Introduction

'Design Thoughts' as a journal has been in the planning for a while now. The first issue is finally out – with a sincere hope that many more will follow. We wish to publish two issues a year, one at the beginning of the year, in the month of January and the other in the middle of the year, in the month of June.

This issue is a collection of thoughts to cover a spectrum of concerns that affect design. Such as, design history (as in 'Once I Was A Banyan Deer'), design outlook and strategy (Design by People'), design mapping ('Visual Appetite'), design and storytelling ('Narrative and Non-Narrative Traditions'), design process ('Methodology of Design for the New Post Box'), and typography's role in design ('Anatomy of Devanagiri Typefaces'), with case studies wherever applicable.

'Design Thoughts' is based on the notion that thought has no boundary, thought should be its own reward. By that count alone, design (thought) becomes an inclusive affair and opens up its doors to a diversity of ideas.

Our future plans include conceiving issues with specific focus areas. The announcements for these, as they take shape, will appear on IDC, IIT Bombay website (www.idc.iitb.ac.in).

Do enjoy reading the first issue – we'll be glad to have your feedback and suggestions.

Good thoughts,

Ravi Poovaiah,
Editor,
Design Thoughts

Once I Was A Banyan Deer

Shilpa Ranade

Histories have chronicles to tell and lessons to teach. Our Animation history too , although not a long one, has recorded important milestones that cannot be ignored and must be examined to understand where we are at in the world of animation.

The post independence scenario saw the implementation of many socialist policies which were meant to trigger the change that our leadership envisaged for our country to cross the threshold from bondage to freedom. This was a time of great promise and potential, a time to address the future and look to making a leap and taking our teeming population heaving along too.

Our populace, although united in freedom, was divided by language , caste and creed across a huge landmass. For the change to be effective every nook and individual had to reached. The challenge was huge. Every resource had to be tapped.

Animation was seen as a medium of great potential, which could reach out without the baggage of language, it could be a vehicle of change that could tackle issues of gravity; population control, voting rights, women's empowerment, cleanliness, literacy, education, child rights, the list was endless.

To help make the change the power of animation could not be ignored. Although the possibilities of the medium were known, local practice was negligible. We had to look to the West for expertise, experience and training.

Help by way of a UN grant funded the establishment of The Cartoon Film Unit, much on the lines of state funded animation boards the world over. Equipment was imported but animators and technicians had to be trained. Expertise in this area came from America in the form of Clair Weeks, the quintessential American and Disney animator, with years of experience behind him. A group of young enthusiastic people were roped in, among these were Ram Mohan, Samant, Gokhale and Bhimsain.

The first film that was made by animators trained by Clair weeks was 'The Banyan Deer'. This was a Buddhist Jataka tale. The Jatakas were popular stories that made the teachings of the Buddha more accessible to the

common man. Originally these stories were told by the Buddha to his followers and referred to his many avatars before the attainment of Buddhahood.

The story was chosen and it was decided that since this was a Buddhist tale the visual inspiration should also have roots in the faith. There could be no more appropriate inspiration than the grand cave paintings at Ajanta. These are intricate and amazingly beautiful pictorial representations of the life of the Buddha and all the Jatakas. These fabulous murals are resplendent narratives that transport the viewer from cave to cave following the detailed stories where the images hanging on the wall surfaces telescope from one story to the next.

'The Banyan Deer' the Buddha wears the avatar of a noble deer. The paintings at Ajanta have among the human and bodhisattva representations, beautiful and peculiar animal figures. It was decided to use these to model the Banyan Deer.

Clair Weeks coming from the Disney tradition, had brought with him material from previous Disney films, to instruct the animators he was training. He had with him the model sheets from the well known film Bambi.

The protagonist of the film was a deer, this seemed like an appropriate point to help connect the newly minted animators to the subject in their own film. The model sheets from Bambi were used to instruct them in the area of character design. The rules of classical animation were being imparted to the animators, the examples came from Bambi.

The story was Buddhist and the pictorial inspiration was that of Ajanta. These cues were certainly at odds, both diametrically opposite with no meeting point. The animators were at a loss as to how they could adapt the imagery of Ajanta to the rules of classical animation. To quote Ram Mohan, "The Banyan Deer was supposed to be the representation of the Bodhisattva and instead ended up being the avatar of Bambi." It is in this statement that the bane of Indian Animation lies.

Was this the proverbial lost opportunity? Did this turning point seal the fate of Indian Animation. Were we doomed to measure our work by the American yardstick, and uncomfortably wear shoes that never fitted, forcing ourselves to represent and animate in a way that was never natural to our way of thinking?

Quite possibly this was the point in our animation journey that we lost our way.

Banyan Deer

Direction: Ahmed Lateef, Shanti Varma and G. H. Saraiya

Production: Films Division 1959, 10 min, colour

Storyboard: G. D. Gokhale

Copyright: Gokhale Family

About the Author:

Professor Shilpa Ranade is a faculty member at the Industrial Design Centre (IDC), Indian Institute of Technology Bombay. Her interests are in the field of Animation, Visual Representations, Illustrations and Graphic Design.

Design by People within Culturally-rooted Idioms – the new 'cool' in a globalised world

Ravi Poovaiah, Dr. Ajanta Sen

Introduction:

"When, as by a miracle, the lovely butterfly bursts from the chrysalis full-winged and perfect ... it has, for the most part, nothing to learn, because its little life flows from its organization like melody from a music box."

This rather poetic reference was made by Douglas Alexander Spalding in 1873 while observing young animals vis-à-vis the role played out by instinct. *("Instinct: With original observations on young animals," Macmillan's magazine, vol 27, 1873)*

Traditional knowledge systems – a cumulative of the innate and the animal-like instincts in man: Spalding was enthralled at the idea that "the mind cannot learn unless it has the rudiments of innate knowledge" – an idea that came to be termed as ***'nativism'*** in the 1880's by William James in his 'Principles of Psychology'. William James was of the firm belief that human beings have more instincts than other animals, not fewer. Less than a century later in 1953, Noam Chomsky would argue in its very favour, this time in the context of children – that in order to learn the rules of language, the child must be equipped with a set of innate rules (to which the vocabulary of the language is then fitted). Devoid of this, the child cannot learn the language from an extraneous source such as through examples.

The point of our assertion here is simply that, experience that arises in conjunction with innate knowledge is different from experience that is received without it. When this ***conjunction between the innate and the acquired*** happens across the generations, the resulting knowledge becomes part of ***a collective domain*** and gets ***culturally rooted***, to represent what has come to be recognized today as ***traditional knowledge systems*****.**

It will be our endeavor today to expand on the scope of the traditional knowledge systems beyond their traditional economies to find meaningful connections

with modern marketised economies, and then explore the extent to which such repositioning could offer us practical working propositions for a post-industrial society.

2 **How do we do this?**
By recognizing the strength of what resides in the domain of innate knowledge amongst people, and recognizing the strength of people-participation in everyday acts of designing, where design is meant to mediate towards a better quality of life through its goods and services and its environment. And the recognition that such design necessarily resides almost intuitively at a cultural level and seldom taken notice of.

Needless to say, such innate knowledge can only be a cumulative of ideas that has blossomed across the centuries, one generation at a time, each generation integrating the highlights of its own times and experiences, and then passing this on as a legacy to its successive generations, until it becomes what New York Times recently termed as ***"tribal knowledge"*** – something that cannot be learnt quickly. The best that one do, therefore, is to recognize the origins and sources of these pursuits, and then leverage them within modern contexts to reap the benefit of such accumulated knowledge.

With respect to India, what is pretty much known by now is that our knowledge systems are a sum total of a wide range of pursuits, vastly differing convictions, widely divergent customs and languages, and a veritable feast of viewpoints. What is not always apparent, however, is how they have survived the ravages of outside invasions and of time. Amartya Sen in his most recent publication, 'The Argumentative Indian – writings on History, Culture and Identity' (2005) offers a perspective on this. According to him, these systems have survived not in spite of but because of the argumentative propensity of Indians that make thought processes robust and flexible and non-doctrinaire. It also makes for more open-ended systems that ask difficult questions and remain open to outside scrutiny.

The 'Rangoli': As promised, we now take this opportunity to present the case of an intrinsically Indian aesthetic – the 'rangoli' – as a template for how design may innovate and spread, not in the individual domain but in the collective domain.
We ask the question: ***Can we harness the workings of the 'rangoli', traditional as it happens to be, into a set of principles that will set an examplar of a driver of modern business conditions/practices?***

At its very basic, the 'rangoli' is a pattern that is generated as part of a folk ritual that enjoins upon the woman of a household to decorate the front porch in celebration of everyday living, but more specifically, to create these patterns as a mark of welcome to anyone who wishes to visit the household. Rangolis are usually always done as a collaborative act of creativity, with mother, daughter or other members of the household joining in, not because help is needed but because it is seen as an act of creativity and enjoyment.

Our motivation behind the choice of the 'rangoli' are several. But amongst the most important ones would be (i) its primordial nature as a form of art going back to prehistoric Indian art and hence retaining an essentially 'tribal' quality to its rendition and character. And (ii) its innate modularity, with an amazing ability to scale up and down towards construction and reduction/deconstruction.

From the perspective of social organization and art form in India, it is crucial to remember the following about the above conditions. With respect to condition (i), the origins of the style of the 'rangoli' dating back to prehistoric Indian art, has remained ***a part of a living tradition for seven thousand years.***

This is exemplified by the neolithic tribal rock paintings of central India which bear a close resemblance to the 'dream-murals' of tribes located thousands of miles away into remote eastern coastal India, as well as to folk murals with which houses are commonly decorated in many regions today. This implies that systems of knowledge have accumulated and coexisted across a very large time period, one on top of the other, without any attempt at demolishing previous works of art or their styles – the only way in which traditional knowledge systems can possibly acquire body and weight over time.

It is now widely known that "the earliest paintings were executed as far back as the Mesolithic age and then figures and animals superimposed on or juxtaposed to these extremely ancient images during successive eras to within a century of our own time." Amazingly, "such remarkable continuity of tradition, as exemplified by these works of nomadic tribesmen and cattle herders, ***is to be found in most of the rural culture of the subcontinent*** – endorsing the claim that ***Indians live in more centuries at the same time than most other peoples."***

With respect to condition (ii), the modularity of the 'rangoli' is typical not an exception in Indian art forms, such modularity going back to the ancient civilization of the Indus Valley where the basic modular component – the brick – remained the same shape and size. This ***empirical ordering capacity*** was originally inherited from the Near East from where these bricks were imported. Important for us here is our culture's ***ability to sustain uniform and repetitive means of production and reproduction,*** and implicit in this uniform repeatability its ***high level of technical coordination.*** Richard Lannoy, in his 'The Speaking Tree – A study of Indian Culture and Society' (1971) remarks that "wherever such a level is reached it reveals a sense of relatedness, ***an orchestration of all measurable factors in the interdependent unity: God, nature and man."***

3 Lessons from the present – globalisation and its implications for traditional knowledge systems:
Given the focus of this paper on traditional knowledge systems and people's propensity to participate in it quite effortlessly, our effort should now be to take it to the next step, viz., to integrate these existing knowledge systems with the emerging knowledge economy, especially standing as we are at the threshold of forces of a globalisation, and the opportunities that this could throw up for the traditional sectors. Thomas Friedman describes this moment of transition as a period "when the walls came down and the windows went up."

Talking of transition, it's worthwhile recalling what John Calhoun once said, that: "The interval between the decay of the old and the formation and establishment of the new constitutes a period of transition, which must always necessarily be one of uncertainty, confusion, error, wild and fierce fanaticism." Of the instances of innovations during a critical transitionary period in the history of design in the West, the one that seems particularly bold was Francis Meynell's attempt to "produce the finest possible printing for commerce" and an attempt to bridge traditional and contemporary aesthetics. This Meynell did in 1923 as proprietor of the Pelican Press and then declared to great satisfaction "With twenty-five soldiers of lead I have conquered the world." (Looking Closer – Classic Writings on Graphic Design', Vol 3, 1999)
Change is never easy. For a long time, almost until the recent rise of the emerging markets in the developing world of India, China, Brasil and the South East Asia, significantly since the 80's, our traditional knowledge

systems were often viewed as not much more than eastern splendors, and celebrated as such (sometimes as exotica). As we stand at the threshold of marketisation of the Indian economy (specifically since the privatization of television, telecom and the petroleum sector across the last ten years) and the phenomenal rise of information technology, we are to look outwards beyond our own shores. What we are about to see and experience in the years ahead is this so-called 'exotica' becoming a potential commercial force – a veritable 'factor of production' to boost industry and commerce.

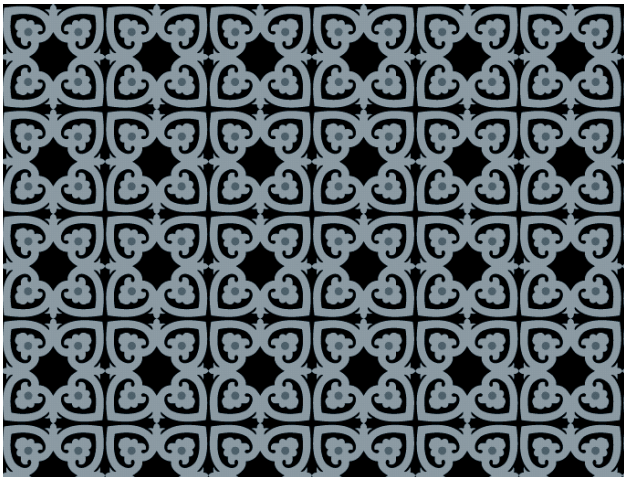
Sectors that have taken advantage of a global market (diaspora or otherwise) are Indian cinema, the fashion industry, traditional/alternate healing systems, the herbal beauty industry, and the crafts sector.

How and why?

At the cost of sounding clichéd, this sudden turn of events may be attributed to globalisation – defined simply as a freer flow of labor and capital across political and physical boundaries (as in the EU). The operative concern in globalisation is the idea of ***straddling multiple boundaries.***

Difficult as it is to comprehend the rootlessness arising out of straddling and moving across physical distances and political lines, the real complexities begin to arise when the exchanges (of ideas and commerce) have to negotiate across cultural boundaries. It is this aspect of globalisation – ***the transcultural*** rather than the narrower idea of the transnational – that interests us. And forms the platform on which we have positioned the proposed models of how traditional knowledge systems may be used to meaningfully connect with modern industrial systems, as a viable factor of production.

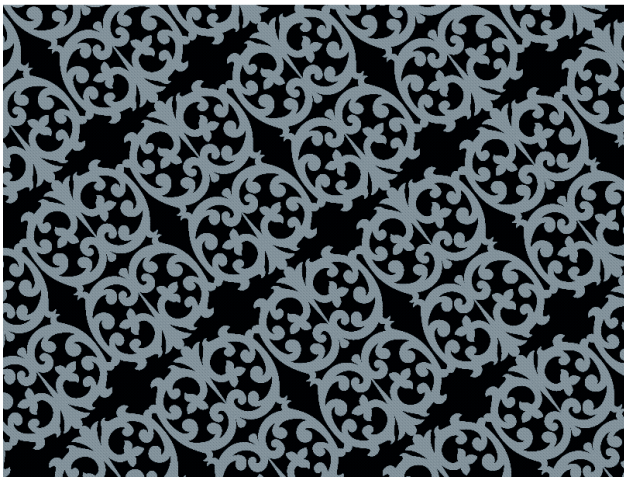
A historical perspective of globalisation in India: It is worthwhile mentioning here, that by this very definition of global flows of labor and capital, globalisation ceases to be such a contemporary phenomenon in the context of India. From very early on, since at least the 5th century AD, India had experienced an inflow as well as an outflow beyond its national boundaries, of labor, capital and goods. With its changing contours of trade determined only by the internationally changing sources of demand and supply for these goods and labor and services. Persians, Syrians, the East African and Arab countries, the Chinese, Central Asian and Caribbean countries, the



Portuguese, the Dutch, the French and the British being just some of the trading partners with India across the centuries. (I dare say, V.S. Naipaul remains an example of one of the most famous exports from India via his Indian indentured-labor forefathers migrating to Fiji).

The new globalisation: While globalisation itself is not new, what is new is the speed and the borderlessness of the transactions characterizing the present cache of

globalisation, made possible in large measure by the networking technologies, and in part by the object of such transactions, viz., information and knowledge, and the ensuing new economy. As already stated, the operative factor here remains the ***transaction of knowledge and information as a key driver of the economic transactions*** – making it a ***knowledge economy***. Not surprisingly, the crux of a knowledge economy, as a Wall Street Journal advertisement would have us believe is that, "the secret of business success is not who you know. It's what you know". On a more sober note, the Bhagavad Gita says: "The raft of knowledge ferries the worst sinner



to safety" and noted writer and analyst Gurcharan Das ('India Unbound') sees the Vedic adage "Knowledge is Wealth" as summing up the Indian opportunity in the new century.The emergence of a knowledge economy underscores two sets of conditions for us:
(i) Just as countries have found transformation from poverty to prosperity ***powered by a leading sector as an engine of economic growth*** (textiles for Britain, railways for the USA, timber and timber products for Sweden's take-off, milk and dairy products for Denmark), for India it would have to be the knowledge sectors of the economy.

(ii) Knowledge transactions inevitably call for very intricate entanglements with the global. Why? Because knowledge is now required to transact across cultural boundaries, since the exchanges are necessarily between the emerging markets, such as India, China, Mexico, Brasil, on the one hand, and the mature Western markets such as the EU, Japan or the USA on the other, increasing thereby the incidences of cultural encounters. And ironically enough, in the process, unleashing a brand of globalisation that actually ***heightens the cultural factor rather than flatten it out,*** as Thomas Friedman will vouch for in his recent 'The World is Flat'.

(iii) Since the recent brand of globalisation predicates itself primarily on an exchange of knowledge and information, it suddenly throws open the opportunity to connect two parallel knowledge systems – the traditional ones (in the emerging markets) with the modern (in the mature markets) – in one continuous arc where parallel and seemingly irreconciliable knowledge systems could now converge to facilitate businesses worldwide.

Globalisation and business differentiators: Following this, it is well worth wondering how we can now move on into identifying business 'differentiators' to leverage our products and services in a globalised market. What capabilities should we be investing in to produce differentiated goods and services that create value for a demanding set of global consumers? Perhaps, taking a clue from the 'rangoli' model, it could mean that we need to tap into cultural contexts that make information meaningful in more ways than one. And then, within this framework, identify signifiers of design (such as the

'rangoli') that will throw up clues for integration with modern, more efficient systems of production. Needless to say, it is the specific condition of globalisation that finally presents us with an opportunity to forefront our design signifiers, which although existing, carried little meaning for the world outside of our closed markets, devoid of the focus that can only come in relation to their opposites/differentials.

Two definite qualifications with regard to adopting the 'rangoli' as a template for dissemination of knowledge that,
(a) it is not about showcasing design excellence. Rather, it is meant to offer clues into how to sustain useful, viable business practices that are based on modular expansion of ideas carried out collaboratively; and
(b) it is not about reviving traditional arts and crafts. Instead, the focus is on attempts at integrating existing skills into modern contexts. Can we reinvent a role for the craftsman – based on the recognition that if Bidri crafts, e.g., will not sell in its craft form, perhaps one should conceive of new products that leverage the core factors of the Bidri, viz., its finely crafted silver inlay on metal, with the silver meant to retain its sheen for at least a hundred years.

4 In conclusion:

Concluding this presentation with a quote from Maynard Keynes could be laced with a trifle irony. Keyenes as an economist had espoused a rabid form of globalisation that would have been sure to have protected the powerful and eroded the weak. However, there is merit in his assertion about traditional knowledge systems. His deep respect for such systems is reflected in the following observation he had made in the context of the Newton papers in 1942 in which he presents an entirely new view of 'history's most renowned and exalted scientist'.

He says:

"Newton came to be thought of as the first and the greatest of the modern age scientists, a rationalist, one who taught us to think on the lines of cold and untinctured reason. I do not see him in this light. I do not think that anyone who has pored over the contents of that box which he packed up when he left Cambridge in 1696 and which, though partly dispersed, have come down to us, can see him like that. Newton was not the first of the age of reason. He was the last of the magicians, last of the Babylonians and Sumerians, the last great mind which looked out on the visible and intellectual world with the same eyes as those who began to build our intellectual inheritance rather less than 10,000 years ago."

Credits for images: The images are courtesy Sheetal Alreja, Visual communication student of the 2004–2006 batch.

About the Authors:

Professor Ravi Poovaiah is a senior faculty member at the Industrial Design Centre (IDC), Indian Institute of Technology Bombay. He heads the department now. His interests are in the field of Information Visualisation, Digitising Design related Content and Interaction Design.

Dr. Ajanta Sen is the International Director of Solar Project, a networking technology experimentation with cross-cultural collaborative learning environments for children. She is also a visiting faculty at the Design Centre (IDC), Indian Institute of Technology Bombay. Her interests are in the field of Culture and Technology, Knowledge Systems, Social Computing and Interaction Design.

Visual Appetite

Mandar S. Rane

Abstract

The matrix of the Indian cuisine is quite complex and beyond satisfying one's appetite. A serious effort needs to be made to make a person conscious and sensitive about the associations a dish can have within that culture. The concern of this paper is primarily on two major issues; a) whether menu cards in Indian restaurants are competent enough to verbally describe, the visual richness inherited by a meal b) How the traditional legacies of a cuisine culture can be revisited (from a design perspective) to blend them in the current context of technology, with a notion of preserving their existence.

Keywords: Cuisine, Culture, Technology, Communication Design

Various thalis in India: State / thali
1. Gujrat / Gujrati Thali
2. Assam / Assamese Thali
3. Punjab / Punjabi Thali
4. Rajasthan / Rajasthani Thali
5. Southern part of India / South Indian Thali
7. Northern part of India / North Indian Thali
8. Maharashtra / Maharashtrian Thali

A search for a true Assamese thali led to this picture. A native confirmed that the contents of this thali are very close to what a traditional serving offers, in comparison to other restaurants, who have diluted their menu. Commercialization has forced restaurant owners to adapt to the changing trends, leading to cosmopolitan versions of food, in turn affecting the visibility of true cultural cuisines.

Fig 1. Assamese Thali,অসমীয়া ব্যঞ্জণ Picture shot at restaurant "Akhaj", Zoo Road, Guwahati, Assam, INDIA

Cultural Journeys

The culinary art in India is spread across 28 different states each having an identity of its own, enriching the great Indian cuisine. Diversity of Indian cuisine is not just unique to a particular state, but also in the food items of a single meal. It is these complexities of regional food in India, which makes it very fascinating. The Indigenous tradition of meals in India, has given lunch and dinner a formal visual identity, linguistically represented by the lexical term 'Thali'. (See Fig.1)

Thali is a circular metal plate or banana leaf in which lunch and dinner is served in India. It consists of small bowls, each containing different delicacies harmoniously clubbed together to form a single meal. Eating from a thali is quite common in most parts of India and usually, name of the state precedes the word thali for it to be identified from that particular state for e.g., a thali from 'Assam' (a state in northeastern part of India), will be termed as 'Assamese thali'. Having lunch or dinner from a thali in an Indian restaurant could be a

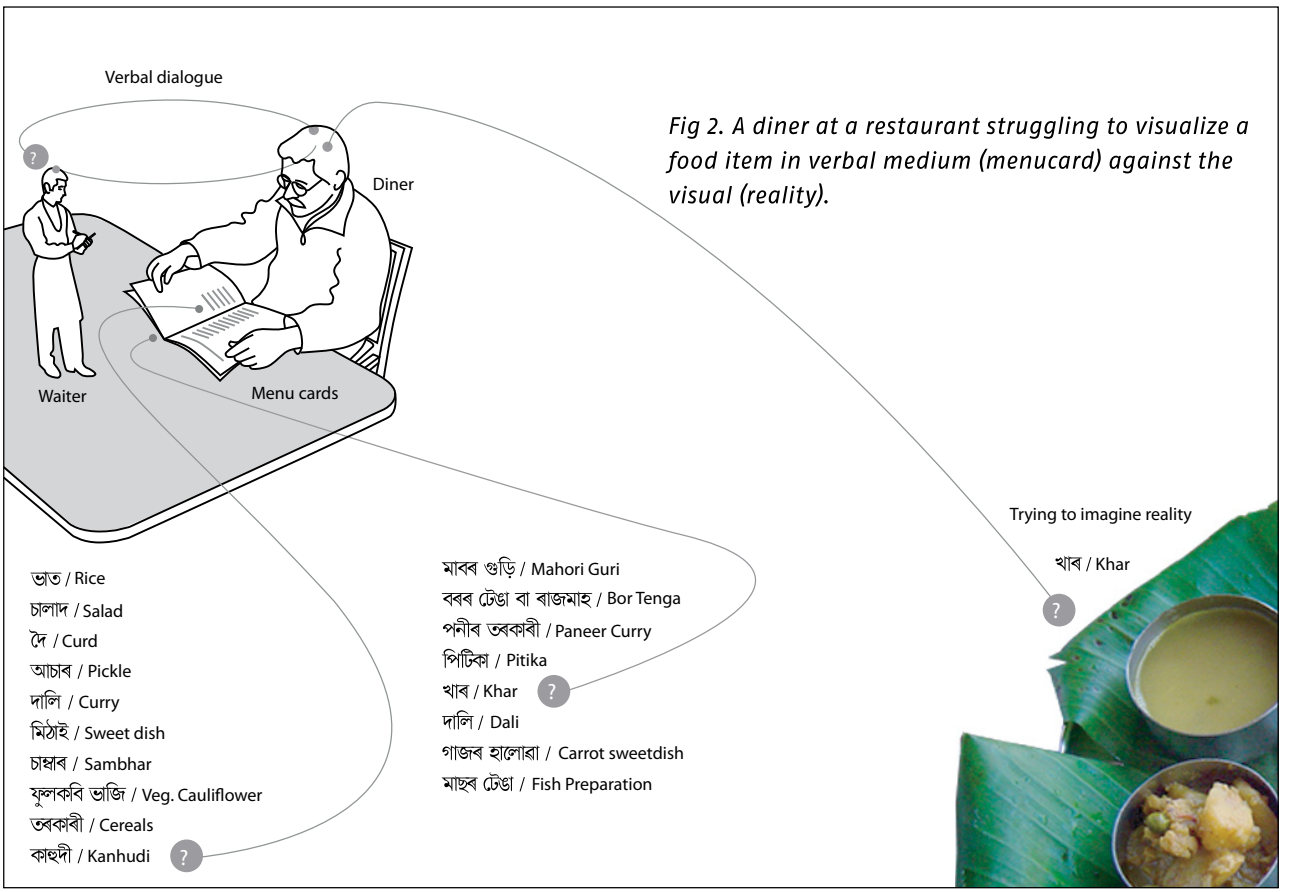


Fig 2. A diner at a restaurant struggling to visualize a food item in verbal medium (menucard) against the visual (reality).

more meaningful experience, if designers consider the ramifications of Indian cuisines, which can lead through cultural journeys, much and more beyond, than just serving one's appetite. Dinning can be made a more engaging experience, if we are able to sense and feel the traditional scents of Indian cuisine, which are currently void in the restaurant menu cards. The aim is of finding a way into the Indian cuisine and culture through a thali.

Manacles of language

Every "name" has its own inherent strength to express what it signifies. With this strength, the name tries to encapsulate its meaning and picture in the viewer's mind. It often happens that we know someone by his name, but actually have never met him. Unless we meet him in-person, we keep on trying to visualize / guess his personality, which sometimes meets our expectations or leaves us surprised. This is quite applicable to anything, be it, a place, person or a thing. A person normally encounters oneself with similar situations when he / she visits Indian restaurants and is greeted with (bilingual) Menu cards. Fig. 2 illustrates the act of a diner who visits a restaurant and orders a delicacy. It expresses his dilemma to visualize the actual dish, verbally, from the 'name' written in the menu card.

The figure shown above translates the linear process from ordering to serving of the food at restaurants. Menu cards in restaurants are either English or at times bilingual (English + local language). They usually struggle to translate the lexicons of local Indian cuisine to the diner. Unsatisfactory explanation, leads to comparison with priorknow edge from the diner (if he is a native) and he tries to anticipate the dish to his best possible extent. The diner awaits the interval concerned with the preparation time of the delicacy, which would be finally served. The food when served might match the diner's expectations or leave him unsatisfied. He ends up eating the meal without being aware of the rich information hidden inside a country's cuisine and culture. Therefore, it seemed necessary to investigate, when the names in the Menu cards of restaurants were found to be handicapped in expressing themselves, emitting a scent 'alien' from their true form. This itself channelized the thought of providing justice to the lexicons of Indian cuisines, demonstrating the design scent of transforming meals into a quality experience for the diner. "Visual appetite", aims at respecting the complexities of regional foods, rituals, customs and practices, as well as sharing them across countries and cultures, releasing the diner from the manacles of language.

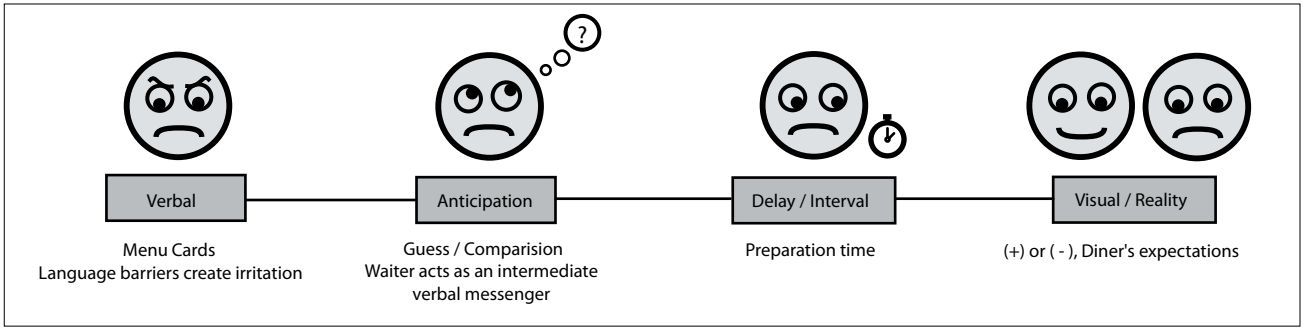


Fig 3. Sequential analysis from ordering to serving of the food at the Indian restaurants

Delayed Reality

Typographically menu cards might have adorned themselves to make food more appealing, but they are still not able to transcend the barriers of language. With 18 official languages and varied menus offered in each of the states, it becomes difficult for the first language English, to translate meanings of dishes into realities. (See fig 4.) Linguistic constraints and complexities of regional food, most of the times leave even a native unknown to these culinary traditions of his own country.

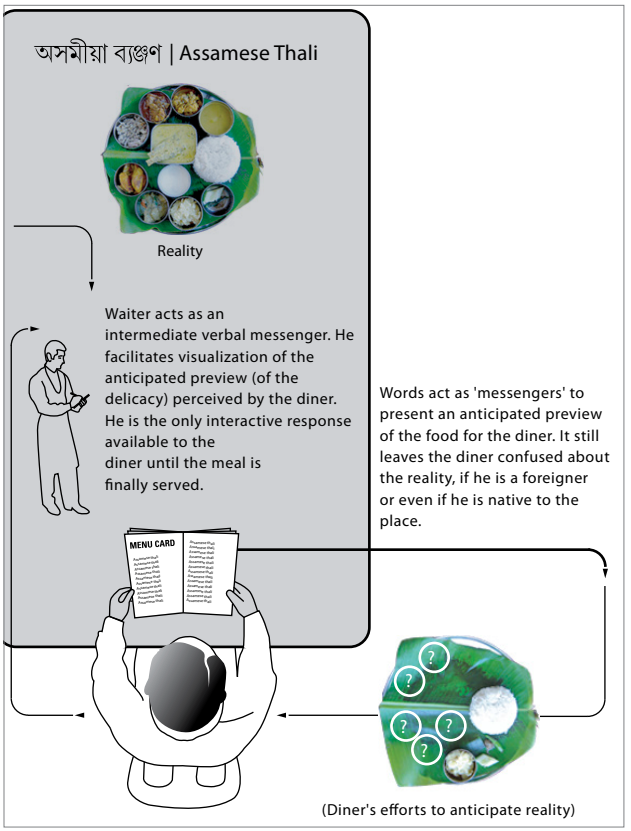


Fig 4. Current Scenario of having a meal in Indian restaurant.

Words (names of the dishes) in menu cards are supported with adjectives like special or traditional trying to emphasize on uniqueness of each dish. Verbal explanations find it difficult to represent themselves in the diner's mind in comparison with the delayed reality (relating to the interval between ordering and serving of food). The concept attempts to explore boundaries of meanings, beyond words, for a native/tourist to savor his taste of culture and cuisine.

Information flowering

The idea is of envisaging a device, which will provide an interactive preview of the food for the diner. He will be able to navigate through dishes and understand the essence, for e.g. of a true Assamese thali.
This preview will act as a visual expression of the meal, informing about each delicacy, on a tangible gesture upon the interactive surface, by the diner. If a certain dish evokes the diner's curiosity, he will be able to opt for a video preview of the same. The diner can also explore the palette of aromatic Indian spices, which are not only known for their medicinal properties, but also play a major role in imparting flavor and taste to the Indian food from centuries. The 'thali' will be able to create interesting associations and accentuate a dish, to the extent of sharing its relationship in history, e.g. the 'Mattiboro Dali' (a kind of cereal in Assam), with rice and eggs was used as a mixture to substitute cement in the 17th century marvel 'Talatal Ghar', which still attracts lots of tourists to Assam. (See Fig 5).

In this world of globalization, such a device would help create deeper understanding of cross-cultural issues, For example: In the west food is consumed with fork and spoons, where as the Japanese rely on chopsticks[1] or to put it in better words "hashi", meaning bridge, to effect the transport from bowl to mouth. Indians

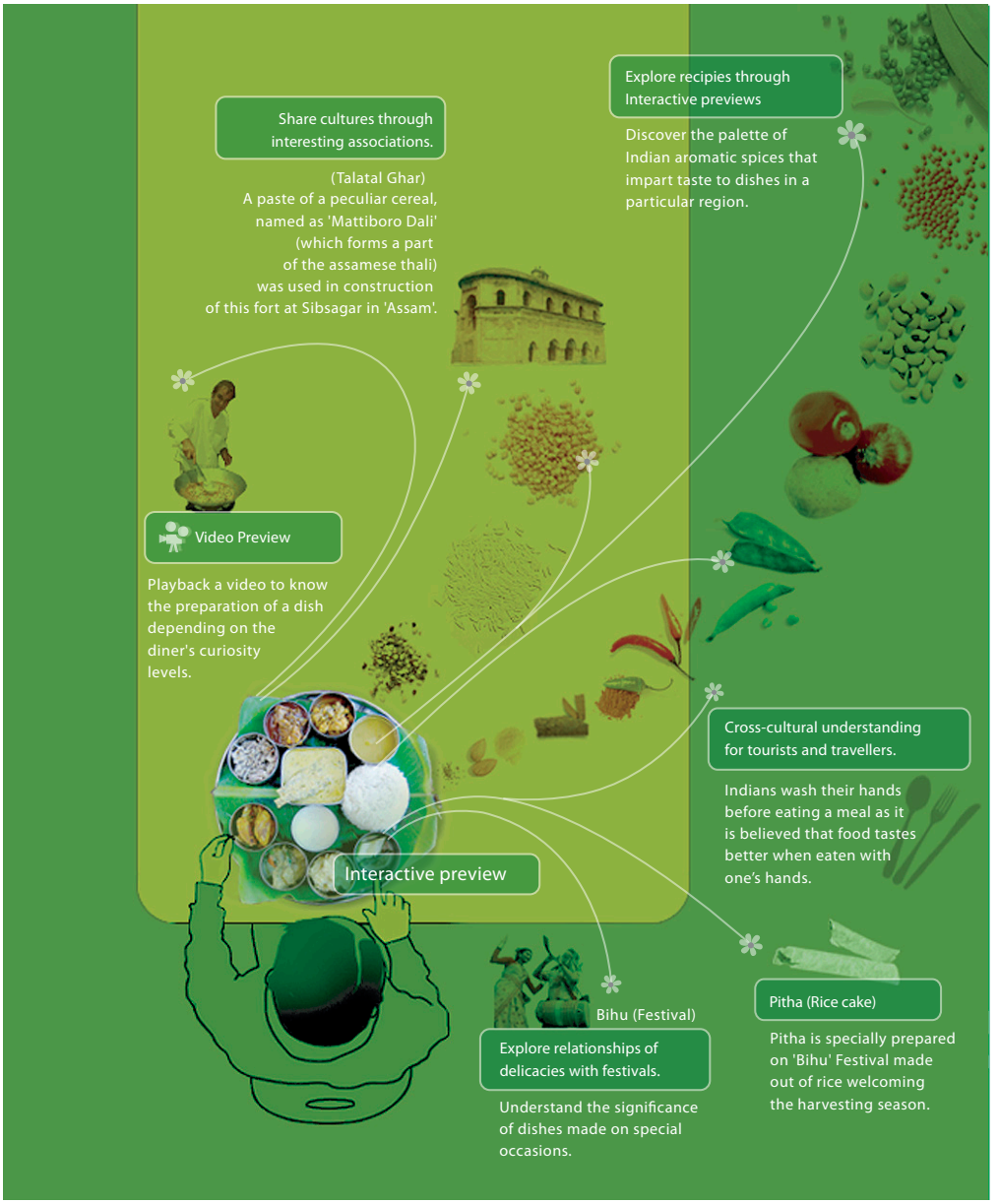


Fig 5. Unfolding the store of information within a traditional Assamese thali for a tourist or a native of the country.

believe that the food tastes good when eaten with one's own hands. Every festival in India calls in for an array of delicacies which are special to those occasions, e.g. Bihu (harvest festival) is celebrated in Assam with the preparation of 'Pitha' (a sweet dish made out of rice), stuffed with sesame and coconut, very unique to this festival. Special dishes made on special occasions can now have their share in displaying and adorning themselves for the knowledge of the diner. He will be able to explore the multifaceted nature of Indian cuisine by opting for food from various states of India, since the food and language are peculiar of each state. It can offer him a wide range of options, where he can visually decide his choice rather than relying on his intuition. The concept here is to give an experience of the food item before it is ordered and also about the ritual in terms of which it should be consumed in every culture. It aims at rediscovering dining and guides the diner into an experience of a country's meal. As per Indian tradition one should not waste food and should eat a complete meal without any leftovers. In an interactive mode the diner will be able to predetermine the amount of food which varies from restaurant to restaurant. He will be able to approximate his likes and dislikes, and predetermine his needs. Similarly, innumerous food and table manners in Asian cultures[2] will be able to find blossom through such concepts, which otherwise remain silent.

Fragrance for the future

It is a fact that whenever a new idea is presented it raises more questions than answers. Visuals, dummy mockups, wax models, close to reality do exists as display menus in many other countries. In the past few years, Mac Donalds has launched their chain of fast food centers in India. A collage with visuals of high appetite value and price tags form their mockups, wax models, close to reality do exists as display menus in many other countries. In the past few years, Mac Donalds has launched their chain of fast food centers in India. A collage with visuals of high appetite value and price tags form their unique special identity. In such a case, any analytical mind would like to translate this paper as combining menu cards with pictures, with a sprinkle of technology to it. The concept "Visual appetite" does not mean a photogenic representation

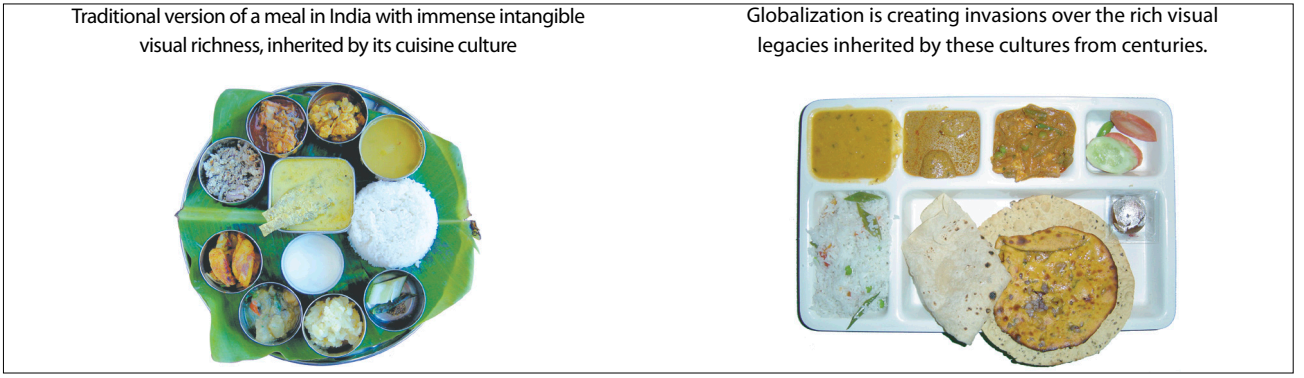


Fig 6. Traditional serving style (left) versus the modified serving style (right)

of food, but it resonates itself to interactive preview of food by providing information as needed at various levels of depth (from the name of the dish to its recipe, to a video of it being made, to the sources of various ingredients, to the significance/associations/special stories attached to it, in cases of dishes made on special occasions). The main application is to safeguard visual and oral traditions of cuisines by creating cross-cultural understanding, developing respect and appreciation for each other's cultures.

1. The english word chopsticks is a terrible and ugly distortion since you don't chop anything ever with them. In China the word is "kuai-zi", which sounds like "fast fellows" because their use results in swift and agile handling and eating of food. Roland Barthes, in Empire of signs, eulogises the use of chopsticks: "... the instrument never pierces, cuts, slits, never wounds but only selects, turns, shifts, separates, unravels; they never violate food". (source: Asit Chandmal)

2. Li Chi, the Chinese Book of Rites, was written in the first century BC. already Detailed rules of etiquette and propriety had been formulated and published. You can get a flavour of instruction from the following admonition: on receiving the first(tiny porcelain cup) of wine look grave, at the second be pleased and respectful; and at the third look self possessed and prepare to withdraw. This applies to Japanese sake also, where you never help yourself but fill a neighbour's cup,

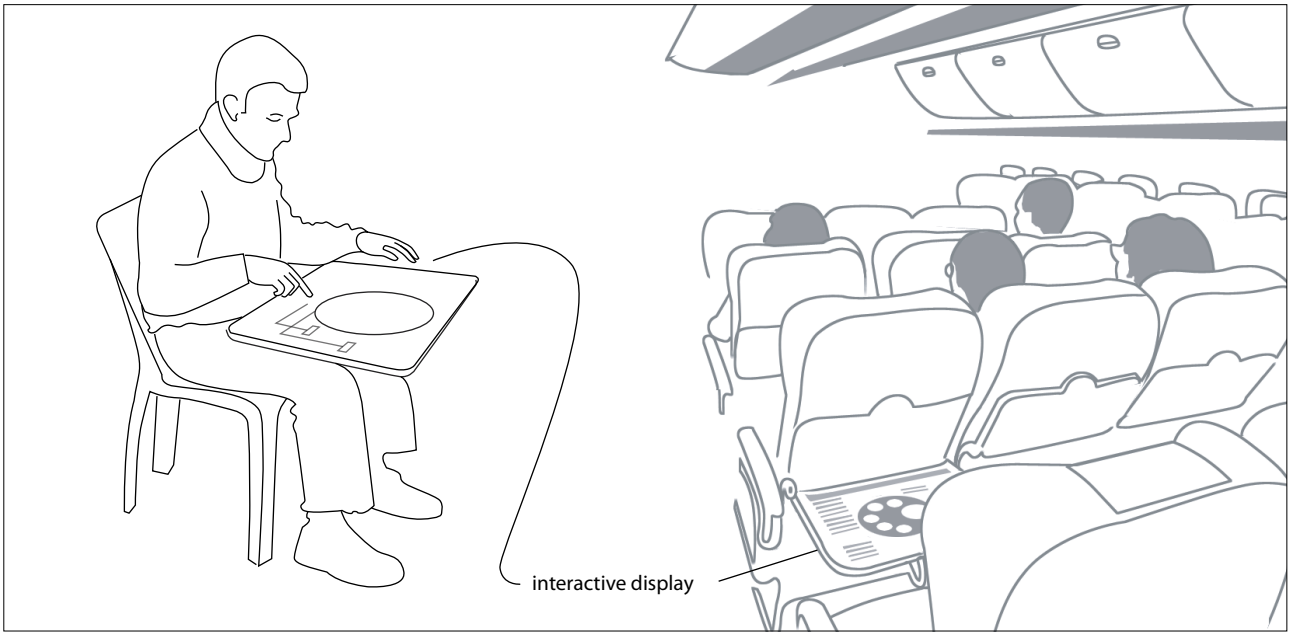


Fig 7. Proposed scenario of interactive display in airplanes (context for the concept)

and hope they do the same when your cup is empty. (source: Asit Chandmal)
Fig.6 shows the deterioration of cuisine culture. Use of food templates for stacking, washing and serving food to ease a system and increase profitability seems the most logical for restaurant owners, when compared to the traditional serving styles. With the coming years most of these traditional styles will be lost or reoriented in a way more conducive to the commercialization prevalent in that time. Then issues related to cusine culture of such countries still existing, but of least concern in today's times will suddenly become an area of research. This can be considered as an opportunity to debate or a possibility to innovate.

Choosing the latter, I would like to present the idea as two fold, one at the concept level and the other at the context level. Concepts are thoughts concerned with a more holistic approach and sometimes feel the fear to remain as point of views, if not translated

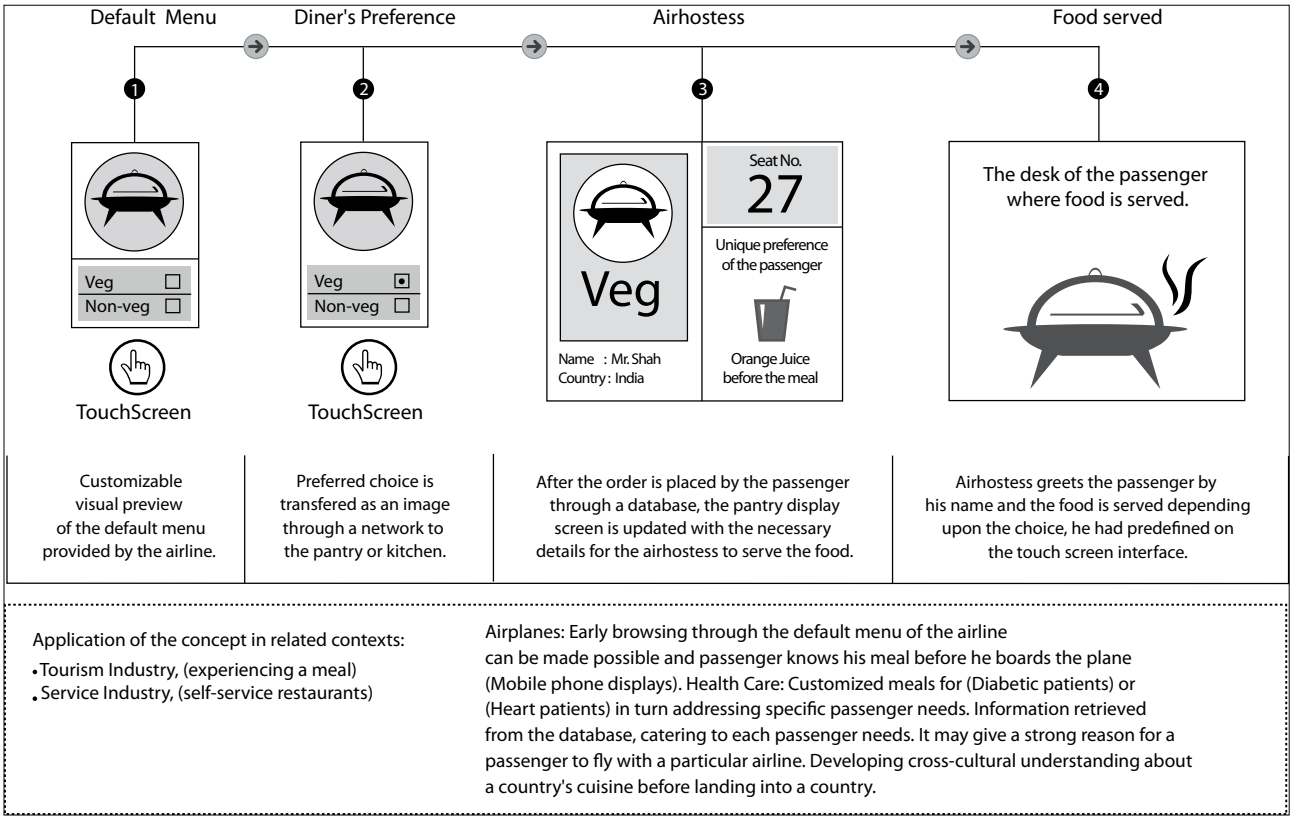


Fig 8. Proposed ideas for interactive Screens in an airplane.

into business ideas. Where as business is always on lookout for contexts in which concepts can be applied or implemented. Therefore as a designer, it makes more sense for the concept to be presented within a framework of (context) business perspective to make it more comprehensible and acceptable. The paper further describes possible avenues where the concept can be applied as a business idea to preserve the old legacy in comprehension with the new. An interactive preview would serve as a true representation for a traveller, who is unaware of the Indian cuisine and its delicacies. Design of such a visual experience could do justice to the unspoken information, hidden inside a country's cuisine, which otherwise would have gone unnoticed. The theme can be adopted in various contexts; where people from different cultures come together or where choices are to be made, (e.g. interactive food service in an airplane, where minimum interaction is possible due to constraints of space or dining desks of restaurants in relation to the tourism industries, where a meal could create an experience to be carried back). All this may not sound untrue with the upcoming flexible polymer film based LCD screens which are so thin that they can be rolled like paper; they are expected to flood the markets by 2007. (Prof. Sadagopan, S. 2003)

Ideas may branch out commercially to find their place in tourism industry or service industry, but the main aim is to find solutions without destroying the legacies of the past (our traditions) as well as to merge smoothly with the coming future (technology). Efforts should be made towards involving audiences in an inviting experience while eating a thali in India by maturing ourselves to get sensitive to these traditional scents of cuisines, which might get lost under the perfumes of modernization. It is our concern to nurture these traditions, revisit them, and preserve their aesthetic sense and beauty.

We should envision the twenty first century as a fine balance of tradition and technology to create a fragrance for our near future.

References:

I. Asit Chandmal, 2004,16th May, The chinese book of rules, Indian Newspaper: Midday (sunday),18

II. Prof. Sowmyanarayanan Sadagopan, 2003, 29th December, IT's Hot – Ink and Paper go smart, Newspaper: Times of India.

III.Website: http://www.food-india.com/indianCuisine/index.htm Anjana Srikanth, Food Tour of India: Diversity of Indian Cuisine. Articles on Indian Cuisine: Why do Indians eat with their hand? Etiquette in Indian Restaurant, Spices and Indian Cooking

About the Author:

Professor Mandar Rane is a faculty member at the Industrial Design Centre (IDC), Indian Institute of Technology Bombay. His interests are in the fields of communication Theory, Visual Communication and Graphic Design.

Narrative and Non-Narrative Traditions

Raja Mohanty

Keywords
Narrative, Non-narrative, Figurative, Abstract, Design Methods

Summary
In this first part of this essay I shall attempt to throw some light on narrative and non-narrative traditions; in the subsequent part I shall briefly examine the implications that these traditions can have on design methods. A narrative is a set of facts / ideas / pieces of information that follow one another in such a manner that when these bits and pieces of data are viewed together, they conjure up a totality that is quite different from the arithmetic sum of the data. A non-narrative, on the other hand is again a set of inputs and data that refuse to add themselves up to some obvious totality, but nevertheless have a capacity to point to unspeakable infinites.

In a terminology used in art, the figurative work of art suggests the use of identifiable objects and figures; whereas an abstract work of art offers no recognizable clues about its content. Semioticians such as Barthes and Kristeva have spoken of the meaning of signs and how signs comprise of the signifier and the signified. Both narrative and non-narrative traditions are based

Depiction of the Buddha in the Mahayana Buddhist tradition and the same in the Hinayana Buddhist tradition.

on their own set of signs, though the degree of abstraction inherent in those signs that maybe said to belong to the non-narrative traditions are usually far more complex and sophisticated than those deployed by a narrative tradition.

The shortcomings of the non-narrative inclination arise out of its opacity to easy interpretations. 'What is the Sound of One Hand Clapping?' is clearly not as easy to interpret as 'The audience broke into claps that far from being appreciative, was actually a sense of edginess to the obtuse density of the performance.'

The second part of the essay describes two recent projects done by design students – one of which is in the narrative tradition and the other with a non-narrative approach.

Part 1: Narrative and Non-Narrative Traditions

A prince, who had the best of this world, is surrounded by high palace walls meant to shield him from the suffering of people. One day his charioteer drives him through the city of ordinary people and the prince encounters four sights that change his life. He sneaks away from his ivory tower and seeks to understand the cause for human suffering. Surely, this narrative is familiar. The prince is the prince of the Sakya clan – hence Sakyamuni, better known as the Buddha, whose life and teachings hold immense meaning even in present times.

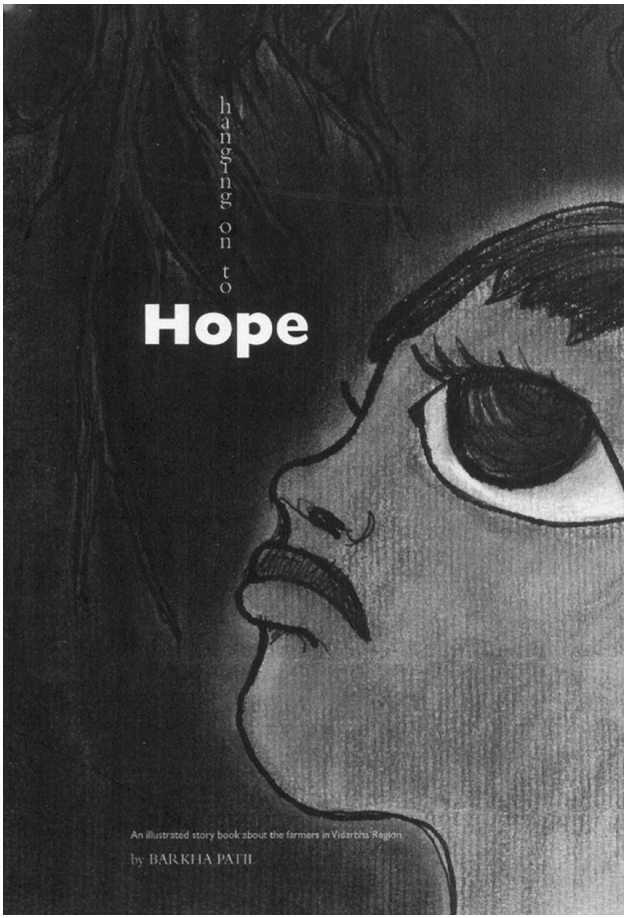
Another conversation attributed to Buddhist stcholar Nagarjuna, happens between Nagasena (presumably Nagarjuna's pseudonym) and the Bactrian king Menander. The king who arrives on a chariot rhetorically asks Nagasena, "Who is Nagasena?" In reply, he gets this answer-

"Nagasena is only a name, since no person is found". The king asks him who the agent of actions is. The master asks him if the hair, the head, the hairs of the body, the nails, the teeth, the skin, the flesh, the sinews, the bones, the marrow, the kidneys, the heart, the liver, the membranes, the spleen, the lungs, the intestines, the mesentary, the stomach, the excrement, the bile, the phlegm, the pus, the blood, the sweat, the fat, the tears, the serum, the saliva, the mucus, the synovic fluid, the urine or the brain in the head are Nagasena. Is Nagasena material shape, feeling, perception, the habitual tendencies, or is he separate from these five aggregates? The king says no, but cannot believe that Nagasena does not exist and wonders if he is telling a lie. Then Nagasena asks the king about the chariot in which he came. Is each of its components, the pole, the axle, the wheels, the body, the flag pole, the yoke, the reins, the goad, the chariot? Are all of these parts the chariot? Is the chariot apart from these parts? The king says no. Then Nagasena says: "the chariot is only a sound" and wonders if the king lies. So the king is obliged to admit that "the chariot exists (merely) as a name". Then Nagasena concludes that "according to the highest meaning, the person is not found here".

What is the difference between the two narratives? The first reads more like a story that is easy to grasp and remember; the second one is far more "abstract". The Hinayana Buddhist forbade icon-worship, was highly abstract, and had a few who took that path. Mahayana Buddhists, on the other hand, invited sculptors and artists to make beautiful icons that gave the Buddha a human face that was infused with such feeling that it moved even those that had never seen the Buddha. Hence, the Mahayana (meaning greater vehicle) Buddhist

view came to be regarded as the pop version of a difficult path; one that had several followers.

Though there is nothing perhaps that is entirely abstract; there are ways of seeing that are not as "story-like" – and one may call these as a "non-narrative" way of seeing. To put it simply, with the help of another example — when Piet Mondrian draws trees as realistic trees, these may be regarded as narratives (one could also use the word story); when Mondrian starts drawing lines and squares, some of which are coloured yellow, blue and black, he moves into the realm of the non-narrative.



One may say that the narrative tradition uses symbols whose signifiers form a part of a collective understanding; whereas in the non-narrative tradition the decoding of signifiers requires a-priori acceptance of not just the language used for signification, but often of meaning itself (or the lack of it). In other words if the narrative tradition seeks to draw its strengths from innovatively using a common database of accepted conventions, the non-narrative tradition relies on what one may call 'a leap of faith'.

Part 2: Student Design Projects

Having clarified the distinction between the narrative and non-narrative traditions, one may now move to some observations regarding the possible implications of these on design methods and design solutions. The gist of the argument can be summarized thus:

The formulation of a design brief is a key step in the design process. Such a method is used by designers in an attempt to articulate the problem that is sought to be addressed. By clearly articulating the problem, the designer intends to prepare the ground for those solutions that would be most relevant. However, there has been a class of problems, (often referred to as "wicked-problems") that defy easy articulation. Very often, these are problems that are very acute and at times appear as various crises that confront people and even civilizations. The argument proposes that a transition from narrative descriptions of problems and narrative ways of seeing to non-narrative understandings may

offer possibilities of a more open-ended (fuzzier) design brief – and this in turn may lead to more comprehensive design solutions.

Give below are examples of responses from two design projects – one of which has a clearly articulated design brief and the other a far more fuzzy "problem-statement"

The first example is a project on a storybook based on the agrarian crisis; the second is a film on representations of time. Hanging On to Hope: An illustrated storybook about the farmers from Vidarbha

Though the subject of the project is related to a social crisis, I didn't want this book to be a social message. I just wanted to express my feelings about the whole issue of the farmers suicides which have been taking place in Maharashtra. It is a project which deals with the emotions of farmers in Vidarbha; what are the hardships that the farmer faces and what does he and his family go through. I feel that people should at least be aware of the situations that these farmers face. Thus I didn't have a specific audience, in my mind, for the book, when I started it. I just wanted to voice my concern for the farmers.

Excerpt from the student design project by Barkha Patil

Representations of Time
Pythogoras, when he was asked what time was, answered that it was the soul of this world. (Plutarch) Time is the moving image of eternity. (Plato) Time is a sort of river passing events, and strong is its currents; no sooner is a thing brought to sight than it is swept by and another takes its place, and this too shall be swept away. (Meditations, Marcus Aurelius) Time travels in divers paces with divers persons. I'll tell you who Time ambles withal, who Time trots withal, who Time gallops withal, and who he stands still withal. (As You Like it, William Shakespeare)

Time is an avijjamana-pannatti, which means that it is a conceptual construct with no corresponding objective reality, a concept based on the continuous elemental flow. (The Dhammasangani, Abhidhamma Pitaka)

Excerpt from the student design project by Vaibhav Singh

Student Design Projects in the Narrative and Non-Narrative Traditions.

The first of these two examples has its starting points in a concern for an immediately visible reality. The concern is real and demands a response that if not immediately fruitful, is still a response that seeks to alleviate. Instead of a slogan or some explicit social message, the project approach seeks to describe; and instead of adopting analysis, chooses to narrate a story.

The second example in fact does not have a design brief but expresses an interest in representing time. The statements that form the introduction are clearly eloquent narratives and yet the notion of representing time is far from narrative in its objective. Though the language used is that of cinema, the structure departs from the unfolding of some plot. There is no plot in the representation charted out; and with each viewing the 'plot' changes, confounding the conventional comfort with narratives. The non-narrative inclination is what gives this project its special strength.

In Conclusion

Design methods, when determined by a precise brief, tend to yield solutions akin to narratives; design briefs that include open-endedness or have fuzzy boundaries are likely to result in responses that are charged with the potency of a non-narrative tradition. Goal-oriented processes have the strength of being focused just as a nebulous meandering towards no seeming-goal creates its own resonances.

Notes

The reference to the conversation between Nagasena and Menander is from the Milindapanha, composed roughly between 1st century BC and 1st. century AD.

This particular translation is from ccbs.ntu.edu.tw/FULLTEXT/JR-EPT/mitch.htm

About the Author:

Professor Raja Mohanty is a faculty member at the Industrial Design Centre (IDC), Indian Institute of Technology Bombay. His interests are in the fields of Visual Arts, Aesthetics and Storytelling.

New Post Box Design For Indian Postal Service

B. K. Chakravarthy

Introduction

There is a lack of well designed products in the public domain due to the difficulty in tendering process in the Government Sector. Unfortunately, new technology based products need investments in tooling and development, which do not figure in the method of operation for purchase in the Government Sector. The attempt of the project is to provide well designed products in the public domain. Having maintenance-free letter boxes was the long time requirement by the Indian post and the initiative was taken up by Prof. Chakravarthy as an idea to implementation project.

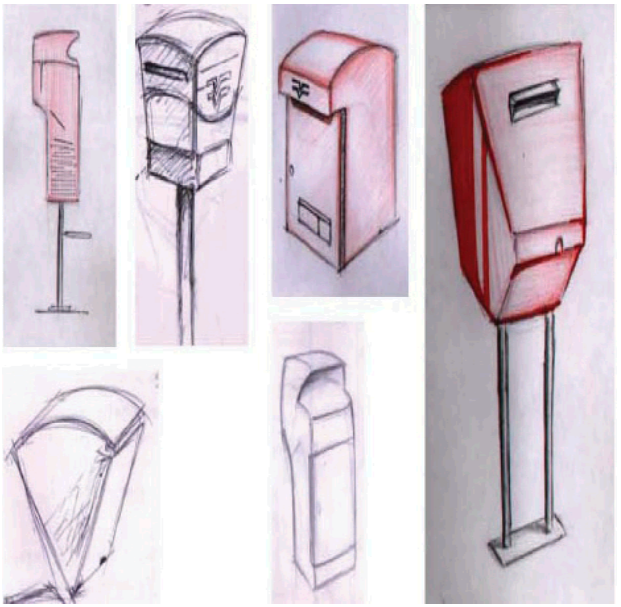
The brief given by India Post was to design a maintenance free letter box, justifiably so, since the existing letter boxes which are made of mild steel were damaged easily and rusted rapidly. As a result the postal department spent a lot of effort and money in painting, repairing and maintaining them.

Design Process

A study conducted prior to designing the letter box among postal staff and public to obtain feedback on the difficulties they faced while using the box as also the additional features they would like to have to make it more user-friendly.

User study insights

- India Post was losing business due to inaccessibility of letter boxes to public.
- The existing post boxes made of mild steel rusted rapidly and were easily damaged and users would often hesitate to post letters in such boxes
- Letters would get wet during rains.
- Postmen found it inconvenient to collect letters.
- There was overflow of letters during festivals and New Year.



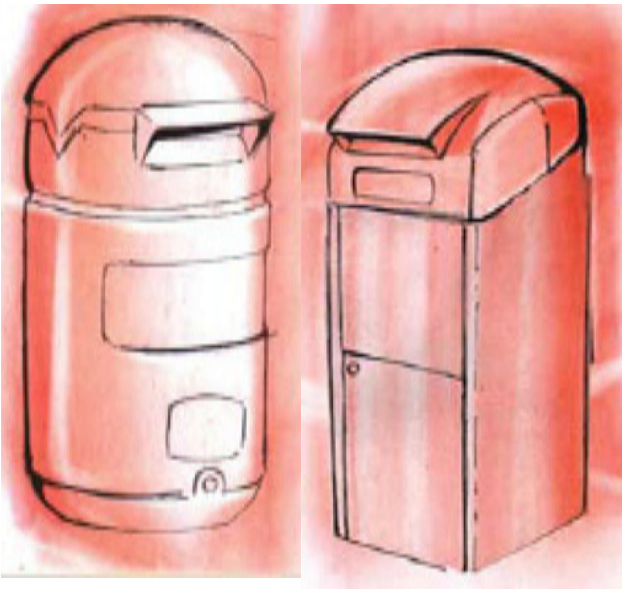
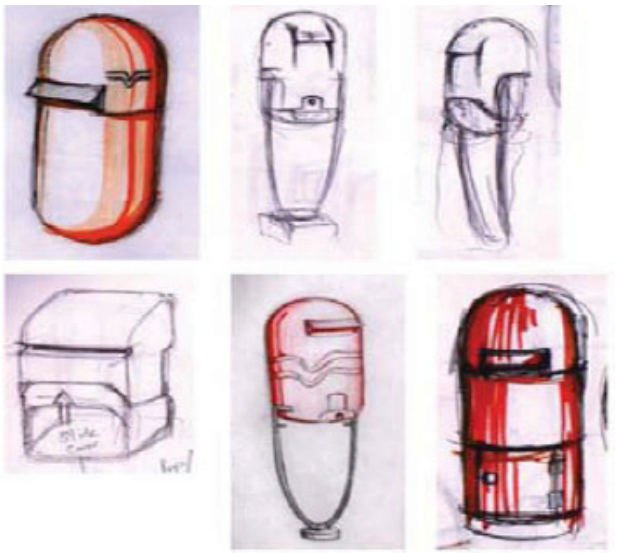


Fig. A *Fig. B*



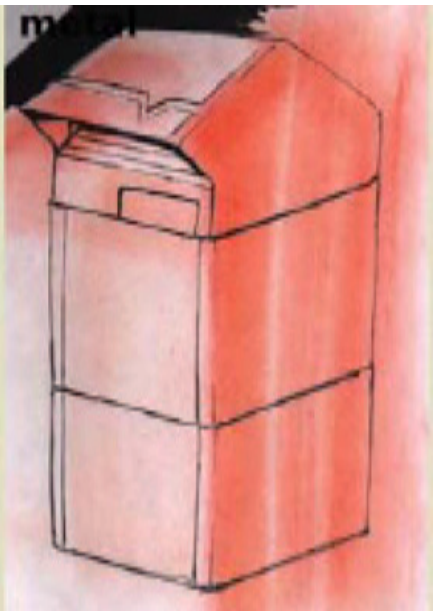


Fig. C

The user insights were converted into idea sketches wherein the core issues regarding seepage of rainwater, rusting of letterboxes and ease of collection of letters were addressed.

The ideas were clustered into groups and in line with the requirement of maintenance free letterbox, the idea clusters were based on the materials used for manufacture.

Concept options
Evaluation was conducted on the following three concept options.
Concept A: Full letterbox in plastic (Fig. A)
Concept B: Full letterbox in sheet metal (Fig. B)
Concept C: Main body in Stainless steel and top box in plastic.

Final concept
Concept C was chosen as the best option and the advantages are illustrated in the following sections. After further refinements using CAD and prototyping, the final design was released for manufacture.

New letter box features
A futuristic elegant letter box made of stainless steel body has been designed with an attractive red beak like top with an aperture for the letters to be dropped. It also has space at the bottom to enable user to rest the letter and push it inside.

The letter box, with an increased capacity due to its square cross-section can be mounted quickly on foundation bolts placed in advance in concrete.

While the top cover enveloping the body on all the sides prevented ingress of rainwater, the slopes on the top of the box drains out the rainwater. It is mounted on a base, so that the overhang can be used by the postman to place his bag and collect the letters easily. A wide opening to accommodate large envelopes, simple time slider, flat top surface which can be used for writing, common key to open all letter boxes in one region are some of the additional features.

Advantages to India Post
- Projects a strong retail visual identity for India Post and enhances its image.
- Letter box's modern and elegant look will encourage industries to advertise on them and generates revenue for India Post.
- Maintenance free.
- Longer lifespan – will last for over 20 years, five times the life of present boxes
- Easy for postmen to collect letter.
- Easy to install.
- Common lock for all letter boxes in one region.

User-friendly Features:
- Easy to post letters.
- Convenient to post large envelopes.
- Can use the top surface for writing.

Manufacturing
The letter boxes were manufactured using:
- High-end CNC machines to ensure excellent surfaces and high quality.
- High quality brush finished stainless steel from M/s. Jindal Stainless Ltd., for longlasting finish and durability of letter box body.
- Engineering plastics from GE plastics for letter box top to provide toughness and strength
- Rust proof locks from Godrej for long and durable use.

Costs and revenue

The cost of manufacturing the box is relatively higher than the present mild steel letter box. But the new stainless steel boxes will last longer and the postal authorities will save on the replacement costs as it will need no maintenance. The ample space on the sides can be used for commercials and the advertising revenue thus generated will also offset the higher cost. Prof. Chakravarthy funded the pilot project up to the prototype stage and the postal authorities provided the manufacturing cost.

Implementation

India Post approved the design and placed a pilot order with IIT for manufacture of 200 letter boxes, which are ready for installation now. The new letter box was launched on 18th October 2005 at Le Meridien, Delhi. The 30 test letter boxes installed earlier in Mumbai, Delhi, Chennai and Patna have been a success as evinced by the feedback received by India Post's corporate communication group.

Recognition

The letter box has won a "special mention" at the stainless innovation awards 2007 presented by Jindal Stainless Ltd. The recognition has come for the innovative use of stainless steel in product design.

Packaging and transportation

When the letterbox is dismantled it is designed in such a way that the base of the letterbox enters the main body and the top fits inside as shown in the image on the left. This reduces the volume of the letterbox, thus reducing the cost of transportation. This also helps in protecting the plastic top during transit.

Future Plans

India Post now plans to replace the old letter boxes with the new ones wherever necessary. Apart from creating a new corporate identity for the India Post and generating ad revenue it will serve as an icon signifying the changes that are taking place at India Post. It will represent the department's efforts to reinvent itself with many upgraded services as also new innovative ones like e-post, e-bill post, greeting post, international money transfer, instant money order, speed post passport service etc.

Promotion

- Popularise the new letter box, its unique features and what it signifies among the public
- Promote the letter box among the corporates as a new advertising medium. Though photographs, brochures and pamphlets can create awareness nothing can equal the impact of a product's physical presence. Hence in order to create a lasting impression on our targets—public and advertisers—they must be exposed to the product directly and constantly. Since carrying the actual letter boxes or bringing the target audience to the letter box is a difficult task we should create handy miniatures of the letter box and distribute them. The mini letter boxes can be made of plastic but with the same visual effects and features.

Piggy Bank

These letter box replicas with a opening can also ideally double as a piggy bank. By installing a detachable bottom to facilitate removal of coins these boxes can be easily converted into a coin bank.

And they can be sold at a reasonable price at post offices as an endeavour to promote savings among children.

Credits

- Scotch brite stainless steel 304 from Jindal Stainless Limited, New Delhi.
- Manufacturing from Jindal Architecture Limited, New Delhi.
- Rust proof locks from Godrej (Locks Divin.), Mumbai, Engineering Plastic GELOY from SABIC Innovative Plastics, Mumbai.
- Thermoforming and Fabrication by Malibu Plastica Pvt. Ltd., Ahmedabad.
- Anchor bolts from HILTI, Mumbai, Injection moulding dies by Indo Dies, Mumbai.

Support

Geeta Joshi, Siddharth Patil, Prakash S. & Shalini Tripathi

About the Author:

Professor B. K. Chakravarthy is a faculty member at the Industrial Design Centre (IDC), Indian Institute of Technology Bombay. His interests are in the fields of Product Design, Smart Materials and Concurrent Engineering.

Anatomy of Devanagari Typefaces

Girish Dalvi

Introduction

The anatomy of a letter can perhaps be defined as a system which depicts the structural makeup of a letter; describing certain key parts within the letter for a given typeface. These morphological articulations of the characters within the font form the first level of description within the typographic ontology of a script. The Latin script, due to its long and elaborate tradition in printing; has a fairly standardized vocabulary to describe its letterforms. Unlike western typographic systems, theory and literature on the anatomy of Devanagari letters is sparse—although there are a few experts who have tried to articulate the various features of Devanagari letters.

This article discusses the various approaches taken by four experts in describing and defining the anatomy of Devanagari letters. Within these approaches we will focus on the vocabulary used to describe the diacritical and vowel signs in Devanagari, the elements within each of the Devanagari letters and the terminology used to describe them. We'll also examine the reference or guide lines used to mark the limits and proportions of the individual parts of a letter. This article also attempts to gauge the strengths and limitations of each of the approaches. Finally, we'd consolidate the similarities that exist amongst the various approaches.

Bhagwat & Naik

One of the first attempts towards a graphical classification was done by S.V. Bhagwat[1]. Devanagari letters till then had not[2] been subjected to such a graphical analysis[3]. Bhagwat's main focus was on handwritten Devanagari and not on printed Devanagari; Naik[4] nonetheless believed that his insights on the graphical structure of Devanagari are enlightening. Bhagwat first creates groups of letters based on shared graphical properties. Six grouping systems for letters based on the following criteria are given on:

1. Size
2. Simplicity
3. Motion, stroke and angles
4. Endings, flourishes, fenced etc.
5. Groups according to the parts of letter design.
6. Groups based on graphical similarity (see fig.1)

He then goes on to define (see fig.2) the guide lines for the letters and terminology for some of the graphical

Letters	*Common element*	*Letters*	*Common element*	*Letters*	*Common element*
ग म भ न	~ and/or ग	प ष फ ण	ष	अ आ ओ औ अं अः	अ
र स (ग ख)	र (ग)	ट ठ ढ द (क्ष)	ट	ए ऐ	ए
त ल लृ	त	ड ड इ ई झ ह	ड	ऋ ॠ	ऋ
व ब क ख	व	य थ	य	उ ऊ	उ
च (ज) घ ध छ	व or घ	श ळ ज्ञ ञ	–		

Fig. 1

elements that exist within the letters. The guide lines defined by him are as follows:

The top lines are the "Rafar line", followed by the "Upper matra line" and the "Head line". The head line is also referred to as the "Shiro rekha", Bhagwat chooses

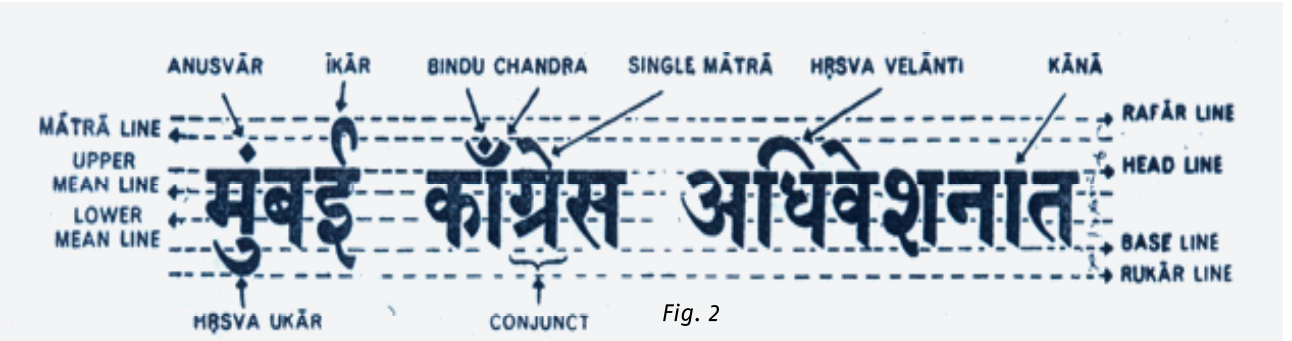


Fig. 2

the upper limit of the Shiro rekha to denote the head line After the head line, the upper mean line and lower mean line are indicated. The upper mean line denotes the point from which the actual letter starts, it is the line where the "peg[5]" of the letter ends and the actual letter begins, for example the topmost counter of the letter क and व. The lower mean line is marked where the distinguishing characteristics of the letters comes to an end for example the lower end of the first half of ग or the lowermost part of the counter of the letter क and व. These lines are followed by the base line, which is where the complete letter ends and the lower Matras begin. The lowermost line is the "Rukar line" named so that is the line where the lowest portion of the Rukar ends.

This division of letters is simplistic in comparison with the other schemes discussed in this article, it fails to address issues of the proportion of letters, double ligatures etc. It is also obsolete in a certain sense primarily because it uses handwritten Devanagari as its source material. Therefore it is interesting to note that, in this model two lines are marked above the Shiro rekha—the Upper matra line and Rafar line. A marked difference between the height of the matras and the height of the Rafar is seen mostly in handwritten or calligraphic Devanagari. This scheme cannot be applied to contemporary Devanagari as in most of these the typefaces the heights of the Rafar and the Upper Matras are equal. If we were to consider Bhagwat's scheme for contemporary Devanagari typefaces then the two lines (Upper Matra line and Rafar line) would merge into one another. Bhagwat titles his figure as "Graphic Elements in Devanagari Letters", the new contribution that he makes to the vocabulary of graphic elements of Devanagari is the term—the "loop", which. he uses to describe the top of letters such भ and श.

Bapurao Naik[6] also attempted a graphical grouping (titled "Graphical Classification of Devanagari Varnas") of letters—this grouping is a more succinct version of Bhagwat's grouping based on the parts of the letter. Naik graphically organizes the letters into five groups (see fig.3) based on the position of the Kana or the verti-bar.

	Vowels	*Consonants*	
Group 1	letters	with full verti-bar *attached* (अंत्यदंडयुक्त)	20
	अ	ख घ च ज झ त थ ध न प ब भ म य व ष स क्ष ज्ञ	
Group 2	letters	with full verti-bar *detached* (अंत्यदंडयुक्त)	3
		ग ण श	
Group 3	letters	with a short-bar (अल्पदंडयुक्त)	14
	उ ऊ ऌ ॡ	ङ छ ट ठ ड ढ द ल ह ळ	
Group 4	letters	with a central-bar (मध्यदंडयुक्त)	4
	ऋ ॠ	क फ	
Group 5	letter	without a bar (दंडरहित)	1
		र	

Fig. 3

It is worthwhile to notice that in this scheme the letter ए is missing. According to the given logic this letter would have a half verti-bar which would have increased the number of groups from five to six. One could also consider the fact that in group 5 the letter र is considered without a bar, in many contemporary Devanagari fonts the letter र is drawn with a half verti-bar as against a small arc from the Shiro rekha which is considered in the given example—in such a case one can group the letter ए with र and call it a group of letter with half verti-bars. The terminology used by Naik[7] (also Bhagwat and Gokhale) is the typical terminology which is used to describe Devanagari vowel signs in schools while teaching Devanagari. The terms used for vowel signs are:

Vowel	*Matras*[8]	Name
अ		
आ	ा	*Kana*
इ	ि	Short *velanti*
ई	ी	Long *velanti*
उ	ु	Short *ukar*
ऊ	ू	Long *ukar*
ऋ	ृ	Single *prithvi* sign
ॠ	ॄ	Double *prithvi* sign
ऌ	ॢ	Single *klpti* sign
ॡ	ॣ	Double *klpti* sign
ए	ॅ	Single *matra*
ऐ	ॆ	Double *matra*
ओ	ो	*Kana matra*
औ	ौ	*Kana* double *matra*
अं	ं	*Anuswar*
अः	ः	*Visarga*

M W Gokhale

The next attempt at creating a vocabulary for Devanagari was done by M W Gokhale; it was first published in 1975–76[9]. Gokhale uses the "body" paradigm to describe the various portions of the Devanagari letters—the body is used as a reference for the vertical proportion of the letters. The lines defined by him are as follows:

- उर्ध्वरेखा (topmost line)
- शिरोरेखा (head-line, start/end)
- स्कंधरेखा (shoulder line)
- नभरेखा (navel line)
- जानुरेखा (knee position line)
- पदरेखा (foot line)
- तलरेखा (extreme bottom line)

Regarding the proportion of letters, Gokhale uses the stroke thickness (thickness of the pen stroke) as the base unit. He suggests—to define the upper Matra signs we need minimum four strokes and bottom Matras need

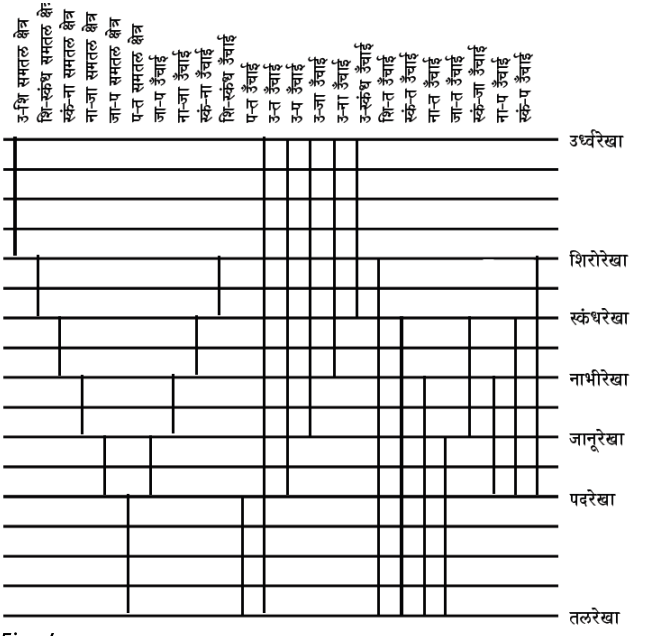


Fig. 4

a minimum of four stokes. Thus four strokes for upper, eight strokes for the main characters and four strokes for the bottom Matras are necessary. Total 16 units of strokes can be considered as a primary parameter for the total height. He also goes on to suggest—for practical purpose the thickness of the pen stroke could be 1/16th of the type height (see fig.4) According to this scheme, "an expert designer can vary the proportions if guide lines and alignment zones to suit his/her design needs[10]".The description of the various parts of Devanagari letters is called "Cartographic description of Devanagari" in his document. The supporting figures show the labelled terminology.

Some notable terminology that we can see here is, शिर्षदंड for the "peg" or connecting part of a letter such as द; सर्पकार मरोड for the elongated loop of the letter क्ष; विवर for counter space in the letter व which has a open counter in the given example. गाँठ i.e. a knot, more precisely a filled knot in the letter द. बंदिस्त अवकाश for the enclosed counter space in the letter म.

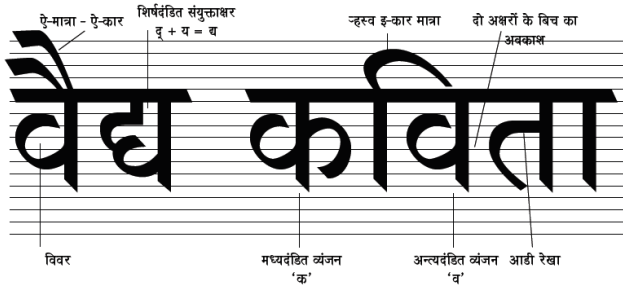
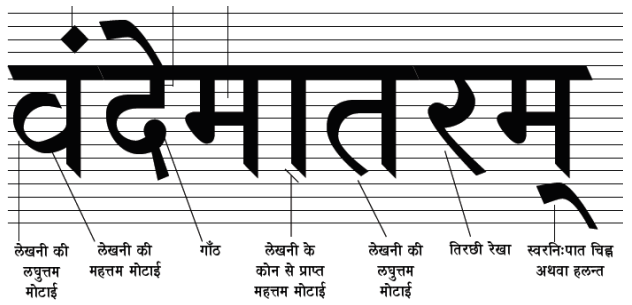


Fig. 5



Mahendra Patel

Mahendra Patel designed two digital Devanagari fonts for the National Institute of Design Ahmedabad, in 2001 and 2004 respectively[11]. In the documentation of these projects he uses the following set of guide lines—these lines not only stand independently for Devanagari, but Patel has also laid down their relation to the Latin reference lines. The Devanagari reference lines laid down by Patel are:

- Upper most line
- Upper Matra Line
- Shiro Rekha Upper line
- Shiro Rekha Lower line
- Kana Lower line
- Vertical Conjunct line
- Lower Matra line
- Lower Matra line for vertical Conjunct
- Lowermost line

He further enumerates the following design aspects of his font by grouping "Characters in Formwise Categories". The groups formed by him are:

1. "Angular Endings": The endings or terminals of letters such as क ग ञ ट ड ण त त्र प फ य ल व ष ए १ २ ५ ७
2. "Block Loop Endings & Joints": Block looped endings would be seen in letters such as न while block loop joints would be seen in letter such as ख क्ष ज्ञ झ द भ म र श स ह्म इ ऋ.
3. "Loop Endings and Joints": Loop here again denotes an open loop so a letter with a looped ending would be छ ढ थ श while letters with open looped joints would be क्ष and श्र.
4. "Merging Joints" (a curve to curve/straight stroke): such as in letters क ख घ च त्त द्र द्द ३
5. "Right Angle Joints" (straight to straight/curve stroke): Shown in the letters such as ग्र ज त म न २ ४ ७

6. "Looped Form" defined here as letters which have a considerable portion of their body looped, such as the letters: ठ ६ ८ ९

Patel defines two kinds of loops for his letters—a "block loop" which is a filled knot it can be an ending (as in the letters न) or a "block loop join" (such as in the letter र) similarly an open loop is a open knot (where the counter is visible) it again comes in two flavours; a open loop ending (the letter छ) and an open loop join (the letter क्ष).

It is important to note here that the terminology defined here, is highly dependent upon the shape of the characters—a particular character can have a variety of forms and the terms applied here refer to the specific font designed by Patel. An example to show this is the letter ग, in the font designed by Patel the letter ग does not have a counter or a loop even, whilst it is very common to see a ग with a loop (filled or otherwise).

Observations

After analysing the various divisions and nomenclatural terms used by various experts; one can make the following observations:

Certain terminology is unanimously used by all the experts. This is more or less the terminology of the Matras (dependent vowels) and other diacritical signs. The terms where there seems to be a large level of consensus are noted below (alternative names are shown alongside).

In describing various parts of the letter—many a times experts have named the same part of a letter with different names. As an example if we consider the part which Bhagwat refers to as a "loop" is further classified by Patel into two kinds: blocked (filled) and open (with a counter) loops. These two are further placed into two contexts: "loops at the end" and "loops at the joints". If we consider the same element, Gokhale calls the "blocked loop" of Patel as a गाँठ or "knot". Similarly the

Character	Sign	Nomenclature
	◌्	*Halanta*, *Virama*
आ	◌ा	*Kana*
इ	◌ि	Short, *hrasva velanti*[12]
ई	◌ी	Long, *dirgha velanti*
उ	◌ु	Short, *hrasva ukar*
ऊ	◌ू	Long, *dirgha ukar*
ऋ	◌ृ	Single *prithvi* sign, *hrasva Rukar*
ॠ	◌ॄ	Double *prithvi* sign, *dirgha Rukar*
ऌ	◌ॢ	Single *klpti* sign
ॡ	◌ॣ	Double *klpti* sign
ए	◌े	Single *matra*,
ऐ	◌ै	Double *matra*
ओ	◌ो	*Kana matra*
औ	◌ौ	*Kana* double *matra*
अं	◌ं	*Anuswar*
अः	◌ः	*Visarga*
	◌ँ ◌ॅ ◌ॆ	*Anunasika*, *Chandrabindu*
	◌ॅ	*Chandra*
	ऽ	*Avagraha*
र	प्र द्र	*Ra-kar (short slanted line)*
र	ट्र	*Rashtra sign (chevron shaped sign)*
र	र्प र्द	*Reph*, *Rafar*
र	च्य	*Varyacha*, *eyelash* र *(Marathi)*

portion which Patel refers to as a counter is referred to as a विवर (for an open counter) and बंदिस्त अवकाश for a closed counter.

While dividing letters, the most important reference line seems to be the Shiro-rekha or the head line. In its definition, two experts have defined it considering its width—defining two lines within the Shiro-rekha—an upper Shiro-rekha line (आद्य शिरोरेखा) and a lower Shiro-rekha line (अंत्य शिरोरेखा). Only one expert (Bhagwat) uses the upper limit of the as a reference for the Shiro-rekha.

Most of the other reference lines are marked by vertical upper limit that the width of a stroke can take or the vertical lower limit that the width of a stroke can take. A typical exception to the above observation is the नभरेखा (navel line) which defines the horizontal maxima that the stroke takes while drawing certain characters with circular strokes.

In the division of letters, one can see a similarity between Bhagwat's divisions and Gokhale's. The latter seems to be a more elaborate and expanded version of the pervious scheme— above which is placed the body paradigm which dictates the vertical proportion of letters. One can see differences when we compare the letter division schemes (especially in the proportions—as an example compare Bhagwat with Patel) of all the experts. However the guide lines which are common and have been delineated by all are:

- Upper Matra line, Matra Line, उर्ध्वरेखा (topmost line)
- Shiro-rekha, Head line, शिरोरेखा (head-line)

- Initial line, Upper Mean line, स्कंधरेखा (shoulder line)
- Lower Kana line, Base line, पदरेखा (foot line)
- Lower Matra line, Rukar line, तलरेखा (extreme bottom line)

Conclusion

The existing literature on this topic is very limited and experts have afforded only a page or two to the description of the Devanagari letters. Considering the existing literature on the anatomy of Devanagari letters—it seems as if there exists a common unanimous vocabulary which is used to describe Devanagari vowel signs—minor linguistic differences do exist within these terms, but they are translatable in most cases. There are a number of differences in the nomenclature used by experts to describe the specific parts (stroke elements) within Devanagari letters. Many a times, the same elements are labelled by different experts differently, in this again some experts describe certain terms much more elaborately than others. The Latin typographic letterform is almost unanimously governed by at least four reference lines—the ascender, descender, x-height and the cap height. There exists no universal consensus on the reference lines for Devanagari letters.

One can see from the given literature there are differences in the methods and nomenclature within the theories proposed by the various authors. However there are certain similarities too; these similarities ascertain the significant features and divisions of Devanagari letters. We can sense here a need for a unifying anatomical model for Devanagari typefaces which resolves the differences between the given assorted schemes by incorporating the essential features mentioned by each of the experts.

Notes & Referances

1. Bagwat S V, Phonemic frequencies in Marathi and their relation to devising a speed script, Deccan college Pune, 1961

2. Two pamphlets published on Devanagari calligraphy in Marathi: Apte, Jagdeesh Pandurang, Chitraroop

Devanagari, Poona February 1960 and Ravale Lakshman Sakharam, Hastakshar Darshan, Popular Book Depot Bombay, 1964

3.The summary is consolidated from Naik, Bapurao S., Typography of Devanagari (Bombay: Directorate of Languages, 1971)

4. Ibid pp 205–214

5. A letter-peg is defined by Bhagwat as, a small vertical dash (or short bar) hanging from the head-line and supporting the main body of a letter.

6. Naik, Bapurao S., Typography of Devanagari (Bombay: Directorate of Languages, 1971) p176

7. Ibid p177 & p186

8 Naik explicitly uses the term Matra with a capital M to denote all the vowel signs, while matra with a small m is used for the vowel signs of ए and ऐ.

9. Gokhale, Mukund. An Experiment on Devanagari Type Design System. Pune: Script Research Institute, 2004.

10. Gokhale, Mukund. An Experiment on Devanagari Type Design System. Pune: Script Research Institute, 2004. P19

11. Patel Mahendra. Type Design Development Project, National Institute of Design 2004

12. The term velanti is a typically Marathi word (origin from the Marathi word वेल (vel): of a vine or other scandent shrub) used to denote the dependent vowel sign for इ and ई.

About the Author:

Girish Dalvi is a doctoral student at the Industrial Design Centre (IDC), Indian Institute of Technology Bombay, working in the area of Devanagari Typography.