

**Across the Web:
The Colors of India as a cross-
Cultural collaborative initiative
For learning**

Across the Web: the Colors of India as a cross-cultural collaborative initiative for learning

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A

Introducing the context - the people and the times:

In a touching feature on travel, a visiting design scholar from the Rhode island School of Design (Taguiri, 1999) had remarked: "some journeys cover great physical distances, while others are journeys in altered states." Project Solar Eclipse'99, suggesting the occasion for the conception of the Project as well as representing the empirical arm of Colors of India (COI, 1998), is one such journey in altered state and carries the tale of real people in a fascinating time.....

Most of these 'real people' were painters, sculptors, tribal artists, textile artists, storytellers, printmakers, housewives, community workers, schoolteachers and educators at the forefront of people's movements (movement for workers, movement for the demystification and popularization of science).

Then there were the children, not just as real people, but as the 'fascinating people' of a fascinating time, since they had lent magic to the Project. Among the member-participants were children from schools that were both mainstream as well as economically deprived. Street children who went to no schools at all. And, indeed, children with learning disabilities such as dyslexia and in that sense making them disenfranchised.

All these people, in turn, had the collective effect of imparting to the rest of the participants, viz., students, practitioners and the faculty of design and technology a 'realness' usually not attributed to this category of people.



The essence of the Project: "connecting up"

Now comes the tale itself from a fascinating time....
It all started in 1997, when the Internet was still at the beginning of a communications revolution. The technology, not yet chronicled, was threatening to explode on one's face in directions completely inconceivable, even five years down the line today. A

major cosmic phenomenon in the form of a complete solar eclipse, awaited by people with breathless anticipation, presented itself as an impetus for an experiment with new media technology.

This occasion of a complete solar eclipse, slated for the 11th of August 1999, was still two years away. The eclipse was estimated to commence at dawn, off the coast of New Foundland, Canada to quickly move on into Cornwall on UK's southwestern most tip off the Atlantic. In the late hours of the same evening, the eclipse was going to conclude over a location more than half way round the world, off the Bay of Bengal, along India's eastern coastline. Since UK and India were at the onset and the concluding points, respectively, of the solar eclipse's line of trajectory, the Project naturally came to be conceived and partnered as an Indo-UK initiative.

The reason that made the phenomenon of the eclipse so unique was that this was the first time in recorded human history that the trajectory of a complete solar eclipse was going to travel through a large swathe of landmass so as to cover entire portions of the UK, Europe and Asia. The sun was expected to get eclipsed over a veritable string of countries, with France, Germany, the erstwhile Yugoslavia, Hungary, Czechoslovakia, Turkey, Iran, Iraq, Afghanistan, Pakistan and India being just some of them (*footnote 1*)

Next on mind was the question: could we turn this historical occasion into an opportunity to build a "daisy chain" of communities with the intention of "connecting up" the different cultures that were intrinsic to the countries located on the straight line of the eclipse's trajectory?

Differentiated and yet resplendent across the spectrum, in their varied hues and colors as in a rainbow, could we celebrate the fact that these different cultures were suddenly strung together and bonded by a common universal thread of the narrative - the sun? Unified, as they were, by the fact that all of these countries were expecting to experience a unique, cosmic, once-in-a-lifetime solar phenomenon of an unimagined magnitude over their respective skies.

And then, almost as if by serendipity, this unique cosmic phenomenon seemed poised at the threshold of a new technology, the Internet. The obvious question to ask was: could we expect to leverage this new technology, aided by the already existing networking technologies, to create web-based exchanges that would enable communities located far away from each other in different parts of the world, to interact, share ideas and work together?

Towards this end, could we create a space that would exist in continuity across all these countries? Almost co-terminus, as it were, with the geographical spread of the eclipse's own sphere of influence?

And, could we eventually attempt to build into this contiguous space on the Internet, a set of "collaborative work spaces," in order to get the member-communities (drawn from universities,

art galleries, craft centers, schools for children or even the industry), to collaborate creatively with each other on themes of mutual interest or on themes thrown up by the different cultures? (*footnote 2*)

The questions that kick-started the experimentation might well have been a tribute to the inventor of the WWW, Tim Berners-Lee, and an opportunity for us to construct a critique of Berners-Lee's original intention of constructing the WWW - as a universally connecting device for people across the world (*footnote 3*). The series of questions that inevitably follow could also well have been inspired by the original genius of computing A.M. Turing's thoughts from his writing "Computing Machinery and Intelligence" (Hofstadter and Dennett, 1981). In it Turing asks: "what is the answer to this new form of the question?" To which he counter-questions: "Is this new question a worthy one to investigate?"

The questions give us a glimpse of the allegory surrounding the eclipse. By attempting a "daisy chain" it was possible to look at the larger context of space and time. The themes on the anvil for intended collaborative exchanges could well end up providing the subtext of what these cultures were predominantly about. To future generations and to people from far away cultures, the work carried out on the collaborative spaces via the networking technologies could become a crucible of the cultures' iconography, folklore, use of colors, and a myriad of such tales usually unavailable first hand unless one visited a country.

This idea of using technology (albeit in its non web-based form) to collaborate over a shared idea had just started to gain ground through the works of Scrivener (1992). Based at a UK university, Scrivener was suggesting mechanisms such as CSCW or CSCL (Computer Supported Collaborative Work/Learning) which were the technical terms for collaborative practice aided by computing. And was highly supportive of this idea of a "daisy chain" and shared tasks mediated by computing (*Footnote 4*). However, the existing technical definitions of CSCL and certainly the one posed two years later by Ryokai and Cassell at MIT Media Lab's Gesture and Narrative Language Group as being "a collaboration between a teacher and a learner mediated by a computer," was obviously too restrictive for us. This, given our own intention of applying it to the larger context of cross-cultural exchange on a web-driven platform. Instead, what found convergence with this study (Ryokai and Cassell, 1999) was that it coincidentally supports an original assumption of ours (related to another aspect of CSCW/L). Namely, that such collaboration drew strength from the ability of participants to "co-construct fantasy worlds and tell stories about them." Which automatically meant that since children fantasized as well as shared their fantasies with great ease, children could end up being wonderful collaborators on the Net. Also, an ongoing study about locating technology within a cultural paradigm (Sen and Poovaiyah, 1998) helped provide us with a theoretical imperative for our emphasis on culture as a powerful mediator for communication practices.

Additionally, our own hunch based on the notion that the essence of a culture was much better communicated through a paradigm of folklore, social mores and imaginative narratives rather than through dry ethnographies, gave the Project the confidence needed to undertake cross-cultural collaboration via the networking technologies.

At a more specific level, therefore, the Project became committed towards providing a design-technology axis of opportunities for cultures/cultural set-up(s) to not only access and learn through cultural studies, art and design practices of other cultures by specifically interacting across the networking technologies. As a step further, with every cross-cultural exchange, it would be our intention to enable participants to build on top of each others' stories and ideas that have been shared/communicated across the technologies, and give the outcome of such construction a character of its own.

This kind of construction would obviously depend on the willingness of the partners to wish to share spontaneously and without cultural biases. However, the actual exercises on the ground eventually bore out our initial hunch that people were much more willing to co-construct stories and imageries about their respective cultural milieus than is usually made out to be, and that the Net could be a great facilitator in this regard.

B

Vision statement and objectives/mandates of the Project

Project Solar Eclipse was conceived at a time when the 'The Economist' (1997), known for its wry humor, had declared as a title for its book review section: "Hardware, software and fancyware: a new crop of books on digital revolution looks back more clearly than forward." However, even this 'looking back' had thrown up no example of any similar initiative, and hence, set the pace for enumerating a lucid set of Project objectives.

Based on a vision statement that aimed at creating "new art, new audiences and new experiences," in turn, based on connecting up distantly located communities with one another through design-technology initiatives in order to create a body of work that would be a direct outcome of these cross-cultural interactions, the Project was able to formulate the following as a set of mandates/objectives:

(i) to explore a larger and a possibly far-flung world through the networking technologies, thereby making the intention of "connecting up" an imperative rather than a mere rhetorical question. Inherent in this being an attempt to make the Net *cross-culturally viable* by developing interfaces that could cut across any *dominant or any local language dependency*. And in that sense, be able to effectively extend the use of the Net, in one grand sweep, to large swathes of users from across the world. This potentially effortless access to another's culture is what we would term as "*new experiences*";



Virtual 'Holi' - Festival of Colors and a riot of activities

(ii) to involve "*new audiences*" into the folds of the emerging technologies by making the Internet work in a friendly, inviting and intuitive manner, and in that sense, aim at bringing the digital world, in all its positive essence, at the doorstep of those as yet unfamiliar with its use. To this end, the terminology "new audiences" was coined for the occasion to typically 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, craftsmen, artisans, dyslexics, housewives and such;

(iii) to view the virtual-physical domains as a continuum (rather than as being fragmented and compartmentalized worlds) in order to make the resulting learning environment more comprehensive (*footnote 5*).

The objective would be to extend the domain of the '*virtual*' into the '*physical*' through a set of activities that were able to express themselves through both of these domains, rather than allow the computer-mediated interactions to remain restricted to the 'virtual' domain alone, as is usually the case. This marriage between the domains would then create a form of "*new art*" and open up the option of a *parallel use of the mediums* of expression (such as the arts, the crafts, music, films etc..) as well as that of a *parallel use of materials* (such as paints, clay, fabric, geometrical structures, videos, photography, etc..).

The physical artefact(s), created as an outcome of interaction across the virtual, would have the added and distinct advantage of being representative of an inspirational structure as a tangible reminder to potential future users about the promise of being able to relate to another's culture via the networking technologies. Something that cannot be expected of the 'virtual' which, in comparison to the physical, can be rather ephemeral and distinctly non-tactile.

It has to be said here that not being armed with the benefit of hindsight experience of other initiatives may be a bit unnerving but not necessarily debilitating. It could, instead, have the effect of achieving something altogether fresh. It is tempting to reference a rather remote but related context provided by Australian designer Kevin Murray's efforts in 1997 to develop a

curatorial thesis 'Turn the Soil,' which pondered over whether things would have been different if Australia were colonized by another country.

In the context of the exhibition concept that explored the experience of second generation Australian crafts people from a non-English speaking background and the influence of their parents' homeland culture, Murray quotes from Alex Miller's novel of Chinese diaspora 'The Ancestor Game.' A local painter intending to leave Shanghai for Australia is advised: "There must be plenty of work for artists to do in such an uncertain place as Australia." (Murray, 1997-98).

With the operative emphasis on 'uncertainty,' our Project had attempted to leverage a new technology's wilderness and treats it as an open stage for creative experience, rather like a futurists' stock in trade.

C

The experimentation on the ground:

The envisaged cross-cultural online-offline collaborative exchanges were designed to take place within the framework of a series of 'modules/'events' that would go on to form the empirical backbone of the Project.



The Project's nerve-centre: people, material and resources in action in 'project-room'

(I) A few parameters for Project 'events': Intended as activities within these 'events' were a series of interactions both via (i) the *conventional* networking technologies (fax, tele-conferencing and email), as well as (ii) the *emerging* ones, the Internet (*footnote 6*). These interactions were to then find translation on to the 'physical' domain through use of *parallel mediums* of expression (arts, crafts, photography, video streaming etc.,) and *parallel materials* (paints, clay, geometric structures, fabric, etc.,) of use.

After a pilot project held in early 1998, it became apparent that each module/'event' ought to start with a two and a half month period of *asynchronous*/offline research and exchange of ideas between participating cultures/countries over a pre-designated theme(s), followed by short outburst(s) of *synchronous*/online exchange ranging across a time period between three days to a week's duration. During which period, the cultural partners would

work simultaneously on the ground at their respective countries and constantly exchange and share ideas and inputs towards the stated tasks/goals, culminating with the completion of proposed artefact(s) as well as joint presentation through conferencing. The prohibitive costs of online networking then (and even now) had altogether foreclosed the option of longer bouts of synchronous/online exchanges.

(II) Dominant models of interactivity: What emerged through experimentation across these 'events' were two models of interaction and connectivity.

Model I concerned a set of 'events' that involved two distinct cultural partners working on a one-to-one collaborative basis over a pre-designated task across a pre-designated time-period and theme. An 'event' would begin with the act of constructing a dedicated webspace for the given theme and occasion, followed by the establishment of 'project rooms' at the participating locations/countries. The idea of a 'project room' was also to establish parity in composition and size as well as inventory of people and material required between the partners.

Typically, the main collaborators [Indian Institute of Technology (IIT) Bombay in India and Falmouth College of Arts (FCA), Falmouth, UK; IIT Bombay with City Gallery and De Montford University, Leicester, UK, and on occasion others], would set up shop by drawing in their respective stake-holders on board. Stakeholders such as children and teachers from primary and occasionally secondary schools, artists, printmakers, story tellers, documentation team, and such. As well as design students, members of faculty of design, faculty of technology and engineering, model makers and whoever else needed to set the ball rolling towards the designated theme and project goals.

Model II, on the other hand, usually commenced with India and a dedicated webspace on a given theme as the take-off point, with the doors of the Web thrown open in invitation to any country/culture to join in for collaboration on a pre-designated task across a pre-designated time-period. This set of 'events' did not require synchronicity in project room size and composition and were, in effect, quite open-ended.

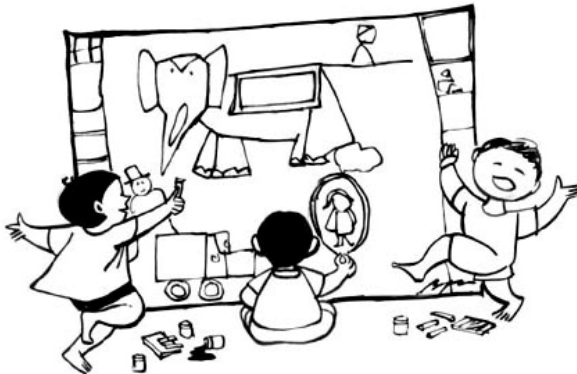
These two modes of interaction are by no means exhaustive. It is possible that other models will emerge in future from other Projects of a similar nature.

Both the models had their respective charm and advantages. While the model based on one-on-one interaction seemed more rigorous and concomitantly less open-ended (not in ideation, but only in the structuring of time), it also ensured more constructive results on the ground. The open-ended interaction on the other hand could, by its very free-wheeling nature, generate hyper-excitement like a kaleidoscope gone out of control. Model II could also require intense hands-on editorialising of content, given Internet's tendency to use its chat mode to digress into inanities.

(III) Theme for pilot event: Our pilot 'event' viz., the *Bombay-Cornwall collaborative mural* was based on Model I, which

followed the one-on-one interactive pattern. The 'event' involved the simultaneous build-up of two murals - both eight ft by eight ft in size, one constructed at Cornwall, UK with Bombay as its theme, the other constructed in Bombay with Cornwall as its theme. Information, stories and lore about Bombay were asynchronously transmitted to Cornwall via a dedicated website built for the occasion by participants at IIT Bombay. Additional information about Bombay was transmitted via fax and email. On Cornwall's part, information came in as faxed images and email information as well as online digital images posted on the Bombay website (there was no dedicated website of Cornwall). All this formed part of the preparation, leading up to the pilot 'event' on Feb 6th 1998.

The participants chosen for the occasion were children, eight years of age (about 12-15 in number from each side), along with students of design and students and faculty members of technology. In addition to other support base made up of teams for documentation and those who helped with the physical construction of the mural (*footnote 7*).



Collaborative Bombay-Cornwall Mural in progress

(IV) Outcome of pilot event: (a) An interesting outcome of the murals were their respective *identities*. Cornwall did not remain exactly Cornwall after the children in Bombay had interpreted the received images in their own light. The black and white faxed images (of the tiled English houses or ships docked at the Falmouth yard) were painted by children in India in their own notion of what Cornwall could be like. In the reverse, the image of an elephant sent across to Cornwall found its own shades of colors there. Bombay at Cornwall did not remain exactly Bombay,

nor Cornwall in Bombay exactly Cornwall. It seemed like a celebration of points of view about cultures and how differently one's culture could be perceived by another when mediated by technology, without raising unnecessary hackles or dust about why one's culture was being perceived differently in the first place.

(b) It was also interesting to observe the way the *technologies* worked. What seemed the most uncertain was the glamorous, emerging technology of the Internet. What worked well, on the other hand, were the tried and the tested technologies of the facsimile, the telephone and the email. Outside of these, what additionally worked well was the 'pasteboard', a proprietary tool developed for the occasion by a bright technology student at IIT Bombay and meant to place on record, the happenings at both ends of the collaboration, by splitting the computer screen as part-Bombay and as part-Cornwall.

At the time of the experimentation, the ability of the 'pasteboard' to store and then unfold itself chronologically to retrospectively reveal the entire chain of happenings, was not what was possible as part of the just discovered paradigm of the digital dairy. The 'pasteboard' as an innovation made us confident that tools built with a focus on context (of use) and user group were likely to make an impact as well as be sustainable.

(c) It was a matter of happy irony that while technology aids such as the CUCme cameras installed at the UK end and whiteboarding installed at both ends worked rather tediously since they are both bandwidth-hungry technologies. What worked extremely well on the ground and for all to see were normal activities that required *human, mental and emotional energies*. These were activities such as drawing and painting that helped express one's culture to another, with these activities being supplemented by technology only for purposes of their transmission (via faxed images and digital images). Or, the act of chirping through telephone-conferencing that came out unfettered, spontaneous and natural as the most basic of communications are expected to be, and additionally lending to the interactions, a sense of tactility. As was the privilege of being able to interact with children from another culture (through the computer, of course) and directly get to learn about their milieus. The point here is that, technology did not obfuscate or overwhelm the real human activities on the ground, it merely uplifted their quality.

(d) The *elements of surprise* unleashed about each other's cultures through direct and imaginative communication, with the most significant revelations relating to the area of time. Apart from difficult lessons of 'time void' made easily comprehensible, the 'event' brought home to roost differing notions about one of life's most baffling concepts. It seemed ironical that a technology born in the cradle of the West was actually structured around Eastern *concepts of time*. Rather than being depicted as absolute and uniform (after Schopenhauer and Newton), the Net seemed to work in an infinite series, more like "a web of time, the strands of which approach one another, bifurcate, intersect, or ignore each other" (after Ts'ui Pen's concept of time, Borges 1962).

(e) And most of all, the excitement of seeing a large empty canvas *transforming* before one's eyes into a beautiful mural

across a four hour period that carried the time zones of two different continents and managed to finding a remarkably uncomplicated expression through timelines (on the mural in India) - with the GMT (Greenwich Mean Time) marking the left border as if depicting the West and the IST (Indian Standard Time) right border, as if the East..

(f) But the greatest celebration of the day came from a fantastic sense of a '*carnival*' that had been triggered off by the joyous and spontaneous participation of children and adult alike - notwithstanding key technologies failing at the most critical of moments. This, in turn, was underwritten by the unassailable fact that it was not technology that had steered the course of the day, it was people and their activities. Technology was there to help when it did.

It was also apparent on the face of it all that something about learning had changed irrevocably, and that Stephen Pappert's 'Mindstorm' (1980) about the computer's ability to make learning breathtaking and constructive had suddenly appeared to be almost prophetic and oracle-like (Pappert, 1999; Time, 1999) All other 'events' conducted under project Solar Eclipse'99 have carried the same quality of the 'carnival', driven as they were, by collective inspiration, by the very sensorious nature of their experience, and not least of all because of the exciting user-groups involved. The infusion of creativity through children and artists - urban and tribal alike. Street children with their keen native intelligence, wonderment and a hunger to learn writ large in their eyes. Storytellers with their ability to regale an audience even while communicating matters of grave import. Model makers and printmakers surpassing everybody else in their energy and staying power long after the last rays of the day had vanished. And school teachers with their immense reserve of patience and never ever appearing to be patronising with their wards.



"Walking through" an Indian Elephant:
 designed and
 built in Cornwall from images exchanged
 of information
 between India and UK
 Cornwall and Bombay

Cornish Sailboat in India:
 constructed after exchange
 and images between

(V) Other 'events': The following 'events' followed the pattern of interaction as in Model I:

(i) *collaborative installations of the Indian Elephant* and the *Cornish Sailboat*: a life-sized walk-through installation of the Indian Elephant at Cornwall and a life-sized walk-through installation of the Cornish Sailboat at Bombay, India. Once again, the respective outcomes were a distinct function of the interpretation of the information exchanged across the wires. The Indian Elephant website, built for the occasion by IIT Bombay provided a comprehensive information and feel of the elephant, while the sailboat carried nuances of Cornwall's tragic story about King Mark's unrequited love for a commoner Isore, resulting in her death. Sails in black and white uplifted by motifs of the sun provided a warm metaphor for the way two cultures could work creatively around each other's idioms and folklore.



Children in India acting as live sundials under a bright sun: preparing to collaboratively build sundials with UK partners



Partners in UK their own preparations for collaborative sundial building

(ii) *collaborative sundials*, with sundials made collaboratively at the two locations - India and UK through information and ideas exchanged about their designs and functions. For inspiration acting as starting point for the designs, there was India's ancient legacy of a huge sundial called the Jantar Mantar, located in its desert-state of Rajasthan, The sundials that emerged at the end of the 'event' either bore the distinct imprint of the respective parent cultures or came out as sundials that were neither English nor Indian in their identities. But assumed a persona of their own as a function of contemporary materials and processes available to design combined with cultural exchanges.





Dedicated site for 'event' entitled 'Love Stories and Love Letters': progressively built during the course of the 'event'

Artist and Story teller Sri Badrinarayan narrating Stories to children

(iii) *collaborative love stories and love letters*, based on exchanges between children and adolescents from schools in Bombay and Leicestershire in UK's Midlands. Activities included one of the partner countries writing part of a story and the other partner completing it. Or one partner outlining various possibilities of a story end and the other partner fleshing out the story itself. All this, with help of eminent story tellers at both locations. India's story teller, Badrinarayan, the country's foremost designer of children's story books and artist *par excellence* (in the genre of Matisse) died soon after, taking with him his first-time memorable experience of interacting with children across two continents via the networking technologies. The participants also exchanged love letters that were like puzzles, incomplete at one end and completed at the other by the recipients.

The following 'events' followed the pattern of interaction as in Model II:

(iv) *"Here comes the Sun"*, held on the occasion of the complete solar eclipse that took place on the 11th of Aug'99, was an 'event that was driven towards creating a web-community from around the world and enabling them to experience a virtual solar eclipse on the Web. The idea was also to interact and share eclipse-related ideas and products with the logged-in web-community before and on the day of the event. What the communities got to share were off-shoots of the theme such as eclipse-related myths from different cultures, with the metaphor of the eclipse being transposed onto non-eclipse activities and games such as kite-flying (with one kite eclipsing the other). Or revealing the face of the sun as seen in nature such as on the sunflower or on fried egg with its sunny side up or the face of the lion with its golden mane, and so on. Some of the products designed on the occasion were solar masks and solar filters with help of ideas-exchanged across the Web.

NASA (USA)'s Exploratorium and UK's Art Catalyst joined in as collaborators after they came to know through the Web of the Project's existence



"Castles in the Air": installations as outcome of collaboration between painters, sculptors, tribal and textiles artists and fashion design students working with different mediums of expression

(v) "*Castles in the Air*", which was a three-day event about using the Web to interface with the arts and the crafts in order to explore patterns, shapes and structures across two-dimensional surface and in three-dimensional space, drew its inspiration from referencing, via the Web, patterns from other cultures. As part of

an experimentation to understand the Web and the networking technologies' ability to mediate with the 'physical' and the tactile mediums of the arts and the crafts, the 'event' invited renowned artists, sculptors, tribal artists, textiles artists and installation artists. The end-game was to construct a large installation on the theme of shapes, structures and patterns with the help of parallel mediums of expressions (painting, sculpture, textiles designing, etc.,) and the parallel use of materials (such as clay, textile swatches, paints, hand-made paper, pvc structures, and such). All of these were thematically driven by ideas exchanged across the Web. Collaborating with the artists and sculptors were students from a fashion design institute as well as a private trust for promotion of the crafts.

D

Project findings:

Our cross-cultural collaborative exercises based on 'events' starting in the late 1997 and ended around the end of 1999, threw up the following pointers:

- (i) the web-community appeared far more committed towards creating physical artifacts when the model of interaction consisted of a one-to-one interaction-mode between two focused user-group, rather than when the model of interaction involved a wider and a more diffused user-group. The product-ideas exchanged were usually in inverse proportion to the number of the audience/web-community involved or the products generated. It is rather telling that in spite of our web site being 'hit' with a figure of 400,000-plus across a period of two days during the solar eclipse, with many of these hits coming from designers, the number of suggestions for products continued to remain insignificant. It is our understanding that for more serious product-generation activities, one would need to restrict the number of interaction-groups to a select few and devise an inbuilt-monitoring structure in order to get the communities to seriously respond to pre-designated task(s) at hand.
- (ii) A carnival-like atmosphere prevailed without exception under both models of interaction.
- (iii) Children appeared to be the more intuitive in their approach to community-building across the Net than adults, with almost no pre-conceived notions or fear about the computer-mediated technologies.
- (iv) The parallel employment of the networking technologies, with both the conventional and the emerging technologies bailing each another out at critical points of failure appeared to represent the use of emergent planning at its best.
- (v) The usual infrastructure-related problems such as bandwidth-availability or the lack of it, more than occasionally slowed down or brought to a grinding halt entire chunks and segments of the events in progress.
- (vi) Over and above all these findings, empirical testing clearly established that: while it was the state of the art of the networking technologies that had enabled the information-exchange, the fact that the information exchanged had got

actually transformed and assimilated 'locally' by members involved in this transfer, created a significant take-off for design's intervention into the networking technologies. It is our understanding here that technology alone would not have achieved these outcomes. It had to be the result of a combination of technology-design initiatives such as the use of imaginatively designed web-based tools, alongside the use of intuitive interfaces rooted in everyday metaphors, as well as easy uncluttered navigation that could make the Web feel like a dream, a journey worth taking, rather than give one the feel of a new technology device in use.

The important thing to remember here was the mix of planned and emergent strategy that was employed entirely based upon researchers sensing that there was a strong contextual and cultural field to be explored.

E

Looking ahead - shape of the Project's future as 'Project New Century':

Project Solar Eclipse'99 was Phase I of Colors of India and was undertaken to comprehend the cross-cultural collaborative potentials of new media technology. While for most part of the time between its commencement in fall '97 to Dec '99, the Project's energies were directed at conducting 'events' as an empirical exercise to support our original assumptions about the technology. The period between spring '99 to the present (fall '2002) was devoted towards understanding the findings of the experimentation and then articulating these as international papers to mirror different aspects of the new media technology. In the process of researching into the subtext of the Internet as a technology that continues to scratch the mere surface of its total potential, the following aspects have found articulation:

(i) The early inklings of its appeal in the market even without its containing a business model (which was never the intention in the first place since the Project was learning-driven and involved children). The interest was evident at a presentation for "Business Models for the Internet," where major IT companies in attendance found the Project's content rather business-worthy (Sen, IIT Bombay, India, April 1999).

(ii) The Net posited as a 'School of the Future' (Sen and Pulley, ICSID-ICOGRADA-IFI Millenium Congress, Sydney, Sept 1999; Sen, University of New South Wales/ACUADS, Sydney, October 1999).

(iii) The static and dynamic qualities that uphold the Net's progressive ability to 'inform', 'dialogue' and 'collaborate' towards creative ends (Sen, CADE 2000 Postgraduate Forum, Falmouth College of Arts, UK, July 2000).

(iv) The reach of the Net and its potential to work as a functional medium for the non-technologist (Sen, City Gallery-De Montford University, Leicester, UK, July 2000).

(v) The powerful combine of a technology-non technology alliance as a function of learning, especially for children (Sen and Poovaiah, University of West of England, Bristol and Rajabhat Institute Suan Sunandha, Bangkok, 2001).

(vi) The Net's ability to work as a medium for sustainable practices (Sen, Poovaiah and Pulley, Design History Society, Aberystwyth, Wales, September 2002); and

(vii) Identification of certain strains of pedagogy (Sen, Poovaiah and Pulley, Design History Society, Aberystwyth, Wales, September 2002).

Phase II of Colors of India, tentatively named 'Project New Century', is about building actual deliverables into the Net. At the time of submitting this paper, work on constructing stand-alone tools to leverage the potentials of the Net's collaborative environment has already started with stated focus on children as user group. Other tools for other user groups will follow.

F

In conclusion - the metaphors of the Solar Eclipse as a basis for optimism:

It might be presumptive to announce with the certainty of faith, the concluding words about a medium that remains as yet so nascent in its development cycle. While completely subscribing to the more well-known facets of the new media technologies, viz., their open-source and shareware idioms, what really represent the cornerstones of an experimentation undertaken amidst immense uncertainty are a few metaphors drawn from our own experience of viewing the eclipse on August 11 1999, as well as from an on-the-spot recounting by *Observer's* Nicci Gerrard of what had occurred across the actual moments of the eclipse in Cornwall (Lewis, ed. 2000):

(i) While Milton called it the disastrous twilight, for us the Eclipse was far from being a signifier of disaster. For us, it had everything to do with an opportunity to "connect up" and open doors to those shut out from the networking technologies:

(ii) If the daylight sun was predicted to get reduced to a gleaming crescent just, before being completely devoured by the moon, for us this was going to be a moment of deep reflection over the downside of a technology considered the "mother of all technologies." It was definitely time to de-glamourise technology and see its underbelly in full objective view.

(iii) If the eclipse was going to send the birds home to roost in the middle of the day and make bats flicker around on silent wings. If the air was going to become still and cold, and if for a few seconds, day were to turn into night and night itself giving the feel of the end of the world. For us it simply meant that we would have to do without the warm comfort and support of institutions and markets that did not see the merit of trying to de-mystify the novelty of a new technology. And worst still, reluctant to make it freely available to those who did not have the means to afford it.

(iv) And finally, the belief that the sun would return and a new dawn would flood in from all sides, the bats would disappear and the birds would fly back and begin to sing, and the ghastly chill replaced with golden light and warm sensibilities. For us it meant that we were going to work with some of the nicest user groups in the world - children and artists, sculptors and the disabled. To see a smile on their face because they could make a technology work to their advantage? That sight, as a potential and a real outcome of our experimentation, was definitely worth the leap, quite comparable to the leap of faith taken five years ago to conduct this experiment in the first place.

The implications for design and technology surrounding Project Solar Eclipse'99 stem from our attempts to bridge cultures, resources and time, evidently through addressing certain impending and looming realities about the new technologies, viz., (a) the decision-making scale that is likely to arise out of having to operate outside of finite data systems and finite geographic boundaries, and (b) that "as we design technological systems, we are in fact designing sets of social relationships" (Cooley, 1980).

At the end, it could have been like walking into a dark tunnel that Jorge Luis Borges (1962) so eloquently described in his 'Labyrinths' as: "roads that fork and corridors that lead nowhere, except to other corridors, and so on as far as the eye can see." The desire to remain in such a labyrinth for the sheer love of the excitement and promise of the joyous discovery of collaborating with potentially unknown frontiers of knowledge-systems vested in faraway cultures. The excitement of connecting up with these unknown people without fear or favour of offending. And awaiting the flavour of a finished product borne out of time-bound, shared, reciprocal exchanges.

In that sense and more, the Project does not claim to offer solutions except to ask questions such as 'technology for whom' and 'technology for what'? If only to understand whether it is a mark or a scar that technology has left behind in its march across people's domains. Perhaps, one day, the answers will emerge from verily asking the right questions!

Footnotes:

Footnote 1: Complete or partial solar eclipses are not such rare cosmic phenomena. However, for most practical purposes, they are lost to humanity since they usually occur over the oceans, given that the earth is made up of only one-third land and two-thirds water. Under the circumstances, since the trajectory of the Solar Eclipse of '99 was due to cover a large part of the inhabited world, this presented itself as a rare opportunity for millions of people to be able to get a glimpse of one of nature's most fascinating occurrences, without having to undertake travel to far away destinations.

Footnote 2: The intention of putting on the ground the mechanism to connect up all of the countries on the occasion of the Solar Eclipse'99, just two years away, was highly notional and idealistic. The important point to remember here is that this idea of a large-scale possibility of

"connecting up" cultures for the purpose of learning and camaraderie seemed to have a life of its own and quite capable of extending well beyond the temporality of the occasion (of the actual eclipse). The solar eclipse had provided us with a powerful idiom for connecting up and learning through shared ideas.

Footnote 3: Although the Internet has its origins in early US defence applications - the ARPANET - way back into the sixties, the first time it assumed a form that would make it accessible as a universal device of connectivity was in 1993. This was when Tim Berners-Lee, a scientist from the CERN Laboratories, Switzerland, invented the World Wide Web (WWW) that enabled computers from disparate systems from around the world to get connected to each other. Berners-Lee, who had since moved on to MIT, USA, had explicitly maintained on the BBC in late 1997 that his preference for letting users have the device for free over selling the WWW to the market, was to enable its use on a world wide scale. Project Solar Eclipse owes a large part of its ideology to this stated position of Berners-Lee's.

Footnote 4: A paper presented by co-author Robert Pulley at ICSID '97, Toronto had raised the possibility of a "daisy chain" along the eclipse's trajectory. And had Scrivener commenting positively about the potentials of CSCW underlying the "daisy chain" idea.

Footnote 5: Subsequent experimentation on the merging of physical and virtual interfaces at MIT's Media Lab (Glos, J.W and Castell, J., "Rosebud: Technological Toys for Storytelling," 1997) would suggest that there were obvious advantages of marrying the digital with the physical. The digital domain is known to be attributed with properties of "networking and ease of abstraction," while the physical is laden with properties of "legibility of interface and multi-sensory interaction".

Footnote 6: The reason for combining emerging technologies (usually novel, glamorous and exciting but hardly tested out) with conventional ones (tried and tested and ubiquitous by nature and hence non-glamorous), was to assure us of returns in the event of the failure of an emerging technology to deliver.

Footnote 7: What occurred on the day of the pilot project/'event' was beyond anybody's imagination. On the downside, despite our best efforts at placing the infrastructure on the ground and running a technology test with Cornwall the day before, the insufficient bandwidth often held communication to ransom, forcing us to revert, from time to time, to fax, email and telephone communications. The telephone stood out as the oldest and yet the most heroic, stoic and unfailing technology of the day. The emerging technology (Internet) worked erratically and had to be seriously bailed out by the conventional ones (email, fax and telephone). However, everything else seemed on the upswing. When the children 'met' each other, it was warm, sunny and just past school hours in India, and cold, freezing and early on in the morning before school hours in the UK. The children in India greeted their counterparts in UK in at least eleven different ways of saying 'hello' in Indian languages. Before the children in England could recover from the idea of such multi-linguality, the children on both sides were already on to the computers that had CUCMe cameras fixed at the UK end, enabling the children in the UK to view those in India. Soon enough, there was whiteboarding as a tool allowing both sides to mediate each other's drawings and to come up with drawings done together. And most of all, they had questions for each other: UK: "what are you wearing?"

India: "lemon-coloured shorts." UK: "how lucky! it's freezing out here."
India: it feels almost hot here." UK: "does your mom scold you over homework" India: "you bet!" UK: "my favourite pet is my hamster" India: "mine is a parrot." UK: "wow, it's already past three in the afternoon there?" India: "And it's just nine thirty in the morning there?"

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