

New Technologies for Underserved Communities: Proposing a Cultural Framework-Driven Process for Constructing Interactive Social Spaces (Multicultural)

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I.0 Introduction: Who Are the Underserved?

In the backdrop of an emerging market scenario in India and the increasing need in the last three to five years to have to design devices and applications that are technology driven, one set of users that have arrived on the market's radar is the underserved communities from India.

The reasons are obvious. The focus of the networking technologies has started shifting away from the traditionally established user base, viz., users with large income bases in big cities to underserved communities, whether rural or urban.

The operative word here is '**underserved community members**', who we prefer to address as our '**new audiences**'— a component of India's rising demographics that today offer a critical threshold for the market to wish to build products specifically intended for these user groups.

It is imperative that we understand the mindsets of the 'new audiences'—their needs for specific products thrown up by their own environments that are hugely culturally mediated—and what makes them reject or click with certain products introduced by the market.

Needless to say, the reason to term these communities as underserved is precisely because they have remained outside of the pale of our attention—the attention of the market, the designer's, and to some extent even that of policy maker's in a country like India's, whose socialist plans have traditionally prided on including a fairly wide social support net for the disadvantaged.

It is our submission, that to get to the heart of the 'new audiences' we need to design and locate technology-driven products within key cultural frames of references, and not on mechanistic, engineering and technology-driven value-neutral bases.

It will be our attempt in this paper, therefore, to

1. posit a set of broad, normative **universalizing principles** at the highest level of abstraction that can help form the basis for identifying and categorizing into meaningful groups, key cultural attributes that can work above a country level reference (across similar ones) for the purpose of building product interactions;
2. Identify for India, moving down the level of abstraction, its **specific set of cultural attributes** based on the above universalizing principles;
3. briefly reference from our culture, the use of **associations and meanings deconstructed at different levels**—part to whole, and whole to part - that allow for a composite of complex iconography and semantics for our product and communications environments, and not always obvious to the outside observer; and finally
4. through examples of Interaction Design work carried out by us, indicate interactive concept solutions derived from the use of the above principles and designed for user groups from underserved communities (fisher-folks, migrant construction workers, shoe-shine boys at commuter rail stations, long-distance truck drivers, and children suffering from cerebral palsy)—to be demonstrated during presentation.

2.0 Pointers to a Cultural Frame of Reference—Towards a Methodological Outline

In response to our principal question 'how can we make new technologies meaningful and thereby more widespread for the underserved communities', and our assertion that we may need to embed product interactions and experiences within a *cultural frame of reference*, there are two broad aspects that are traditionally inherent in our product and communications environment that we need to address:

- (i) Our culture's use of **local narratives and cultural mores** as templates for product building; and
- (ii) the need to **build a sensory-rich environment into product interactions**, for two reasons—firstly, in line with the age-old human affinity for sound, images, smell, touch, and speech to build human interactions since civilizational time; and secondly, in keeping with the sensory-driven attributes of the new media technologies that allow it to mimic human sensory(s) through various sensors and actuators (heat/thermal, pressure, gesture, and so forth,) and, hence, as a subset of the above two,
- (iii) An imminent recognition and **identification of local inflections in sensory-use from culture to culture**.

This begs three further questions that are methodological related:

(a) Why/how is this any different from the way new media technology products have traditionally been built?

(b) What is it that might be construed as a cultural frame of reference?

And, (c) how may we decode the factors that go to constitute this rather complex and nebulous area that we call 'culture'?

As already summarized, we will address the above at two consecutive levels—the universal and the contextually specific.

2.1 Pointers to a Cultural Frame Of Reference: Enunciating Universalizing Principles Applicable to Developing Economy Conditions as High-Level Clues for Cultural Values

We will attempt to locate some universalizing principles as the first line of defense towards building a cultural frame of reference that could work as clues for design decisions across environments similar to ours, such as Latin America, South East Asia, Africa, etc.,

Our research into pointers at this highest level of abstraction suggests three strains of thoughts:

2.1.1 'Social capital' as a construct going back to Aristotelian times and redefined in recent times by Francis Fukuyama—a factor that recognizes with some satisfaction that man is a social animal. Social capital as a construct could find special meaning in India. According to Gurcharan Das (2002), a social commentator from India with deep corporate experience, social capital in Village India is encapsulated in Indians being warm, gregarious, and seldom alone, interacting incessantly, and usually within the context of their extended family. In Das's words, "if someone falls sick, the entire village shows up at the hospital, practically willing the patient to get well!"

This might help explain why it is important to vet design decisions in terms of community-level participation, where people carry affinities for various practices, products, public messages etc. that are necessarily organized around the core of community-attributes, not around individualistically fashioned spaces. For example, designing sturdy, macho-styled tractor noses in northern India for the Jat farming community, because of this community's propensity to revolve around a strong centralizing core of patriarchy. Intense community conviviality also imparts an altogether new context to the idea of self-reliance in the context of the individual in India.

In design terms, social capital as a factor could also help validate why communication systems in India or environments similar to ours such as Africa, Latin America, etc, that are organized around community affinities and sometimes even jeopardizing individual interests, will stand in better stead than designs

aimed at individual preferences. Ignoring these dynamics is to risk ground level signals for decision-making practices and that can often defy the most orderly patterns of decision-making.

2.1.2 History as a source for narratives and tales revolving around human experiences, and this providing an anchor for role models in anecdotes or personalities that have since become larger than life in course of historical time. This kind of historicity is not something that is unique to India. Any country with recorded antecedents of human anecdotes of some civilizational value across the centuries, with peaks and dips in the fortunes of its people, will empathize with what this can generate for its people as a source of narratives.

However, what remains unique to India, is the fact that India lives in several centuries simultaneously, clichéd as this may have begun to sound today. In 1961, noted French cultural historian Jeannine Auboyer (1965) had noted: “Modern India is perhaps unique, historically, in that its twentieth century existence is still fashioned on traditions laid down thousands of years ago. Yet it has by no means been trapped in the rigid mould of an archaic civilization.”

This is necessarily predicated on a pace of change that is ‘slow’, and in Auboyer’s words, “a necessary accompaniment of such continuity,” and reflecting accurately “the rhythm of rural life, which has always provided the essential framework of the country’s structure.”

In design terms, this means that pushing a product or a design that requires updating every so often will fail. It also means that products have to capture the sense of a locale’s history. For example, it would help to understand that in central India, the divine space is simultaneous in its association with the feats of its warrior queen from Jhansi, who strapped with her infant baby on her back, had ventured forth on horse back to rescue her people.

It is possible that the lore surrounding her valor has today found representations of particular color, texture, size, or meanings in which the notion of femininity itself has been recrafted in those parts of the country.

This sense of history derived from a pride from the past and evolving itself as a narrative, can account for preferences that may find no immediate causality to the presently available source of materials or contexts for the designer who remains unfamiliar with the given cultural milieu.

2.1.3 A disdain for history in Indian culture that ends up imparting to its human tales a certain **quality of myth and magic**, and a repository of inspiration for decision-making that defy scientific logic. This highly antipodal situation related to the concept of time and history needs to be understood as a function of historical materialism, where according to eminent Marxist historian from India, Romila Thapar (2000), it is important to view Indian concepts of time as being cyclical and nonlinear and therefore inimical to encouraging a sense of history.

What do these antipodal elements of time do for design? Whereas **a linear concept of time** helped people relate to social concerns—based on activities that were measurably concrete—since linear time measured through the invention of sundials, water clocks or the latter day mechanical clocks, and helped communities follow the trajectory of social activity.

A nonlinear or cyclic time, on the other hand, is by its very nature fluid, with ambiguous terminal points, and defies any clocking of activity in favor of building myths and tales of magic that are inspired by elements of nature and human experiences. In effect, according to Thapar, “the creating of cyclic time was (itself) an act of imagination, metaphorical and symbolic.”

However, in spite of the cyclic concept of time being held to be a primary reason for the supposed absence of history in India, Thapar contends that there is not only evidence of “linear time in Indian concepts”, but also suggests ways in which “cyclic and linear forms could intersect employing a complex view of time.”

In design terms this would mean employing two kinds of time machines – (i) the ‘panjika’ that measures planetary movements and connects these movements to one’s state of mind, and (ii) being exact about how time constructs itself in stark reality terms, based on which Indians had once built one of the best sundials the world has ever known.

The construct of time in the Indian context remains one of the most puzzling elements for technologists and designers, who need to figure the right ‘pace’ for a product, but remain stuck with the unidimensionality of mechanistic time, since that is the paradigm that applies itself to industrial processes and one they are familiar with.

2.2 Pointers to a Cultural Frame Of Reference—‘Indian-Ness’ as a Lower Level Clue for Specific Cultural Values

Having established the ground for universals from our own cultural mindsets, what is that ‘Indian-ness’ that can be like no other?

What are those culturally specific nuances that could (i) go to facilitate or impede our ‘capacity’ for innovation and creativity; as well as (ii) leverage our ability to utilize human, technical, and physical resources for social construction – that Francis Fukuyama (Harrison and Huntington) terms as the ‘role of social capital’?

In trying to arrive at an understanding of what is it that is essentially ‘different’, we ask the question: Is it the geographies, the technologies or the cultural contexts surrounding people, or a combination of these conditions thereof?

Dr. Romila Thapar says: “the historical past demonstrates that similar technologies do not create identical societies.” Thapar, as also thinkers such as Jared Diamond (1998), share the view that it is a complex amalgam of factors that work as a DNA for a society’s particular projection of choices and decision-making about its way of life, overriding any singular feature, however overwhelming—be it technology, vocational advantages attributed by geography, supremacy of power achieved through historical turns of events, or individual achievements by humans at given points in time, such as by discoverers of land or inventors of technologies.

But importantly, germane to this “intermeshing of many other conditions and decisions, not least the social choices made by these societies” as in Taper’s eloquent words, is what we may term as being native knowledge systems, arising from our innate sense residing in our interactions with our lands, habitats and our ecosystems. This is precisely what will set cultures apart, even in spite of an overriding set of universalizing principles.

Some of the culturally specific features worth noting as part of the body of ‘Indian-ness’, with the specific purpose of drawing the contours of the user’s context, would be as follows:

- (2.2.1) Although open to transformations, so characteristic of Indian culture and society from the repeated incursions from outside, the Indian mindset shows a tendency to generate a certain amount of creative ferment, once the original stimulus for change has been found.
- (2.2.2) This stands in striking contrast to the protestant work ethics of the American society and its driven nature of enterprise, and as an exceptional situation, evident in the driven work culture of Mumbai.
- (2.2.3)
- (2.2.4) Most outside influences that have endured through the process of social reconstruction are those that had created a dialectics of change between indigenous and alien value systems—forcing into the system a set of creative interrelationships. Where no dialectics had been achieved, innovations have failed to take root.

This is imperative to understand wherever the industry wishes to build products for local communities.

- (2.2.5) Most changes that have occurred have done so as layers upon layers, without rejection of the earlier layers—the piling up of traits being compared by our first prime minister, Nehru, to a palimpsest, an ancient manuscript written upon over and over again without the preceding layer completely obliterated.
- (2.2.6) It means that any dialogue/investigative session with user group needs to include questions about his environment not just at the obvious level. For instance, while trying to understand the attire/garment characteristics on a woman from the user group, one may engage her in talks not just about the particular sari she's wearing, but about the trousseau she had received from her father years ago.
- (2.2.7) It also means that, neglecting to see the palimpsest nature of the information archiving can run the risk of treating sources of information as being reposed in static hierarchical equilibrium.
- (2.2.8) That, given the propensity for art in India to act as virtual repertoires of cultural meanings, one needs to view Indian art as making a direct appeal to the senses—being intensely metaphoric without being abstract.

Which accounts for traditional Indian architecture and its structural engineering component, e.g., being able to draw up its design principles through a set of stylized representations – the five elements of nature (earth, water, fire, wind, and ether) mapped on to five geometrical representations across the five sections of an architectural construction—square for earth at the base, upheld by the circular for water (the pillars), the triangle for fire (the roofing), and so on.

- (2.2.9) The brilliant employment of Gestalt-like thought processes—“the visualization of patterns ‘all falling into place’ and the insights into the nature and relations of things – all reflected in the unified-field awareness of traditional Indian thought-processes. This reflects the extent of control that the visual arts had achieved over antithetical processes—the objective combining with subjectivity while practicing creativity.

Importantly for the designer, this was been likened to the 17th-century physicist Kepler's method of apprehending information about stars. There was something more than a series of reasoned and orderly steps and the linearity of logic with which Kepler had approached scientific information. Kepler's genius was, in fact, defined as the “the power of aesthetic enthusiasm to disclose universal objective truths.” By cultural historian Richard Lannoy (1971).

The designer is obliged to read into these precepts of orderliness laid out in various documentations (the ‘mandala’ depicting the universe, ‘the ‘rangoli’ depicting patterns and rhythms and narratives of everyday life in abstraction, the ‘ikkat’ weave as a geometric representation of elements of nature and other everyday aspects of life), and understand the cultural cues embedded in the palimpsest structure of the cultural constructs, if only to find the necessary convergences between the user and the construction of a product.

- (2.2.10) And finally, there is no reality in the Indian cultural context that is not divine (not to be mistaken for religious). And that then creates sacred spaces around which the human interacts. Not realizing this would be to ignore a major dynamic of the user mindset.
- (2.2.11) By this token, the snake is a God worshipped during the rains when as an ecological function; it burrows out to the land surface. Or the sun as the harvest God, worshipped during the solstices (summer and winter) coinciding with the harvests. Or the elephant headed God, the Ganesha, worshipped during the end of monsoons, because it needs that special attention as an ecologically fragile species whose cousins have already gone extinct.
- (2.2.12) Or the tree, which is not just a tree in India. It is the oracular ‘speaking’ tree and hence worshipped. To ignore the visual representations of this sacred space embodied by the tree - the vermillion on the tree trunk, the ‘rangoli’ patterns around the roots/foot of the tree, the temple encrusted into the tree's hollow, the water pitcher kept at the base for travelers to quench their thirst—to approach a user context without heed to these clues would be to deprive oneself as a

researcher of an enormous amount of information and insight about the cultural mindset of the Indian village.

(2.2.13) Now, this is an aspect of the Indian cultural context that is critical for us to relate to, and as standing in utter contrast to the cultural context of the West.

(2.2.14) For the West, God and man are, according to the Bible, distinct—man is only the image of God; the world, nature, men, and women are not within the same sphere of divinity, but outside it.

(2.2.15) In India, on the contrary, everything is a manifestation of the divine substance. This instinctive, deeply rooted outlook getting translated into the richness of its mythological imagery, and its constant translation into plastic images—on walls of houses, interiors of caves, temples, tree trunks, foreheads of humans as 'tilak' (white powdered lines) and the ultimate sign of divinity, the bindu on the woman's forehead signifying a 'third eye' (the woman's uncanny sixth sense).

(2.2.16) To miss this point would be to miss the idea of 'sacred spaces' in urban and rural India alike, where one does not stamp on newspaper or any signifier of learning because that would mean defiling the Goddess of learning, Devi Saraswati. Nor does one sweep away rice spilled on the floor with a broomstick but does so instead with a cloth, in deference or as a sign of respect to the Goddess of sustenance, Annapurna.

(2.2.17) Our celebrated architect Charles Correa considers the notion of 'sacred space' as one of his most inspirational take-off points while designing in India – without it, he says, his designs in the Indian context would become irrelevant. And cites for peerage, the Japanese people for whom Mount Fuji is a sacred space, likened to God. To the Europeans, in contrast, Mont Blanc is just another high mountain peak – snow clad, beautiful, and pristine, but definitely not divine.

3.0 The Role of 'Meaning' for Designing in India and Its Levels of Deconstruction as a Method for Apprehending Cultural Nuances—The Role of Sacred Spaces as Being Meaning-Generative for Design

Based on the derivatives collectively arising from the above set of dialectics, viz., constructed time residing in social spaces and unconstructed time that is history-defying, nonlinear, cyclical, and residing in mythical spaces, local narratives begin to assume the mirror of the human mindset.

In design terms, a lot of design-decisions in user spaces from rural or urban areas will have to be steeped with myths, magic and as divinity-driven explanations for certain preferences, the divine itself residing in everyday objects and media, and inspired from nature or from the human domain itself.

How does one deal with such ambiguities?

One of the ways to get a handle on the above set of complexities while designing would be to look at how meanings have traditionally been decoded from our product and communications environment.

It is possible to find at least three levels of meanings, moving from the highest to the lowest levels of abstraction. Architecture and typography are at least two design areas—where such a taxonomy of meanings is possible to decipher.

Architectural principles in Indian texts draw their basis from envisaging the built space as being intrinsic not just to the land on which a building is constructed. It starts with the earth deep down and hence seen as fire, moving on to earth as the base for solidity, water as a fluid element, air as the negative space, ether as the stratosphere.

Moving on from this iconographic level of meaning are the symbols that represent various dimensions of engineering realities—square for earth, triangle for fire, circular for water, and so on. And finally, at an even higher/indexical level of abstraction, these geometric shapes would signify square for stability, triangle for linearity and geometricity, circular for the eternal and beauty.

In typography, the Siddham system of writing treats all letterforms as 'bijaksharas'—seed-letters. It means that every letterform represents a certain elemental aspect of the creation process—the first letter 'ah'

e.g., representing a seminality in its urge to signify the unending, the eternal, the very beginning of times...

4.0 In Conclusion: 'Sacred Spaces' as the Holy Grail Integrating the Universal with the Context-Specific as a Winning Proposition for Our 'New Audiences'

The universalizing principles outlined above as well as the context-specific cultural conditions that we have termed as the essential 'Indian-ness' brings to bear on one essential truth—that, if there is any one idea that encapsulates all of the above derivatives, it would have to be the idea of 'sacred spaces'. It is a notion that has been traditionally applied as a design inspiration by various disciplines related to design in India. As indicated, apart from architecture, typography, and calligraphy, these would be film-making, poster-design, the performing arts, and so forth.

In sheer design terms, to ignore these signs that are not necessarily obvious to the naked eye, would mean ignoring vital signs for appropriate designing for India's context. While they do defy the conventions of the mechanistic principles or techniques of designing, and they remain ambiguous, they are by no means nonexistent, nor irrelevant.

There is, however, an acute irony underwritten into the question of 'Indian-ness' as an identity proposition for products. That irony relates to how universal the elements of this identity can actually be. And we are obliged to comprehend the line one needs to draw between the merits of universals and those of cultural specificities—and not just one or the other.

In conclusion, it would be highly instructive to reference for our understanding here, an example of the universals intrinsic to 'Indian-ness'. The fact that the example cited comes from Europe is meant as a way to find empathy with those who are not from India or from countries like India.

In 1929, the world of art, design, social order, and politics got rocked by the release of the 'Surrealist Manifesto'. In it, Andre Breton had said:

"There is every reason to believe that there exists a certain point in the mind at which life and death, real and imaginary, past and future, communicable and incommunicable, high and low, cease to be perceived in terms of contradiction."

Underwritten in this quotation is an affinity to the way this immediately locates the Indian principle of the conjunction and reconciliation of opposites in a larger, more modern context. The Indian notion that the transcendence of opposites is a state that can be attained by a human being, became the inspirational basis for a lot of 20th-century popular cultures worldwide, including popularized mysticism and science fiction (exploring the idea of the human attaining god-like supernatural powers, or overcoming the space-time continuum).

This notion of an antithesis also finds affinity with the Dinka tribe of Sudan, where tribal lore and sayings combine together universally received wisdom with cultural specificities, clichés with odd and striking images, admonitions with approbations.

This is to say that while delving into cultural mindsets, it would help to spot universals from other cultures and use them as clues to broaden one's own design horizons. Getting caught in cultural specificities without referencing them to a broader universe simply means depriving oneself of related experiences from which to draw inspiration, as well as to deprive oneself of a methodological framework.

And most astounding of all, as a running thread of the narrative across all the three cultural references made so far, is the presence of an oracular undertone. Like the way Ingmar Bergman refers to dreams and shadows in his films filled with the foreboding of the dark, cold Scandinavian winter. And the ventriloquist in the performing arts from all these cultures, making an appearance to speak on behalf of an unknown force.

To that extent, the plight of the 'new audience' remains bound by a few unifying universal idioms, although they may, in culturally specific terms, be very different people from around the globe.

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