problems and their prospects would strike an immediate bond of friendship between them.

For the technologists, it has meant the humbling experience of having to evaluate themselves against questions such as 'technology for what'? And that, the so-called non-technologists such as children could take to the computers as easily as they did.

Or the experience of having to reassess the age-old dictum associated with all scientific or technology-studies that 'science is value-neutral'. This project has provided the technologists with a first-hand opportunity to see how culture could strike at the very roots of science's value-system. That, without making the technology 'human', technology could remain redundant. And also, any technology that aspired to be 'value-free' equally make it equally lethal in the hands of the unscrupulous, as one has already experienced in the case of the indiscriminate hacking of sites on the Internet.

In conclusion:

For the technologists and the children alike, this has been an opportunity to test out their skills against the other, and to then realise that these two apparently disparate factors (technologists and children) could actually work in a symbiotic association of give and take, in complete fulfillment of each other's objectives. While an alliance such as this has given the children the confidence that they can interact with legendary setups such as the IITs, for the adults, it has been the realisation that the roadmap to technology's success lies indeed in the man on the street. That, without his cooperation, the most lauded of the people-oriented technologies could find imminent collapse.