=ARTHAYA=

in
search
of meaning
in man-made products and images

articles from
the seminar on
Visual Semantics

IDC
IIT Bombay

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in search of meaning in man-made products and images

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Contents

on Arthaya

In our present man-made world we surround ourselves with objects, artifacts and visual images, which we identify, interpret and interact with. These artifacts and images, in turn, are shaped by existing traditions and technologies.

These three-dimensional concrete items and flat drawings denoting realistic, semi-realistic and abstract concepts offer a variety of meanings. Communication relies on our ability to recognise these aspects that participate in conveying these meanings.

It is our intention to understand the implications of meaning in relation to products (i.e., objects and artifacts) and visual images.

Product forms can speak about themselves, about the potential user and about the cultural environment. We expect a product to cater to the psychological, social and cultural needs of the user, beyond its intended (physical) function. Products can also offer subtle opportunities to express the aspirations of the potential user, his way of life and his thinking.

This approach to product design changes the designer's role to that of a communicator who speaks to the user through his product.

Communication through visual images relies on an understanding of pictorial, typographic and diagrammatic configurations and, on the ability to recognise these aspects that convey information and participate in the perception of meaning.

A complex aspect of communication that still deludes proper analysis is the way meaning is perceived in images. While we enjoy a certain confidence in dealing with the syntactic and pragmatic aspects of visual images, there is a definite need to gain insights into the semantic aspect of the same. We need to, therefore, ask ourselves if there is an underlying structure to semantics and whether such an understanding transcends formal logic.

For designers living in an increasingly image - dominated society (from that of a word - dominated one), it means, therefore, that areas such as graphic design, film/video making, illustration, typography and painting, as well as the computer graphics, have an even more important role to play.

These articles on visual semantics, is in search of meaning in man-made products and visual images. They intend to explore 'Artha' (semantics) in relation to 'Anvaya' (syntactics) and 'Vyvahara' (pragmatics). These papers were read during the seminar on visual semantics held at Industrial Design Centre, IIT Bombay. They are placed in the order of their significance to tradition, products, perception, basic design, visual images and media.

B. A. Ravi Poovaiah

On Artha

Pandit Narendra Sharma

'Arthaya Thasmai Namah'

All of us are in the process of learning things, because *'Artha'* is always revealing itself - in so many ways that it is very difficult indeed to keep track of the channels of revelation. When I said *'arthaya thasmai Namah'* the great vedavyas; after having narrated the whole story of Mahabaratha in his geyakavya had to say *'Kalaya Thasmayai namah'*. To him, time revealed the meaning and the meaning was the meaning of the entire Mahabaratha. He said " the whole essence of that existence which I had the occcassion to witness was *dharma* ". I proclaim to everyone that *dharma* is the essence of existence. With the help of *dharma*, by serving *dharma* we can fulfill our desires, that is fulfill *Kama* and we can also get our end fulfilled in the pursuit of *Artha*. I am purposely introducing *Artha* in this particular context becuase here the meaning has its limitations. It is men's worldly possessions, men's useful worldly goods. But *Artha* is not confined to these limitations. For example, when we use the word purushartha there is *dharma, Artha, Kama* and *Moksha*. *Moksha* is not getting rid of the whole thing but realising that it is all *purna*, everything is whole. We get rid of our limitations, our lack of perception. Our lack of thinking and through the process of elimination we come to the whole. Then there is the word *paramartha*. *Parama* means far reaching not only in space but in time. So the *Artha* that abides in *paramartha*, is identical with truth, the only abiding thing. Becuase truth sustains everything. Therefore it is not unreasonable to believe that *Artha* represents the entire intended purpose of the whole cosmic creative process. So are the various aspects of *Artha*. *Artha* combined with *Vak* is speech and meaning . They constitute the word and the most important word is the name - its a noun - its a name. You will see that names are nouns - particular nouns. But how can they be common nouns? abstract nouns? nouns of multitude? But name really, i.e *'naama'* colllectively represents all. Here I am reminded of the wonderful statement by the greast ancient Chinese Philospher Lotsai. He said " Nameless is the father, Name is the Mother". What was the meaning behind this? Meaning which means the father is revealed by the mother. Mother is the source of the whole manifest universe and that name becomes the source of revealing

to us the whole manifest universe. *Naama* suggests the *Roopa*. It sugggests *Guna*. It also suggests *Karma* and the *Svabhava*. This *Naama, Roopa , Guna, Karma,* and the *Svabhava* - they are all revealed by the name or *'Naama'*. So this is what the mother does. So when we come to the mother who is responsible for revealing or expressing or manifesting in visual forms in terms of qualities, in terms of functions and in terms of giving it certain characteristics which are specific to a certain thing, the object the mother is the source of that and as Lotsai says father is nameless. In our own ancient Thinking *Neti, neti, neti* has been said of that in whom meaning resides. *Nate, Nahete* is also used to denote anything which is quoted. You quote this statement or that, say anything within quotes and yet meaning will be beyond it. Beyond and beyond and yonder and still be on. That is one point of meaning and the other point is with us always. It is in the things which we use, in the things which we adore, in the things which we love. All those objects which are constantly revealing that meaning to us - the meaning of life. We know that when we reject something, we do say it is meaningless. It is *Nirartha*, it is *vyartha*. So artha really is the *summum bonnam* of all existance. It is existence in essence and quintessence.

In fact there are three aspecs of any revealed meaning. There is the existential aspect, the essential aspect and also the quintessential aspect. There are the three *dhvani* - *abhidha, lakshana* and *vyanjana*. There is the precise use of meaning in science where precision, proper definition is of the atmost importance. There is the sugggested meaning. There is the denotation and the connotation. Both types of meaning give as that *nidhi* of meaning of which our objects, our words and languages, our science are only the representatives. *Pratinidhi* and the *nidhipati*: meaning is the *nidhipati* and words, objects, science, symbols are only the representatives. They only re-present the meaning to us. Off course, it will be important to consider one who will receive the meaning, one to whom the meaning will reveal itself. This is of the utmost importance. *Deshakaal* and *Patra* will be the path. I pray to God *Patra* that he gives us the *yogyartha*, the *patratha*. That we are able to receive that meaning which he has always been revealing to us. Infact, in meaning he reveals himself. The Nameless father and the name that is the mother are in the word, in the symbol, in the object, in the sign and if we receive these modes of communication with proper sense of respect and attention, I'm sure our lives will be meaningful.

VEDIC RITUAL: IMPLEMENTS

T.N. Dharmadhikari

The Institute of Vedic Sacrifice has come down to us from the time immemorial. Even the Rg.Veda Suktas, which are regarded as the oldest available literary records of the human race, show a picture of much advanced sacrificial institution. In Rg.Veda, one can find the titles of such instruments as were directly utilised in Sacrifice, e.g. the words the Sruc. (1.84.18), Sruva (1.116.24), Juhu (5.1.3), darvi (10.105.10), Avani (5.9.3), Graha (10.114.5), Camasa (1.20.6), Yupa (5.2.7), Casala (1.162.5) Adhisavani (1.28.2), Ulukhala (1.28.6), drsad (7.104.22), Samya (3.33.13), etc. etc. found in Rg.Veda have direct bearing with the sacrifice.

Since the forms of sacrifice were much more elaborated in the literature of Yajurveda, a more detailed information of sacrificial instruments is found in the Samhitas, Brahmanas and further in the Sutras of Yajurveda.

Vedic Sacrifices may be divided into three categories, viz. isti, (i.e. a sacrifice offered with clarified butter, or a baked cake); Pasu (i.e. a sacrifice offered with the oblations prepared out of the limbs of cattle, mostly - aja - a goat and Soma (i.e. a sacrifice in which the juice of Soma plant is offered).

The tools were mostly made of wood, e.g. of Sami (Mimosa Suma) or (Prosopis Spicigera)[1]

Khadira (Acacia Catechu)

Vikankata (Flacourtia Sapida)

Varana (Crataeva Roxburghii)

Asvattha (Ficus Religiosa)

Bilva (Aegle Marmelos)

Palasa (Butea Frondosa)

Udumbera (Ficus Glomerata)

Arka (Calotropis Gigantea)

Karsmarya (Gmelina Arborea)

Venu (Bamboo/reed/cane)

Nyagrodha (Fig tree)

Rohitaka (Andersonia)[1] etc.

Incidentally some instruments were also made of metal-especially of Kamsya (i.e. amalgam of zinc and copper) and some of clay.

I shall deal with a few of the sacrificial instruments.

1. Arani - Two fire kindling sticks.

The fire was generated by friction of two wooden logs of Asvattha grown on Sami tree. The discovery of creating fire may also be considered as a land-mark in the social and cultural history of human race.

Arani is a dual form, obviously representing lower arani and upper arani. Their friction generates fire.

A peg cut-out from upper arani is fixed in catra (Pramantha) a spindle; which is again place in Ovili, a horizontal log. The spindle is turned with a cord. The peg is rubbed against lower arani and fire is created by friction.

In a myth referred to by Kathaka Samhita[2], ara represents Visnu and arani is his wife.

In another myth[3], the upper arani is referred to as Pururavas, the lower arani - as Urvasi, and the generated fire as their son - viz. Ayuh.

Thus the arani appears to symbolise the creation also.

2. Rathacakra

The discivery of a rotating circular wheel means a step ahead in the fields of material sciences, as well as in social life. In Vedic literature, especially in ritualistic context, there are many references of a Sakata i.e. a cart and of Ratha i.e. a chariot, of which the wheel forms an indispensible part. The oblation material e.g. paddy, is carried towards the sacrificial hall by a cart. The soma plant, when purchased, is escorted and taken to the sacrificial pandal by a chariot. In Vajapeya, a race of seventeen chariots is run and the Sacrificer's chariot is supposed to win a race. Taittiriya Brahmana in the context of Vajapeya and Rajasuya refers to a Prastivahi i.e. a chariot with three horses and two drivers[4].

In the ritual of Adhana, i.e. depositing three fires, chariot wheel is rotated by a Brahma priest, on the ground from the Garhapatya fire place to Daksina and Ahavaniya - fire places, when the fire is taken to them. The wheel is rotated three times. The chariot wheel here seems to represent a devaratha, the chariot of the gods. It is, therefore, supposed that the fire is carried by the devaratha and that the Sacrificer crosses the three regions and finally attains the highest bliss[5].

In Vajapeya sacrifice, a wheel is horizontally fixed on a peg dug firm in the ground. The Brahma priest sits on a wheel which is rotated thrice. The priest chants a Saman. While this wheel is being rotated, the sacrificer climbs up his chariot and aspires to attain the highest region.

This wheel has seventeen spokes[6]. In Vajapeya sacrifice, the figure 17

bears importance, because this figure is related to Prajapati[7].

In Upanisads, the Purusa[8] or Brahman[9] is said to possess sixteen Kalas.

In the science of Yoga, one of the Cakras in the body is Sodasara, i.e. possessed of 16 spokes.

The moon is supposed to have sixteen kalas. The seventeenth may be the nectar oozing fromher rays.

According to Jnanesvara[10], the celebrated Marathi saint, the 17th Kala appears to be the 'Jivana-kala' identified with the nectar oozing from the Candra fixed in the Vyoma Kasa in the body.

Thus, the seventeen spokes fixed in a cakra of chariot may be symbolic and appear to have related to Prajapati and Yogi practices.

2 a. Ratha Cakra Citi

Amongst many other sizes of citis i.e. the fire altars, the vedic texts enjoin that of Ratha cakra [11]- where it is identified with Vajra, a missile, which must be circular in shape. This alter is prescribed for a sacrificer who has enemies and naturally wishes to overcome them. A sacrificer piling a circular altar, resembling a rathacakra, in a way throws a Vajra, against his enemies.

The concept of Puranic Sudarsana Cakra of Lord Krishna, may have developed from the Vedic Rathacakra; identified with Vajra.

3. Syenaciti

A particular size of fire-altar, having a shape of falcon bird. It is piled in five layers. Each layer is constructed with bricks of different sizes. The total number of bricks in five layers is 1000.

The falcon is supposed to be very swift[12]. The Sacrificer can reach the Svarga with the help of an altar resembling a falcon.

According to a myth related in Taittiriya samhita, Suparni, represented the yonder[13] region i.e. Svarga, and it fetched Soma, from the heavens, with the help of gayatri metre. Suparna is another name of falcon or eagle.

4. Sruc

Sruc means a ladle for offering. The ladles, viz. Juhu, Upabhrit, Dhruva, Pracarani and Agnihotrahavani are generally denoted by the word sruc. All these ladles have similar design. They bear different names due to their varying application in sacrifice. Thus Juhu is used for offering oblations. Upabhrt supports the Juhu. Dhruva is filled with clarified butter and placed firm in vedi. Oblations of clarified butter are drawn from Dhruva, into

Juhu. Some offerings in Pasu and Soma sacrifices are made by Pracarani, if juhu is engaged in other offerings. Agnihotra-havani is used for Agnihotra offerings only.

According to Bodhayana[14], the drain of sruc should resemble the lips of elephant. But according to Anupamanyava the drain should resemble the beak of swan. According to Saliki, the tail of sruc should be similar to that of a crow. The wood prescribed for different ladles is as below.

Juhu - Palasa
Upabhrt - Asvattha
Dhruva, Pracarani, and Agnihotrahavani - Vikankata

The drains of ladles are conducive to easy out-flow of liquid oblations and their design is artistic.

4a. Sruva

Sruva also means a ladle of different design. It has a round bowl, having the diametre equal to the size of one part of thumb[15], or of a hole of nostril[16]. According to Gobila[17], the Sruva may be designed with two bowls separated from each other, resembling two nostrils.

Sruva is mostly used for drawig liquid oblations into Juhu. It is also sometimes utilised for offering oblations. Sruva is made either of Khadira, Palasa or Udumbara.

5. Sphya

The Sphya is held by Agnidhra priest, raised in his hand, when he permits the Adhvaryu priest to proceed with sacrifice.

It is also used for digging or measuring the ground for vedi. It is made of Khadira wood.

This implement is described as a flat piece of wood shaped like a sword.

In Satapatha Brahmana, this word is used to mean a spar or a boom of ship's sails[18]. The sacrificial implement may owe its origin to it.

6. Samya

Samya originally means the wooden pegs fixed in the holes of yoke-ends of a cart. It further assumed the shape of mace.

Samya is used to measure the ground for Uttarvedi. It is also placed beneath the grinding stone in which oblation material is pounded. In the series of Sattra sacrifies, each next sacrifice is offered at a distance of Samya-throw.

It is prepared out of Khadira or Varana wood.

7. Grahas

In the Soma sacrifices, the juice of soma is offered to various deities. The soma
plant is pounded, and the juice is filtered with the sieve. The soma juice flowing down the sieve is taken in the wooden goblets called Grahas.

Grahas are prepared out of wood.

According to Katyayana Sruta Sutra, nine grahas (viz. Upamsu, antaryama, aindravayava, maitravaruna, asvina, sukra, manthi, ukhthya, and aditya) are span-high, contracted in the middle and look like morters (i.e. rounded in shape). The bowls are carved at the top[19].

However, according to Apastambha S.S[20], the dadhigraha, amsugraha, adabhya graha and sodasigraha are four-cornered.

According to Katys. S'S. the Rtu grahas are shaped like bowls of a ladle having beaks on both sides[21].

Two priests viz. Adhvaryu and Pratiprasthtr, offer some juice, with the Rtugrahas, to 14 months[22] which include the adhika, i.e. intercalated month and also Ksaya, i.e. a lunar month omitted in the adjustment of the lunar and solar calendar.

Two priests partake of the soma from the Rtugraha, and hence this graha bears two beaks. However, according to Taittiriya Samhita[23], the Rtus i.e. seasons have two openings and hence the Rtu-grahas also have two openings in form of their drains.

The Asvina-graha, according to Kat S.S's[24] has the appearance of lips at opening of the bowl. But Aps. 's[25] prescribes it as having two corners.

The aindravayavagraha shows a sign of a cord[26] round its neck.

The maitravaruna graha is marked with the udder like[27] proturberance found at the throat of a goat.

According to Sat. S.S's 9.1[28], the aditya patra and ukthya patra are shaped like horse-hoof at their bottom.

AP S'S prescribes this shape for Rtu. grahas[29] also.

8. Camasas

Camasas i.e. Soma-offering pots are utilised by the assistants of the priests, for offering some-juice. The assitants are called camasadhyaryus. There are eleven camasas prescribed by the vedic texts. The camasas is square in size and has a deep bowl. The designs of their handles are, however, different.

The Karikas describing the handles are as follows:-

Caturasro brahmaeamasah
hotus tu parimandalah
prthus tu yajamanasya
tryasrir udgatur ucyate
prasastur avatastah syat
uttasto brahmasams inah
potur agre visakhiyan
nestur daksinavakragah
acchavakasya rasnavan
agnidhrasya mayukhagah
savyavakrah sadasyasya
etac camasa laksanam
dandanam esa akarah
camasas' caturasragah

1. Tha handle of a camasa belonging to Brahma priest is four-cornered

2. The handle of a camasa belonging to hotr-priest is round in shape

3. The handle of a camasa belonging to Yajamana i.e. the sacrificer is a big one and square in size.

4. The handle of Udgatr. camasa is triangular in shape.

5. The handle of Prasastr's camasa is fashioned from below.

6. The handle of Brahmanacchamlsin's camasa is fashioned at the top.

7. The handle of Potr. priest's camasa is a forked one.

8. The handle of Nestr. priest's camasa is curved towards right.

9. The handle of Sadasya-camasa is curved towards left.

10. The handle of acchavaka camasa is marked with a belt.

11. The handle of Agnidhra camasa has a shape of a pointed pin.

Thus the marks on the grahas and different shapes of the handles are simple devices used for the purpose of distinction.

9. Vasordhara

Vasor-dhara is a long ladle having two bowls connected with a drain. It is utilised in vasordhara offering, when a continuous, uninterrupted ajya-offering is made in fire. The ajya i.e. the melted ghee is poured in rear bowl which flows through the drain, towards the front bowl and is offered through its out-let into the fire. The requirement of continuous flow has invented this device.

10. Mahavira

Mahavira is otherwise called as gharma pot and is made of clay. The pot is designed with three evaluations, which according to Vedic texts, correspond with three metres, viz. Gayatri, tristubh and Jagati, which are symbolic for three worlds[30]. The Mahavira pot is regarded to be a head of sacrifice. It is a span-high. The pot is utilised for boiling ajya-oblation, in a ritual called Pravargya. SInce the hot pot cannot be lifted up by hands, the Adhvaryu prlest lifts it up with the help of Sapha, i.e. tongs and places it in upayamani - a big-size ladle, and then offeres the hot liquid oblation in fire.

11. Yupa and Casala

Yupa is a sacrificial post raised towards the east of the altar. The sacrificial victim is tied to the post. The post has either four or eight corners representing four or eight quarters. The lower part termed as upara is fixed in the ground. The ring at the top is called Ucasala, which may primarily mean the fleshy ring seen at the end of boar's mouth[31]. In Puranic tradition, Yajna is identified with Varaha, one of the incarnations of Vishnu. Accordi ng to Vedic traditions[32], the deity presiding over Yupa is Visnu.

In Sadyaskra sacrifice[33], a fertile soil yielding crops, is supposed to be an altar for the sacrifice. The pillar in the middle of the threshing floor (Khala) to which oxen are bound, serves the purpose of a Yupa. The ring made of a bunch of corn stocks, is fixed at the top of this post and is termed as casala. This post and its ring may be the origin of Yupa and casala.

12. Prasitra - harana

Prasitra means a small portion of sacrificial cake to be partaken by Brahma priest[34]. The wooden dish in which this portion is placed and carried to Brahman, is termed as prasitra-harana.

Prasitra [35]- harana is either circular or square in size, or designed in a shape resembling the ear of cow[36]. It has a bowl, not very deep and a lid of same size, for covering the eatable substance.

It may thus be seen that the shapes and designs of the tools sometimes reveal the significance of ritual. The signs marks the distinction of one vessel from the other vessel of similar size and shape. The designs are sometimes conducive to convenience of performance of the ritual. They may owe their origin in certain earlier similar designs of secular nature. The designs may prove the source of later myths. It is again beyond doubt that they reveal the deep aesthetic sense of the craftsman.

Footnotes

1. The Greek names of trees are given from the Sanskrit Dictionary of Monier Williams.

2. KS 21.2.3 aro Vai Vishnu - tasya va esa patni yad aranih

3. agner janitram asi - urvasy asi ayur asi pururavah

4. Taittiriya Brahmana 1.6.3 Prastivahinam Yunakti - Taittiriya Brahmana 1.7.9 trayosva bhavanti, rathas caturthah, dvau savyesthasarathi/

5. T. Brahmana 1.1.6 - Rathacakram pravartayati manusyarathenaiva devaratham pratyara rohati - vide Bhattabhaskara - manusya-rathena anena cakrena gatva devaratham pratyavaruhya tam adhisthaya devibhuto gacchati/

6. Apss 18.4.3 - Rathacakram Sapta-dasaram pratimuncati.

7. Saptadasah Prajapatih (Ait. Brahmana I.1)
- asravaya - astu srausat - yaja -
ye yajamahe - vasat (kurah), esa
vai saptadasah Prajapatih (T.S. 1.6.11.1)

8. Sodasakalah Somya purusah (Ch. Up. 6.5.5)

9. Sodasakalam Vai Brahma (Jai Up. 3.38.8)

10. Sataraviyece Stanya desi (Jnanesvari - XII.7)

11. T.S.5.4.`` - rathacakracitain cinvita bhratrvyavan, Vajro vai ratho Vajram eva bhratrvyebhyah praharati/

12. T.S.5.4.11 - Syenacitam cinvita suvarga-Kamah, Syeno vai vayasam pratisthah - Syena eva bhutva-suvargam lokam patati.

13. Taittiriya Samhita 6.1.6 Asau Suparni.

14. Baudh S'S 20.16 - Srucam akrti - Vikara iti -
hastyausthyah syuh iti Badha-Yanah/ Vayacapuccha iti - Salikih /
hamsamukha-pracecana iti aupamanyavah.

15. Kat. S'S 1.3.39 - Angusthaparvavrtta - matrapuskarah /

16. Devayajnika - Kat. S'S. 1.2.32.33 - nasikavat parvarddhkhato bhavati.

17. Gohiliyagrhyakarma - prakasika - sruvagre ghranavat khatam dvyangustha parimandalam

18. S. Br. 4.2.5.`0 - naur va esa Svargya yad bahispavamanam tasya rtvija eva sphyas charitras ca - The Bahispavamana chant truly is a ship bound heavenwards, the priests are its spars and oars (Eaggling)

19. Sarala - on Kat. S'S 9.2.14. Vide also Aps's 12.14 Pradesa-matrani Urdhava-Sanuni Uparistad asecanavanti, madhya-Sannatani-

20. Aps's 12.2.1; 2; 6 - dadhigrahapatram audumbaram catuh-srakti, evamrupam, amsvadabhyahoh - sodasipatram Catuhsrakti T.S. 6.6.10

21. Kat S.S. 9.2.13 - Rtu-patre - Sruc-puskara Krti ubhayatomukhe -

22. Ap S'S 12.27.` - dvadasa, trayodasa, caturdas'a va grhyante

23. T.S. 6.5.3 Ubhayatomukhan rtu-patram bhavati, ko hi tad veda yata rtunam mukham

24. Kat. S.S. 9.2.7 - Osthyam asvinam;
Devayajnika on Kat SS 9.2.7 - austhyam Osthavayava
Yuktam. Sarata Osthavat Konadvaya - yuktam
CP S. Br. 4.1.5.19 austhyam asvinapatram

25. Ap S.S. 12.1.11 - dvisrakti asvinasya
Also vide Saty S'S 8.1 - dvyasri bhavati. Baud S'S 7.9 etc.

26. AP S'S 12.1.11 Bha S'S 13.1.10 - Parisrak aindravayavasya
Kat. S'S 9.2.1 - rasnavad aindravayavam
also vide S. Br. 4.1.5.19

27. ajakavam maitravarunasya - Kat. S'S 9.2.6, AP S'S 12.1.11

28. Sat. S'S 9.1 - adityapatram casvasaphabudhnam
ukthyapatram casvasaphabudhuam

29. Ap S'S 12.1.13 - rtupatre asvasaphabudhne ubhayato-mukhe ; Also vide Sat. s's 8.1 Bhar S'S 13.1.12, Man. S.S. 2.3.15

30. T.A. 8.3.22.23 - makhasya sirosityaha
yajno vai makhah tasyaitad sirah yat
pravargyah ..... tryuddhim karoti, traya
ime lokah ..... chandobhih karoti

31. Maitrayani Samhita - 1.6.3 - Yavad vai
varahasya casalam tavatiyam agra asit

32. T.S. 6.3.4.4 - Vaisnavo vai devataya yupah
Ms 3.9.2, S.Br. 3.6.4.1

33. - Asvalayana S.S. 8.1 - Comm-sadyaskro nama
somayagah sadiksopasatkah ekasmin ahani
kriyante --- kalapi casalah sa methyagre
dhanyapulaih baddhas tisthati, sa casulah.

34.- Sarala on Kat. S'S 1.3.40 - Prasitram
brahmano bhagah/

35. Kat. S'S 1.3.40 - adarsakrti prasitra-haranam
camasakriti va/

36. Dhurtaswami on Ap. S'S 1.15.13
prasitra-haranam gokarnakriti/

INDIAN MYTHS AND THEIR MEANING

Dr. N. B. Patil

The centre has rightly named the seminar as Arthaya, as this is an attempt to search meaning in the man-made products and images. I here remember the saying of Kalidasa --

वागर्थाविव संप्रक्तौ वागर्थप्रतिपन्तये ।
जगतः पितरौ वन्दे पार्वतीपरमेश्वरौ ।।

Kalidasa says "Vak and artha (speech and meaning) are in a close embrace, even as Parvati and Parameshwara. - the parents of the world. I bow them to have a better understanding of speech and meaning. Bhavabhuti, another Sanskrit poet, who followed Kalidasa centuries after, has in his Uttar Rama Charitam stated --

लौकिकानां हि साधूनामर्थवानाम ।
ऋषीणां पुनराधानं वाचमर्थोनु धावति ।।

The relationship of meaning and words has been rightly described in this couplet. It is true that in the modern times, rare are the Rishis who will command the meaning to follow their own words.

We are only laukika - i.e. men in the common rut and we have always to grope for good words to express the meaning in our minds.

I shall repeat here some of the sentences from the invitation for the seminar.

> "Our intention is to understand the implications of meaning in relation to products i.e. objects and artifacts."
>
> "The seminar intends to explore artha (semantics) in relation to anvaya (syntactics) and vyavahara (pragmatics)."

I would like to keep these objectives once again before ourselves and I shall now proceed with my paper.

Semantics is that branch of linguistics which is concerned with meanings. Literally the word 'semantics' is a combination of the French word sema meaning sign and the Albanian word ditme meaning wisdom or knowledge. It is said that the Albanian word ditme is itself traceable to the Sanskrit rood 'dhyai' -- 'dhyayati' meaning (he) thinks. Semantics also mean the study dealing with relations between signs and what they refer to. These relations are between the signs of a system and human behaviour in relation to these signs. These include unconscious attitudes, influences of social institutions and epistemological and linguistic assumptions. It is precisely due to these aspects of semantics, that we want to apply it in the 'vyavahara'. This then becomes 'pragmatics.' Proper understanding of semantics will go a long way in bridging the gap between our thoughts and our artifacts.

The study of semantics in relation to Indian myths is worth undertaking.

Indian religions are rich in mythology. But to my limited knowledge of Islam, Zorastrianism and Shikhism, I am restricting for myself the term Indian religions. I have therefore, before my mind Hinduism, Buddhism and Jainism. It is almost impossible to do justice to all the myths in any one of these religions in a short span of such a paper. My attempt, therefore, will be only to indicate a few myths in Hinduism and I shall try to interpret them. Before that I would like to dwell on the relationship of myth and culture and how myths function in a social psyche.

Mythology in India is usually equated with a particular group of literature, especially puranas and epics. But as a matter of fact, mythology is a form or mode of expression of any civilisation and culture. It is a tradition or a pattern of mentation very ancient in man. It tries to express itself in different forms at different periods of history.

Myths are very deep in our life. Myths are original revelations of the preconscious psyche and have a vital meaning. A tribe's mythology is its living religion, whose loss is always and everywhere, even among the civilised, a moral catastrophe.

The more we shall delve into our own mythology, the more we shall know the roots of our culture. Myths make a direct appeal to the unconscious mind of the individual. And individual possesses both, a personal conciousness and a collective consciousness. The forms is filled with material peculiar to the individual while the latter is filled with the common mental inheritance of mankind. The primordial images bring into ephemeral consciousness an unknown psychic life belonging to the past. This psychic life is the mind of our ancestors. Every human society builds up its own culture. Beyond the material and economic needs of a community are the higher needs of the mind and the intellect. The fulfillment of these needs is essential for improving the quality of life. Religion and philosophy help in fulfilling this need. If these needs are neglected, strife and hatred among the members of the community are generated. No real religion can generate hatred. It is the lack of proper understanding of religions that is creating problems in the present day situation. Philosophy, mythology and rituals weave the fabric of every religion. It is rather difficult for a common man to conceive of high philosophical truth. Attempts are therefore, often made to garb the philosophy in mythology and rituals. Mythology gives some tangible content to philosophy and the rituals give some behaviourial discipline to the society. Some of these ideas have been echoed by Schopenhaver, when he said, "what reason is to the individual, history is to the human race. By virtue of reason man has become different from a brute. Man can think and remember his past and can think and plan his future. A brute cannot do that. History plays a similar part in the life of a nation. Only through history does a nation become completely conscious of herself." Every day leaves history behind it, and the human mind weavs myths on the events of history.

Immortality, maya, reincarnation and karma are all concepts. You may call them philosophic concepts but they are mythic as well, in as much as they are rooted in human faith. In the beginning all ideas and thoughts were implanted in our minds as a matter of faith only. Let us study the idea of

death. Death shivered and alerted the ancient mind. It continues to do so. Out of this fear of death, man began to look beyond. He could not believe that human life, so tangible on thisearth, could stop so suddenly and disappear in the vast void. There must be something indstructible which must be living when this does falls dead. Out of this thinking came the idea of immortality and that the fire so ethereal on this earth can carry the indestructible part of human body along with the smoke to the heaven. This aspect of fire deified it and we find agni being highly eulogised in the Vedas.

There agni has been entreated to lead the worshipper to lands of prosperity.

अग्ने नय सुपथा रायेऽस्मान्

Various attributes of agni were symbolically concretised and icons were sculptured in post vedic periods, which have come down to us with all their symbolism and mythology. They now form a rich part of our cultural heritage. What is true about icons of agni is true about all other icons which have survived the onslaught of invaders and the ravages of nature. Creation, protection and destruction were symbolised in the forms of Brahma, Vishnu and Mahesh. The Trimurti at Elephanta thus combines all these three attributes and is a huge icon of the three in one. Human imagination is multifaceted one and in the course of history we imagined various gods and goddesses as symbols of a variety of virtues. We anthropomorphised objects in nature. Those who in the course of their pilgrimages visited Himalayas viewed these snow clad ranges as a form of Shiva. The Ganga is flowing from the Himalayas was thus Ganga flowing from the netted white hair of Shiva. I remember to have seen a painting by Nandalal Bose where Himalaya was painted as Shiva in a sleeping posture.

What a graphic vision is this. This is the way mythology is born and is perpetuated. As said earlier, this imagination formed a social conscience and it added richness to our culture. It also entailed a pride of belonging to a rich culture. A section of the Hindu society which was exploited throughout the ages is slowly now becoming self-aware. It is also hankering for a rich mythology. Think of the thrill which the members of this class of down trodden people might be experiencing when they are told that Dr. Babasaheb Ambedkar is a Bodhisatva and is thus closely linked with Bhagavan Buddha of 600 BC. If they come to know what miracle Kavash Ailush, a man claiming their own caste, did in the ancient past. Kavash Ailush filled the river Saraswati by singing hymns to Apam Napat. These thoughts can create a confidence in the present day men of the depressed classes and they can hold their heads high. This is what myths can do even in modern days.

Unconsciously we are all governed by myths. When our late Prime Minister, Smt. Indira Gandhi named her sons as Rajiv and Sanjay she was consciously linked with the symbol of creation viz. lotus and also to the Ramayana and Mahabharata - the great epics of this land. When Prime Minister Rajiv Gandhi named his son as Rahul or Maneka Gandhi named her son as Varuna Phiroz or Shri Haribansh Rai Bachan named his son as Amitabh, they were all looking towards the Buddhist, Vedic, Zorastrian traditions. (I learn from a reliable source that it was Sumitranand Pant who suggested the name to Sri Bachan.) When a big auditorium in Bombay is named as Shanmukhananda Hall, or a dance academy is named as Nalanda, or even when Dr. Ambedkar named his own home as Rajagriha, or Gopi Krishna names his bungalow as Nateshwar Bhavan -- it is all are expression of our linkage with myth, tradition and culture. In the production of artifacts

also we find that myths often prevail. In our traditions a tortoise stands for something lasting and permanent. It is supposed to one of the ten incarnations. In the myth of अमृत मंथन, the Mandar mountain was placed on the tough back of the tortoise. For a site of a temple, land of the shape of a tortoise is preferred. Tortoise is often carved infront of a temple.A motif of tortoise is produced by a silversmith as a container of Kumkum. I need not elaborate on how significant it is. Only a person unaware of our culture will use this beautiful thing for snuff or tobacco.

I am not sure whether I am confining myself to the theme of the seminar. But it is very interesting to note how words are perpetuated in a language with all their mythical aura and how they are exploited or can be exploited in the field of production. More often we are unaware of this fact, sometimes we deliberately choose the words with a mythical tinge. For example, I remember to have seen a film starred by Dharmendra and Sanjeevakumar. It was the life story of an honest and upright engineer for whom truth was everything in life. The film was titled as Satyakama evidently from Satyakama Jabali of the upanishad. Sham Bengal had brought out Mahabharata and Kaliyuga. The stories are modern but the theme is the age-old human mind.

I personally am very much interested in the analysis of mythical motifs. I tried to study a portion of the Mahabharata in this way and I found that through myths, the wisdom of the ancient people of this land has trickled down through generations to the present day.

Swami Vivekananda had advised us to dive deep into our mythology. He said that behind those ancient mythologies were nuggests of truth. He warned us not to throw a thing overboard because it was clothed in mythology. Human language, according to him, is an attempt to express the truth and mythology does the same thing. According to Swami Vivekananda, mythological and symbological parts of religion are natural growths which environ the aspiring soul and lift it godwards. Spiritual giants have been produced where there is exhuberant growth in mythology.

More and more efforts in going deeper into our mythology are bound to result in better understanding of the past and perhaps of the future as well.

MEANING WITH A PURPOSE: MYTHOLOGICAL RHETORIC

S Balram

Relevance to us

Communication rhetoric, played and still plays a predominent role in Indian living. Being basically non-materialist, the Indian culture relied more on the non-physical values behind the physical clues. An Indian, as fundamentally different from the Western analytical, intellectual and logical understanding of a thing, gave preference to feeling; emotion and an inexplicable inner conviction. He believed. Hence, he saw more than his counterpart is west, in every thing around him, a symbol. The symbol and symbolic meaning so important to him that he discarded deliberately, the realism. This was often mis-read by outsiders alien to his culture as 'suspension of reason'.

The Indian will not question the (outer) form of God with thousand arms or four heads or elephant head or semi man-woman. For him the most important thing is the inner meaning behind the outer form. The discord of realism is evident in India from ancient culture to present culture, as manifest in performing arts; of the past to the popular films of the present.

* The indian classical dance always has accompanying musicians on the stage right next to action, as part of performance.

* The classical Sanskrit Drama has 'Sutradhar' who intervenes in the action from time to time interpreting/commenting on the action talking directly to audience. Nearly all folk performances have ritualistic actions and exaggerated costumes and colours far removed from reality. Such alienation devices can be traced as common in Indian art and culture till today.

The most popular modern cultural form is the Indian film. The immense success of song, dance and melodrama in Indian films has its roots in the Indian psyche. The Indian mind is used to myths and can easily transcend; perhaps desires to transcend the physical (outer) reality. It is attuned to different reality.

The present paper limits itself only to look at the semiotic devices present in Indian mythology and see their amazing presence in a successful communication rhetoric which brought about great socio-political changes.

An great contemporary use of mythological image is in the hero of the popular Indian film. Whether it is N.T. Rama Rao/ M.G. Ramachandran of south or Amitabh Bachan of north, their roles are essentially straight mythological heroes with different emphasis. One role may identify with poor youth and the other with God himself, but basically these are word to word translations of mythological heroes; who perform the impossibles with magical powers, destroy the evil and win always in the end. The immense succes of Indian film hero is proof of Indian people's acceptance of mythology. But the sad fact is that the mythological model is taken at its superficial level and is being perpetuated rather than analysing the

mythological semiotic devices and applying them for todays needs. Such indigenous application can be traced to a large extent in the genius of Gandhi.

It is worth looking at the methods of GANDHI who lead his life as an experiment; whose results were well known and who, not only used everything around him for its meaning beyond its physical function but in time turned himself into a symbol - a demi-god invested with more meaning in him than what he really was.

A parallel can be drawn between Gandhi a real contemporary figure who now became mythological and lord Krishna, a popular mythological figure from the Indian epics. It will be useful to use their relation as to how these mythological figures are delineated with many underlying symbolic meanings in all the forms and things attrributed to them. In todays Indian homes, one finds the pictures of Krishna and Gandhi treated almost at the same level.

WHY A PARALLEL?

My objective in drawing this parallel is to point out their similarities in the powerful rhetoric communication of two models. The power of this rhetoric lies in its appeal to Indian mind. This explains Gandhi's success in the overwhelming task of communication with hundred of millions of illiterate masses and persuading them for an action or restraint.

In the great epic, Krishna spread the doctrine of love while eventually effecting the great war between the Kauravas and Pandavas. Gandhi adopted the doctrine of non-violence (Ahimsa) with actually leading the historical Indian freedom fight with the British.

The deceptively simple devices used by Gandhi have not only conveyed but successfully persuaded people enmass to certain action. In terms of utility or economic viability these devices do not stand test. These devices are very much like the persuasive devices attributed to mythological krishna.

A political leader to sit with a charkha at a time when civil war is blazing all over the country amounts to Krishna singing Bhagavadgita in the midst of great Kurukshetra battle. The apparent paradox would no more be there if we look at these in their non-physical sense.

CHARISHMA?

Contrary to the belief in the West, Gandhi is not charishmatic (i.e. super human hero) leader. He became one only after his death. All his life he tried to be identified with; and he constantly in touch with common men; through personal appearance, manner of speech and behaviour. His style of communication is not 'top down' but 'bottom sideways'.

COMPARISON

In analysing the semiotic devices of Gandhi and Krishna; we may categorize

them into objective device, subjective devices and self-identification devices.

Objective devices are conciously applied symbols. Subjective devices are personal artefacts and related objects which may not conciously been applied. Self-identification devices refer to the communicators ability to be totally identified with the message. Such identification lends credibility to the message, which could be vital for its acceptance. For instance; the author of a book on the 'dyeing poor' can not show himself as 'fat millionaire' in real life since it effects the credibility of his message.

Gandhi	Krishna
Temporal placement contemporary	Temporal placement: Ancient
Existence: real	Existence: Pauranic
Made later into mythological hero	Mythological hero
Title: 'Mahatma' the great soul	Title: 'Paramatma' - the superior soul
Non-charishmatic: Inspite great achivements always pronounced 'What I was able to do, any body can'	Non-chraishmatic: Inspite of devine powers;Bhagavata purana emphasises his simple village life
Main leader in freedom struggle but held no high position in office	Main leader in 'Mahabharata' war but held no high position
Promoted 'Non-violence' as a way of peace	Promoted 'Love' as a way to reach salvation
Towards the end disappointed at the fights among his people and died un-natural death	Towards the end; disappointed at the fights among his people and died un-natural death
Objective Devices	
White cap adopted to create unique identity and to signify Gandhian principles and human dignity	Peacock feather adopted to create unique identity and to signify natural beauty
Khadi (hand spun & woven cloth}; the wearing of which is possible to all levels of people and which signifies self-reliance and common identity among all classes	'Hari-Naam' - vertical marks on the forehead. The wearing of which is possible to all levels of people and which signifies acceptance of vaishnav principles and identity with other vaishnavas
Spinning wheel (charkha) signifying the act of self-reliance. Metaphorical identity with 'Dhaarm chakra'. Also, a tool of self employment which brings dignity	Sudarshan (good looking) chakra: signifying the act of (dynamic) psychic force. Also, a tool in destroying evil for establishing Dharma. Also flute, simple local product stands for self-reliance

'Ram Dhun' songs and prayers as means to bring people together for common action	Songs and dance as a way to bring people together for common action
Evolved 'Satyagraha' as unique way of opening the eyes of others whenever reason failed around	Showed 'Vishwarupa' as unique way of opening the eyes of others whenever reason failed around
Subjective Devices	
Dress: White lion cloth signifying purity, simpleness and identity with poor masses	Dress: Yellow Dress (Pitambara) signifying auspiciousness and prosperity to all
Thin lean body (due to often observed fasts) identifying with hungry millions	Blue body - signifying infinity and also metaphorically reminding rain-cloud; which is important for agricultural country
Often seen with children and cattle - signifying compassion towards the weak and the helpless; called as 'Bapuji' - Father	Often seen with cows, cowherds etc. Signifying the compassion towards the weak as well as importance of cattle in our agricultural community; called as 'Gopala' - Cowherd
Self Identification Devices	
Identified with masses though born in high society	Identified with mases (mostly cowherds) though born in high society
Pronounced 'world is my family'	Pronounced 'I am the Universe'
Emphasised on actions continually experimenting, said 'my life is my message'	Emphasised on his 'deeds' than things,and preached 'philosophy of action' (Karma Yoga)

It will be useful to slightly elaborate Gandhi's application of few of these communication devices

Symbols more vital than reality

If one looks carefully into Gandhi's methods, it will be realised how a great emphasis was placed on symbols or symbolic actions. The well known 'salt satyagraha' which shook the powerful British rulers is entirely symbolic act. In real material or economic terms making salt by one self is hardly worth doing.

When Gandhi wanted to increase the efficiency of the charkha to improve

productivity; Morris Freidman designed an 8 spindle charkha which did it. Gandhi rejected this design saying that it looks complex to people and they will not accept it. It shows that Gandhi is well aware of the persuasive aspect of the product which he recognised as more vital than its performance.

Communicator becomes communication

Gandhi's communication success rests on his 'communion' and deep involvement, where he himself became the communication - the process. Before asking people to fast, to remove untouchability etc. He did them himself. He fasted, lived with untouchables and so on. He emphasised that 'Before you transform others, you should transform yourself!'

This is again found in the Indian culture which believed in vibes between the actor and the act. While conducting many ancient rituals, the person conducting becomes possessed, and becomes himself the act. Indian aestheticians are aware of it and prescribed strict codes to this effect to the artist for achieving 'Rasa Siddhi' - the attainment of emotion.

In Kuchipudi dance drama for example the man playing part of Lord Narsimha, though his part is very brief, has to be on fast and on puja before coming on stage. (Once the actor was so involved in the role of Narasimha that he really tore up Hiranyakashipu).

Empathy/Total identification with the perceiver:

Gandhi's insistance on talking, travel, in third class compartments, his manner of sitting in public meetings, are all indicative of his concious application of these as symbols to identify with the masses. He adopted a style which is symbolic of simple living, non violence, self reliance and other qualities he preached. His personal effects which he chose to use - Gandhian chappals, watch, the pencil the post card, small desk reflected this and as symbols gave him character and credibility for his message.

Significance of credibility in communication is usually underestimated. I feel it is essential. Because even if a message reached the subject, communication may not be there till it is accepted by the subject. Credibility brings that acceptance; which alone makes communication possible.

Process and not the product:

Gandhi was not satisfied with projecting 'Khadi' as concrete and accessible symbol of 'self-reliance'. Khadi is only end product. He wanted to project the 'process of making' and thus brought in the development of 'Charkha' (spinning wheel) and insisted more on the process of spinning with it: his public meetings always had 'spinning' as important (symbolic) activity.

Integrated (wholistic) approach:

As is the case with mythological Krishna, Gandhi sought a composite

approach to life. He used different semiotic devices for different purposes yet related wholistically to the main goal. These devices were applied simultaneously in order to compliment each other and achieve maximum effect.

Context change changes meaning drastically:

The meaning I tried to interpret earlier belong to Gandhi's own times with its own socio cultural & political context. Today the times have changed the context and hence the meaning also changed accordingly. For example the Gandhin cap
became a symbol of Indian politician and most of the politicians are corrupt and hence turned to become a symbol of corrupt politician. The khadi cloth on the other hand has become the cloth of elite and a social status to differentiate, rather than identify with, the masses who started using the durable and cheap mill-made cloth.

NEW INSIGHTS

As K G Subramanian says in his 'Moving Focus: Essay on Indian Art': "The methology filled Indian mind reduces everything to symbols of enormous tolerance and elasticity which persist through successive changes in religious ideas, magically transforming themselves, becoming large in content and expensive".

Mythology is a cultural treasure of people. It is the peoples collective dreams aspirations and visions stored in form of symbols - the symbols that can overcome the limits of conventional communication. Gandhi drew immense strenght from it, through unconciously; in persuading millions of illeterate people with whom conventional methods of communication would not have worked. A deeper understanding of successful methods used in mass movements would surely bring new insights in the area of communications and help designers to 'liberate' man with their designs than 'bind' him.

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3. I was guide to a graduate diploma project 'Gandhi's way: Communication as if people mattered' by Suchitra Balasubramaniam The course of our discussions crystallised many of my ideas on Gandhi's methods of communication.

BINDU: THE DOT PERSONIFIED

Haku Shah

In Gujarat, the Chaudhari tribals on the day of the dead remember their ancestors. They feed them by placing food on their roof. They also clean their house and apply cowdung and clay on their walls and floor. They prepare a liquid out of jawar-flour and buttermilk with which they print their hands on agricultural implements, on cattle and also on their walls of their huts. They also draw primitive figures on the walls and sprinkle this liquid (figure 1) everywhere in the corners as well as on the walls. This sprinkling which they call "Chantana", are dots of white on brown coloured walls.

Fig. 1 Chantana

Visually one may say that these are just 'bindus' or dots. But for the tribals its the act of feeding the walls. To us artists and designers these are merely a part of the painting but to these tribals these dots mean a great deal. This ceremony of sprinkling this liquid is performed on the new day called "Navo Dahado".

In the same way the dots are sprinkled, in a methodical manner, on the walls of the houses of the tribals of Orissa. Three splashes put together form a triangle which represents the heap of grain. Here also it is this sprinkling of the white liquid by which the patterns is created. The tribals of Chhota Udaipur region in Gujarat, the 'Rathwas', offer the terracota to their Gods. But they won't buy a terrocota horse, elephant, or tiger without the sprinklings of white on it, which they call painting. If the terracotta is not sprinkled with these dots they say they cannot buy it, because it is not painted.

Fig. 2

Fig. 3

Fig. 4

Fig. 5

Fig.6

Fig. 7

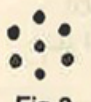

Fig.8

Fig. 9

Fig. 10

In tattooing, the dot means a great deal. In fact each dot is called a "dano" which is the grain. If it is one, then they say 'ek dano' (figure 2). Four dots are called "Char dana" which is four grains (figure 3). When it increases, there are fabulous meanings given to the motifs created. If it is just a triangle, that is one dot placed on two, and the three together placed on another three its called a heap. (figure 4). But if it is one more grain on top of this heap, it is called "DEAADI" 'temple' (figure 5). Two triangles joined together make the 'cobra' or a 'yoke' which is the bull's harness made out of ropes (figure 6). But if the same form is repeated four times around a centre to form a square form, then it becomes a step-well (figure 7). If there are six dots placed around the dot it becomes a flower

Fig. 11

Fig. 12

Fig. 13

Fig. 14

Fig. 15

Fig. 16

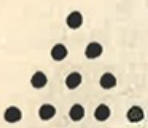

Fig. 17

Fig. 18

(figure 8), but if there are eight dots around a central dot, it becomes a 'kaudi' a unit of currency of Kutch Gujarat (figure 9). Eight Dots placed in a diamond shape with one in the centre, represents a leaf (figure 10). A vertical line flanked by two dots on either side denotes a fly (figure 11). A semi circular line in the middle of two dots, one on the top and the other on the bottom makes it the moon (figure 12). Four semi circular lines with four dots and one dot in the centre make the 'mango tree' (figure 13). And if it is just a plus or a cross mark with a dot in each section it becomes a symbol for the 'Ber tree'. (figure 14). The cradle is represented by three dots placed horizontally and 2 semicircles on either side with a dot within (figure 15). Similarly, a semicircular line with a dot within and the triangular 4 dots at its apex make a woman with water pots (figure 16). Similarly, a mole on a cheek is called 'Saseme' seed i.e. 'Til' which is always seen as an auspicious sign and also as an adornment of the body.

The dot is seen as a grain or a 'Seseme seed'. Also while stitching a quilt, the stitch itself is called 'makudio' - an ant. In the same way sometimes, the dot becomes the star or flower or is just placed on the very first page of an account book with red kum-kum marks forming the Ganesh (figure 17). The account-book does not start without the placing and worshiping of the dotted Ganesha.

In the account books, every page is started by these five dots. The credit word 'Jama' is represented by a dot and a floating line (figure 18) which shows the importance and use of the simple dot in our daily life.

There is a caste known as "Vagharis" where the women wear a cloth 'thapedu' which is red in colour with a pattern of white dot, created as a part of design on the fabric. These people know exactly the amount of dots they need to put. They do not accept lesser amounts of dots than those. In the same way a large number of forms are created in the tie and dye known as 'bandhani'. It is again here, that the dot converts an ordinary cloth into a priceless fabric. Small little dots scattered over the fabric give it the name of moonlit night called 'chand Rokhani'. It has a black base with red dots on it. The technique of making a dot and creating a fabulous environment in colour through dots makes another fabric called "Chundadi", which is worn

by the women of Gujarat in the marriages. In fact, a square piece of cloth with tie-dye dots, is offered to the Mother Goddess in which she adorns herself.

The bright dots have always been used to adorn the garments of both men and gods. Like the 'Sitara' or Mukesh' - the star which is either silver or gold in colour and is used all over the surface of the cloth. These dots themselves makes such an environment that it really takes you into another world that which is above human. In the terracota of Gujarat women make small primitive figures of man and women, so beautifully that the dots themselves become the ultimate expression. At times, they become the eyes, at times the ears, the breasts, the nostrils and at others the navel or the sex organ itself.

Fig. 19

One of the untutored painters from Gujarat, has created a variety of different meanings from dots. For example, in one of his paintings (figure 19) he uses the dot at one point to describe the texture of the trunk of a tree, in another the pattern of the body of an animal. In the squirrel the dot denotes the inside of the body may be the blood cell, in the Sun the diffusing rays, on the mountains it becomes grass and through the dots he creates a whole world of creatures. In one of the paintings of tribals the grain merchant is shown with heaps of grains through dark and light thick and thin dots. (FIG 20-21)

Fig. 20

Fig. 21

Most of the folk and tribal forms have the hidden dot or the play which creates a larger imagery of visuals. For example, in the rangoli, the dots guide all the patterns whether they are lamps and flames, beetle boxes, turtles, snakes and so on. In the same way in the South, in Kolam the dots again guides all patterns and design.

Beautiful play of material for the visuals to create a meaningful result is seen all the time whether it is a brocade sari in Gold or a clay used as resist on red

ground. The skill is so beautifully shown that sometimes even our eyes become oblivious to the elemental dot, for example the jamdani' from Dhaka. How beautifully the fabric itself shows the fragrance of the body and soul of a woman. The visuals and their meanings have achieved a height of expression. The example is one of the blouse pieces of Jat which has a dot in the centre of the breasts. These are embroidered with cardamom seeds and cloves, with mica mirrors and bright colours. These dots of cardomam seeds and cloves not only adorn the blouse piece but also leave a fragrance which is turn, enriches and enhances the meaning of the visual.

So we have taken just one element the dot' or 'bindu' and seen how much is woven around it, what a variety of meanings is lent to it through various ways of representation and use. Not only that, the material is enormous from clay to gold, precisely used for very definite purpose and meaning. It has become very much a part of life. One cannot afford to separate this visual in any way - it is no decoration separate from life: it is life itself.

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HAKU SHAH

3 GOPAL Ein indischer Balladensanger Zeichnet Seim Leben
VON HAKU SHAH, BARBARA UND and EBERHARD FISCHER

MANU: script of The Hand

Mukesh Patel

How beautiful is the hand!

How much it can do and how beautiful its

Functions

The Hand can radiate

The arm rises, the fist clenches and over the single pointing finger the gathered power discharges -

The hand becomes radiating point.

But when it opens, stretching all fingers outward from the palm, it is an open star at the end of the arm.

The hand can hollow itself

The fingers come together to form a bowl,

empty and open in the movement of holding. In the cup in motion the two hands come together to make up one single bowl ..... a space!

The hand can offer!

The hand which can offer is both 'active' star image

and receptive empty form

The hand can touch!

The farthest finger-tip softly touches a thing,

the gentlest power of communication flows out of it and slowly,

softly it reveals itself.

The hand can reassure, love and bless.

Hand surrenders to being. Here is healing. What happens in the laying-on of hands may be compared to the communication of intrinsic being which occurs when the eyes rest on a thing. Both eye and hand work changes deep within. The mysterious meeting of eyes corresponds with the clasping of hands whose

streams of being are exchanged and become one. (And the eye also possesses that second movement of folding one's own hand: it is the movement of closing the lids).

The Hand can feel!

The hand which yields itself to a thing assumes the form of the thing. Yet it does this in such a way that where the thing protrudes the hand is concave and where the thing is concave the hand is pliable. Thus the hand is 'answer' to the formedness of the things. The hand runs over the surface provingly and this movement is at once feeling and communicating, moulding and a calm stroking, a sort of silent conversing.

In many ways the hand understands the world better than the eye. It "sees" the world from all sides. The hand can grasp. Its fingers close around the thing, forming a vault. The power of the hand radiates streams back into itself and in a dark current this power flows about the clasped thing, awakening the answer within it. Thus the thing is taken up completely into the circulation of the body: it is buried in the hallow of the hand: the hand can conceal - and this the eye cannot do either, since for it the world is always open. The hand can take a piece of the world completely into itself and contain it wholly: it can grasp the thing from all sides. The hand makes an entire world, it notices the backs of the things, too, the indentations, the dissimulations. But the hand's world is not large - it cannot reach very far and its capacity is small. The hand is built for what is within its reach, for the limited, and to aim for unlimited and seek for infinite.

The hand can apprehend the surface - the expressions of the forms, the utterances through which they speak. But where the hand itself possesses depth and inner - structures it opens up for itself and the part of the world which is closed to the eye: the inner space of the things. With a push or pull it explores the mass. The "grasping" hand strains the material until it begins to grow soft. The resistance of mass is expressed in the increasing tesnsion of the sinews and

muscles, in the growing pressure within the bony structure. The hand creates an answer to the inside of the things within the own inner structure; and with the same instrument it can form them and also weigh them.

The hand is the scales. If we want to test the weight of a thing we must lift it, hold it suspended against the force of gravity. This happens through the hand. The hand passes its inner stress on into the arm which in turn passes this stress into the body. Hidden within the body is system of tensions running over sinews, muscles and bones, through arm, spine and legs, from the weighted object down to the earth. A sort of pathway is formed between the earth and the thing, a course which passes over the body as the bearing bridge between the mass and the centre of the mass of earth.

It is not by becoming mass itself but rather by translating mass into buoyance that the body perceives the inner nature of the world, its dull, massive heaviness. Body which apprehends the heavy things is not weight but response to weight. It answers to the heavy compactness of the world's matter reads 'column' and 'beams'. Mass is expanding, unformed, roomy; the body is linear, slender and articulate. Mass is fullness. The body is not primarily weight, but lightness - "energy" which interlaces space on linear paths.

The hand is also the basic module.

The entire system of measures and digits are encomposed in hand. The knowledge of guantum and numerals has its origin in hand and fingers. As the smallest unit of measurement hand involves system of proportions within the human body and the Universe. The capacity of hand to respond to scale and proportions can be "reckoned". During the last few centuries this fact has largely determined out pictures of world and also our "work" itself - the "grasping" and with which we saw only the massiveness and weight, modules and proportions in the things and which discovered in them only their "Function".

Ouverte pour recevoir	*Open to receive*
Ouverte aussi pour	*Open also that*
que chacun	*each may*
Y vienne prendre	*come there to take*
les eaux ruissellent	*water streams*
le soleil illumine	*the Sun illumines*
les complexites ont tisse	*Complexities have*
leur trame	*woven their woof*
less fluides sont partout	*fluids are everywhere*
Les outils la main	*Tools in the hand*
Les caresses de la main	*Caresses of the hand*
Larvie quer lon goute par	*The life one enjoys by the*
le petrissement des mains	*kneading of hands*
La Vue qui est dans la	*sight that is in*
palpation	*palpation*
pleine main jai recu	*with a full hand I have received*
Pleine main je donne	*with a full hand I give*

(Translated)

The implications of these words are sensuous and sensually linked with the spiritual and the symbolic - reciprocal giving and receiving is a basic theme. Le Corbusier also linked the notion of the Open Hand with that of enfolding plant growth in the text of Quand less Cathedrales etaient blanches (1936):

Not a tree in the City!

Thats the way it is.

The tree, friend of man, symbol of

all organic creation;

the tree, image of total construction.

A ravishing sight which,

although in an impeccable order,

appears to our eyes in the most

fanciful arabesques;

a mathematically measured play

of branches geared down

EACH SPRING WITH A NEW OPEN HAND.

The spring with the new Hand has arrived. In this spring the new hand would bear an EAR and EYE. The EAR would hear to new forms. The eye would stand for whole body. The ear and eye would receive and perceive. The eye and hand, would give, too the image, the body of man.
(Manu means hand and it also means Man)

Notes and references:

1. John Ruskin, **Sesame and Lilies**, Philadelphia, 1894, pp. 51-52; (First published in London, 1865).

2. John Ruskin, **The Elements of Drawing**, London, 1857, p. 125.

3. Other writers have reinforced and elaborated the basic concept in Le Corbusier's interpretation of the Open hand [a]. Relevance of Ruskins teaching and its influence on Mahatma Gandhi [b] and the Symbol of Open hand in the context of New Political Capital in Modern India concerns the notion of a "State of Contigency" [c]. The Open hand orienting itself to the direction of the wind (that is state of affairs) has also been stated by Le Corbusier [d].

    a. Von Moss, **Le Corbusier**, Neuchatel, 1970, p. 226; Paul Turner, Ph.D. Thesis, **"The Education of Le Corbusier"**, Hanzard University, 1971, pp. 56, 59 and Discussions of Le Corbusier with Constantino and Ruth Nivola in 1951 on Long Island, etc.

    b. V. Laxmi Menon, **Ruskin and Gandhi**, Sarva Seva Sangh Prakashan. Ahmedabad. 1965.

    c. The philosophical meaning of Contingency - "the facts of existing as an individual human being in time, dependent on thers for existence, menanced by death, dependent on oneself for the course and quality of existance" - **Webster's New Collegiate Dictionary**, Springfield, 1956, p. 180.

    d. Le Corbusier, **Oeuvre Complete**; 1946-52, p. 159.

PRODUCTS AND RITUALS
RITUALS AND PRODUCTS

K. Munshi

I must confess at the outset that I am not a ritualistic person in the traditional sense. I certainly have friends who are very ritualistic. I have very often observed a close friend of mine who has an office in Bombay performing an elaborate ritual before settling down to work and before leaving the office. He has two framed photographs of Sai Baba mounted on the adjacent walls. One has a flickering electric light which is never put off. When he enters, he puts his handkerchief on his head and bows alternately to these photographs, then touches one photograph and then his forehead, then another one, then again his forehead. This is repeated 3 or 4 times. And then he touches the drawer, where I believe another deity presides, then his paper carrying case which is on the table, then his forehead again before the settles on his chair. He repeats the same action when he has to leave his office in the evening. I didn't mention about the sweet nothings he whispers to his gods. To most of us it is a very hilarious and humourous situation, but for him it is a very serious business. Nothing can move him without performing this.

Watching him perform, I am reminded of an advertisement for an instant food- mashed potatoes. In this advertisement two Martians - people of the advance society of Mars are talking about the earthlings, who they have observed lately on one of their jaunts to earth; and one of them is narrating an experience about how mashed potatoes are made.

"They take potatoes, boil them, then peal them, then crush them and eat them", and they have a hearty Martian laugh.

The whole procedure was funny to them, but for the earthling it is a serious business of everyday significance and survival. When I see my friend performing I laugh, at the same time I realise that I behave like a Martian, an alien who doesn't understand the seriousness of his practice. We all laugh at things which we do not understand.

Fortunately or unfortunately rituals by nature are ununderstandable, because if they are fully understood, they no longer remain rituals. Ritual is performed without analysis and without worrying about consequences. Ritual absolves the practitioner of the responsibility of the consequences as long as the ritual is performed faithfully.

Another characteristics of the ritual is that it is engaging. Any person who has shed his bias and critical faculty can be deeply engaged and enjoy watching and participating in a ritual. It has a relaxing effect on the performer. It has a kind of mesmerising effect. That is probably why rituals have always fascinated men and women of all ages. Rituals have therefore been performed throughout, and I believe will continue to be performed for eternity, may be in different forms.

Before going further with the various characteristics of rituals, let us try to define it. The easiest way to find is what the dictionary says:

It says that 'ritual is an established form of conducting a religious or other rite'. This sounds familiar but unhelpful. There is another definition also. It says that 'ritual is any practice or behaviour repeated in a prescribed manner'. This definition is more appropriate for our discussion and understanding. We can now see many of our daily activities falling into this definition of ritual like brushing of teeth everyday in the morning in the prescribed manner, washing of clothes with detergent powder as per the instructions on the pack, praying in the mornings, jogging, yoga etc. We also see that many of these activities or rituals are dependent on products. Now we can also reason out why we do not come across a serious jogger with a Kurta and Pyjama on. He is in a jogging suit or shorts.

To understand the relationship between the rituals and the products in depth it is necessary to classify these. Rituals can be classified as follows:

1. Religious ritual e.g. Shradha ceremony, Yajna, Sunday mass, Namaz etc.

2. Social ritual like throwing rose water on baratis, folding hands for namaskar or shaking hands.

3. Social-religious ritual like marriages, Aarti, Garba dance etc.

4. Personal ritual like washing hands before eating, shaving every morning, doing yogic exercise etc.

5. Work ritual like beating a gold foil, weaving carpet, data entry on computer, assembly line work etc.

Products can similarly be classified:

1. Products used for rituals and nothing else, like spoon for distributing Amrut, or a small cross in the hands of a priest or his special robes or wedding gown.

2. Commonly used products transformed into ritual products for the period of ceremony or ritual, like ordinary 'gagar' turned into 'Kalash' for Yajna.

3. Products which lend themselves to rituals due to their nature, need or method of use.

In the first two categories the relationship between the products, their shape, their materials and their practice of use is complex and also full of semantic connotations and standards prescribed by religious orders. We will not discuss these as only religious scholars and interpreters of such rites would be able to do justice to these. Here, in this paper we will discuss the third category relationship only.

Most of the religious rituals even today pertain to death, marriage and birth - all to ensure smooth sailing in the other world, happiness in married life, and a long happy life in this world. We can see that these practices (rituals) stem from uncertainty, because there is no understanding of what is happening behind the scene, where ordinary reason and logic does not work

effectively, where there is discontinuity and barrier or where the feed back is not direct or compatible with the action. In design terms it can be said that rituals tend to be used in 'Black Box' situations more often than not. For example putting the TV on, changing the channel, tuning etc. People who are not familiar with electronics do these action or their variations as 'prescribed'. Most of us do the same way with many equipments that we use like sewing machines, washing machines, Xerox printers, computers etc.

The error in performing this prescribed action or ritual or deliberate non-conformity leads to waste of time, inefficiency, or even break down of the equipment, mishap or serious accident. Cost of this error or the penalty that one has to pay can vary from mild to severe depending on the particular situation. For example if you do not follow strictly the procedure for washing clothes in 'Surf', you may not get the 'brightest' wash. If you run your kitchen machine for more than two minutes continuously against the prescription, the motor windings may burn. On the other hand if there is gas leak in the kitchen there is a list of instructions to be followed strictly, like," open all the windows", "Open all doors", "Do not put on the fan or light", "Do not rub anything" etc. If these are not followed strictly, you can imagine the very serious consequence and penalty - explosion, outbreak of fire. There can be many examples.

In cases where the penalties for not performing a ritual are very heavy, like dying in a plane crash after not checking the fuel gauges or going to hell after death for not performing certain ceremonies, the ritual becomes sacrosanct, sacred and inviolable.

If we look at modern technological systems. We find that these systems which includes the human component are susceptible to heavy penalties if the procedure, prescribed manner of operation (ritual) is not followed. And if we generalise we can say all complex systems lend themselves to rituals or ritualistic mode of operation and working. One reason is that complex systems are expensive; their maintenance, breakdown and shut down costs are quite high and these can occur if the rules of operation are not followed strictly.

Another reason is that these systems being complex are difficult to understand and therefore lend themselves to ritualistic behaviour. For example in a complex machine like a computer it will be dangerous to fiddle (e.g.,keying without knowing the prescribed method or sequence) with the keys to experiment and find out their function as it may bug the computer and corrupt all the data stored in it. So it is very necessary to know exactly the procedure before operating such a complex machine even though one may not know how it functions internally.

If you have to enter an ultra clean room where electronic chips or integrated circuits are manufactured, you have to follow a strict procedure - remove shoes, put on a long apron of special prescribed material, put on a special cap covering your head, take an air shower (observe the apparent similarity in a religious ritual) and only then you can go in, otherwise the products made therein will be faulty.

Rituals democratise

Ordinary loader in such a facility and a highly trained electronic engineer or a visitor, all have to follow the same procedure or ritual before entering this room.

We can now say that rituals are also democratic in nature, And complex systems which are usually the outcome of modern technologies have democratising influence on societies. We can also say that if we design products and systems which lend themselves to rituals can alter our societies by altering our ways of looking at things and our behaviour towards them.

This democratisation apparently brings us into conflict with what I call hierarchy of understanding. Why should not an ordinary loader in a clean room facility understand or made to understand the significance of the ritual he is undergoing every morning before entering, as much as the highly trained engineer.

One reason is that each and every person cannot have the same level of understanding or cannot acquire the same level of understanding of every phenomenon - scientific, technological, religious, social or otherwise. This hierarchy is bound to be there because of the aptitude, interest, capacity and inclination to shoulder responsibility. Another important factor is the cost of making everybody understand all that goes on in this world. Though same cannot be said about opportunity. The opportunity for higher understanding should exist for everybody.

The task of the loader does not demand more understanding of such systems except that he should learn and follow the 'ritual of entrance' and other necessary 'rituals', otherwise it will be "sin" or it will be dangerous or it will cost him the job or "the boss has said so", etc. etc. This does not mean that loader having low understanding of electronic systems will not have high understanding in any other area, or the electronic engineer will not have low understanding of philosophy and religion. Electronic engineer still performs all religious rituals and the philosopher fiddles with the knobs of his stereo system without understanding anything about these tasks.

So, in fact the hierarchy of understanding which a ritual perpetuates does not conflict with its democratic character.

Rituals perpetuate specialisation

Because of the hierarchy of understanding, specialisation takes place. Rituals perpetuate specialisation. In a society or in an organised system, there are always very few people who understand the complete phenomenon and the large number of people who will be trained in associated routine jobs which are very specific in nature and therefore very ritualistic and specialised. For example a process engineer works out the total processing procedure of a particular product manufacture. The process consists of many specialised activities which he assigns to specialised operators or specialised machines and so on. He is the person who prescribes all the parameters and rituals that others are to follow faithfully. We all know the advantages.

Rituals initiate learning

Rituals help in training. If you permit I will call it ritual therapy tentatively. It is analogous to physiotherapy. When the brain functions properly, it gives commands to various parts of the body like limbs to act. When it is struck by a paralytic stroke, reverse process is used to activate the brain by exercising the limbs that have been affected. Similarly rituals can be used to train the mind. This process is already used by making the school children recite the arithmetic tables till it gets memorised. They have just to sing it several times every day till it registers. Recall is also sequential. Once it is remembered and recalled understanding of multiplication and division becomes easier and quicker and therefore efficient. The principle of initial training by ritual or "initiation by ritual" can be time saving and effective. A very effective method of teaching car driving to a new driver would be to let him start and stop the car on a straight road many times and once he perfects this the advancement is quick and fault free. I have tried it, it works. It is effective and quick.

So ritualistic beginning helps in quicker understanding, keeping all other factors same. This leads me to say that all crash training programmes must have ritualistic beginnings. That is probably why the military academies lay so much emphasis on ceremonies and parades.

Role of teacher in a ritual is of prime importance. A good teacher has to know all the steps and impart them to his trainees and supervise its initial faithful implementation irrespective of whether he is the creator of ritual or not. The teacher must therefore be looked upon with utmost reverence and devotion (irrespective of his other qualities) and his word must be law. Since the ritual is not based on understanding and if the blind obedience is not there for the teacher, faithful performance is not possible. That is why all traditional rituals start with the homage to the guru - "the guru is supreme and I bow to thy dictum". All this cannot be done unless there is discipline

Rituals are disciplining

Ritual is absolutely a disciplined practice and if it is not so, it is not a ritual. Why is military more disciplined? Because there are more rituals in military. Or, there are more rituals in military because we want the military to be more disciplined. Discipline is indispensable to ritual. If you perform a ritual of whatever kind, you are found to be a disciplined person. It is possible that one may be highly disciplined in one field of work and indisciplined in other areas, but I think over a period of time discipline would percolate to other activities as well, otherwise one can be sure that deterioration and degeneration is taking root and there must be a slip occurring in the original activity as well.

Rituals are dignifying

Rituals add dignity to otherwise very mundane activities and ordinary products. An ordinary activity of entering the threshold of your house is transformed into a very dignified event when aarti is performed on a newly married couple or a guest. Similarly the ritual of filling in tobacco to a smoking pipe and lighting it in a proper way adds considerable value to the

pipe and gives a new dimension to the smoker's personality. Classical dancers and musicians who perform faithfully according to the texts and true to their style or gharanas are respected more compared to the modern or pop musicians where the rigour of discipline is not demanded and constant prescription need not be followed faithfully.

Rituals are meditative

They make you one with the object of ritual. It changes you as well as the object, irons out the conflicts, brings both into total harmony with each other and with the environment. It makes life and work, person and the object indistinguishable from each other and elevates all together. It clears up the mind for greater understanding. Ritual well performed on a machine or otherwise extends peace and feeling of well being and creates satisfaction for the job well done.

Rabindranath Tagore has said about the "joys of not understanding", which can be implied as the joy of working without understanding, which is ritual. Transcendental meditation which is supposed to be easiest and quickest meditation technique is incidentally ritualistic in character.

Rituals are humanising

Many living species indulge in rituals, but unlike rituals performed by human beings these are performed because of genetic and instinctive compulsions. It is only man who has designed his rituals for varied purposes and occasions like birth, death, marriage, initiation, training and deeper communication with the universe which includes working and communicating with our day to day objects of use. Without indulging in ritualistic activities we would be living like animals and working like robots. Typical examples could be ritual of greeting like good morning or namaskar. How would it be if we do not greet each other on meeting. If we think very rationally it is a waste of time, but greeting each other helps us to communicate and starts the process of mutual understanding. In Vishwakarma Puja the worker extends human attributes to his machine and tools and in the process humanises his relationship with them. It helps to develop respect for ones work and tools which is very essential for good and efficient working.

The ritual humanises and therefore legetimises the work codes that must be respected and observed, which otherwise would be soulless and boring.

In the light of the above discussion we may redefine the ritual. Ritual is not just a mechanical or mindless practice or behaviour repeated in a prescribed manner. It is something more than that. That which adds soul to the activity, disciplining dignifying, unifying and humanising activity which brings, together the subject and the object in complete harmony and which sets off the process of better and higher understanding.

This reminds of me of an American TV crew who came to make a film on India and its people and culture. And naturally they went to Varanasi where they met a learned Gyani Pandit. In the morning they went with him to Ganga Ghats where they asked him why are so many people devotedly

performing rituals which he himself does not perform, though he was a man of religion. He raised his finger pointing to the East across the vast expanse of the river, and asked "Can you see the deer there". They adjusted their eyes in line with the finger and they couldn't see anything , they tried again and couldn't see. He told them,"If you keep on looking at the finger, there is a chance that some day you will sight the deer. Looking at the finger is the ritual, but the real target is beyond. If you left your gaze off, you will never sight it. I have sighted the deer and they are still looking at the finger".

In the light of this I would like to say that the designer of modern products and technological systems and also the designer of political/social/economic systems should review the philosophies and objectives of design and the make such products and systems which lend them to rituals or work codes that are dignifying, unifying and humanising. We have to take up the role of the creators of new rituals so necessary for advancement and lift ourselves to be modern Gyanis. We should be able to point the finger which shows the direction and thus start the process of elevating the over all understanding by the use of our creations and the associated rituals to make the life richer, harmonious and meaningful. That means the product and the way of its use should not be treated separately but to be thought together and keep questioning if the way of use prescribed is humane and dignifying as a good ritual should be. This is going to ensure harmony and 'peace' with the things we deal with.

Before concluding, I would like to recite to you my homage to the ritual:

Let me perform well all the religious rituals to be in peace with my Gods.

Let me perform well all the personal rituals to be in peace with myself.

Let me perform well all the work rituals to be in peace with my work and the tools

Let me perform well all the social rituals to be in peace with all of you, my friends.

Namaskar.

TRADITIONAL PRODUCT (CONTAINER) AND CULTURAL IDENTITY

Odoch Pido

Introduction

Products are commonly and frequently understood to be the results of various machine activities in factories. We are surrounded and overwhelmed by manufactured products. Every breakfast must involve factory made foods such as jam, butter, and beverages like tea or coffee. Our houses are furnished with refrigerators, cookers, cleaners, eating and cooking utensils, furniture, radios and musical equipment, all made in factories. we wear garments made in factories. At the end of the long list we have little choice but succumb to the consumer age and its many dominating products.

However, products may also be hand-made as is commonly done in many countries of Africa, Asia and South America. These products are the result of craft-mode of production. For success, craft-mode of production depends on creativity and traditional technology. The performances of the resulting traditional products are similar to those which are made in factories. However factory-made products have dominated our lives more than traditional products. The result is that traditional products are relegated to classical, backdoor and leftover consumption for historians, anthropologists, other academicians and tourists. This paper is concerned with traditional and three-dimensional products.

The culture of a people is concerned with how they live day to day through the years. It is the overall activity of a people so as to continue surviving biologically, physically and spiritually. In design one could say that 'Man needs products in order to survive'. Therefore, over the years, man has conceived, made and used several products which make it easier for him to carry out his daily and routine activities.

Containers are some of the products that man conceived and made to serve him. The use of containers constitute packaging. Packaging is an activity that started early in the history of man; since he started to consume liquids, grains and other foods. These items needed collection, transportation, processing and storage before, during and after consumption. From the early start, man experienced problems with food items that could only be solved through the use of containers.

Early Development

As time went on, containers were developed to meet more accurately the specialised needs of nomads, agrarians, hunters and different religious groups. Containers, their designs, fabrications and uses were then geared towards serving different cultures.

Nomads are often on the move in search of fresh green pastures. Their

nomadic lifestyle and environment place specific demands which containers must meet. The skin bags, made from animal hide, commonly used in North-Eastern Kenya, is a typical nomadic container.

The container is light-weight, therefore easy to carry around. It is collapsible and hence occupies very little space. Nomads use donkeys to carry their belongings. The back of a donkey has not much space (FIG.1). It is tough enough to take the rough edges of the surroundings. The skin bag does not need much and frequent cleaning. It is durable and fitted with a closure. In a situation where there is water shortage, dust, dirt, flies and little time for container fabrication the skin bag is an ideal answer and servant to culture and environment.

The agrarians are often settled in one place for a longer period of time than nomads. Their population is larger which demands greater food production. The nature of agrarian products like millet, sorghum, potatoes and vegetables are bulky. The settled life-style permitted the development of grain stores (FIG. 2). The size and structure of a grain store is determined by the nature and amount of food required, weather, rodents, termites, surrounding raw materials and traditional skills.

Agrarians as those in Western Kenya, for example, developed earthenware vessels such as pots and bowls (FIG. 3). These containers are fragile though they take much time to make. In other parts of Africa, similar tribes produced highly decorated and well made baskets (FIG. 4). Even the calabash gourds they use are larger and adorned with more sophisticated methods than those of nomads (FIG. 5). Agrarians have more time to make and decorate their containers. Where there is rough handling during use, as in collecting and transporting millet, baskets are the answers.

Hunters and warriors carry weapons and tools like axes, bows and arrows, knives and spears. At the time of transportation, by accident, the weapons may injure the bearers, proving to be dangerous. People therefore needed protection against the tools of their trade. To protect people, sheaths were developed to cover the sharp blades of weapons. The sheaths were made from animal hides tough enough to offer protection. However, when the time for application came, the potent blades of the weaapons were easily made bare. Among the Kamba tribe of Kenya, arrows were transported in quivers, positioned at the back of the body using a sling strap. This not only allowed them to carry more arrows; but also served as protection to the person who transported them. The development of quivers as well as sheaths seem to satisfy the needs, life-style or culture of hunters and warriors.

Religion is the other specialised activity that influenced the historical development of packaging in Kenya. People of all walks of life needed religion. Through religion contact with supernatural powers was possible. These powers could be viewed in the form of spirits, ancestors and gods. As it is well known in this part of the world, not everybody is blessed, entrusted with the authority and able to effect communication through religion. Divine priests and witchdoctors are those who specialise and are involved in communication with super natural powers.

Witchdoctors provide contact between people and their gods, ancestors and spirits. Through this contact people were able to pray and give thanks.

Witchdoors themselves needed containers for their trade to be effective. Containers such as horns, sea shells and calabash gourds were used. To make gourds suitable or effective in this communication, they were decorated with feathers and beads (FIG. 6) and made to appear out of the ordinary.

Religion is considered part and parcel of the culture of the people. In this faculty of culture man prays to Gods or God and satisfies his spiritual obligations. This underlines the use of containers for social-cultural needs.

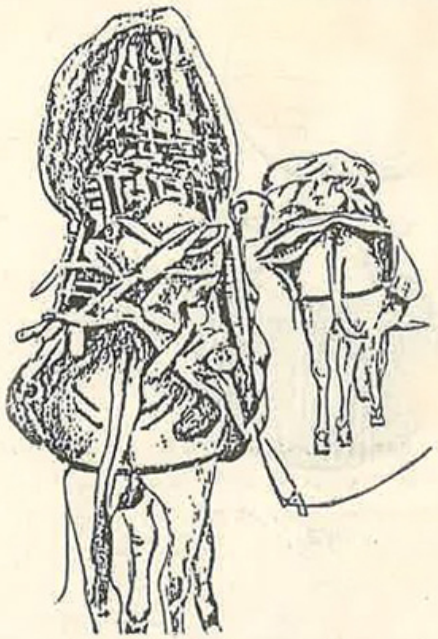

Fig.1 Ildereta, a container used to transport household utencils when the Maasai people are changing homes. (source : Cynthia Salvadori, Maasai, William Collins and Sons Ltd. (1973).)

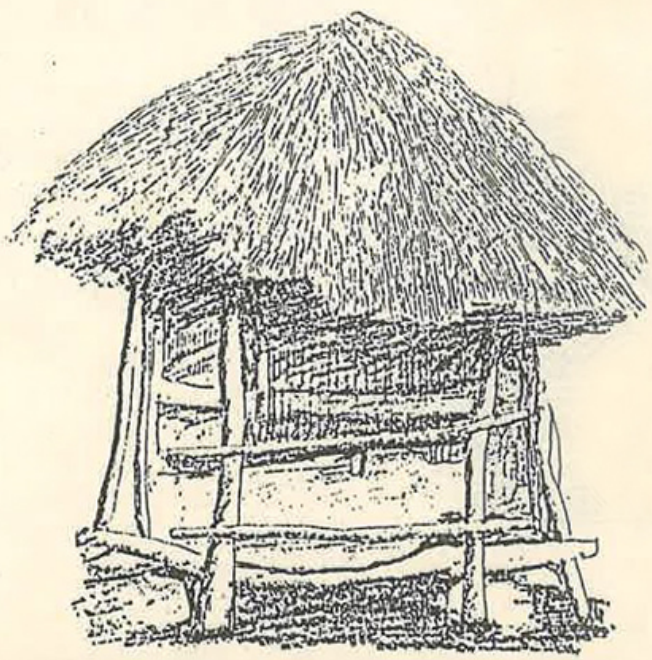

Fig 2. A grain store in Western Kenya (source: Anderson, K. B., African Traditional Architecture, 1974)

Fig.3 Earthenware pots from Western Kenya.

Fig 4 and 5: Agrarian Containers: pots and baskets (source: Margaret Trowell, African Design, 1960)

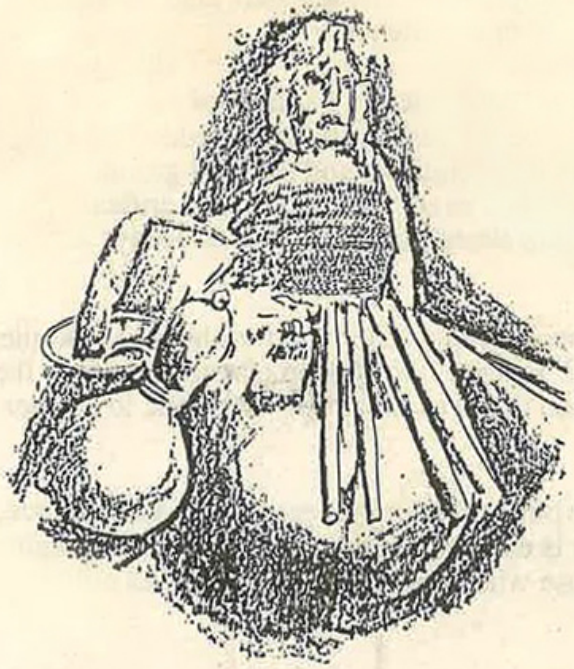

Fig 6 : Containers used by witchdoctors (source: Institute of African Studies, University of Nairobi.)

Packaging Design

One of the fundamental attributes of design is that it is creative. The creative nature makes it difficult for us to agree on one simple and single definition of the term design. Is it important and necessary to define design and agree on the definition? The opinion in this paper is that there is no need to define design. However, it must be understood, translated and practiced in the light of the designer, environment and socio-cultural settings. This attitude may preserve the creative and versatile attributes of design.

Earlier on, a loose description of packaging was given as "The use of containers". It is hoped that this will be understood and translated in the designer's environmental and socio-cultural contexts. What then is the description of packaging design?

"Packaging design is the creative manipulation of resources to make containers suitable for use in a given environment and socio-cultural setting". The resources are design skills, materials and technology. The environment are all those natural, man-made and emotional or cultural conditions. This description implies that a container (product) should be designed to suit a people and hence become an object of cultural identiy.

Objectives and Scopes

This paper is primarily concerned with containers, packaging, culture and design.

The paper is the result of an investigation of how and why containers are used. The answers to these questions provide packaging design rationales and justify containers as culturally important. The answers also provide a set of criteria to judge design poverty or excellence.

Few critical design studies have been conducted in the field of Kenyan Traditional Designs. This may also be the case with many under-developed countries. Because of this, there is less scholarly and cultural ground for the evaluation of modern products. This paper is an attempt to criticalyl appraise traditional and contemporary design using Maasai of Kenya and containers as examples.

In Kenya there are two forms of packaging, modern and traditional. Do the two forms co-exist harmoniously? Is there domination of one form over the other? Is there any conflict between the two? Attempts are made to answer these questions.

It is hoped that this exploratory exposition is in the spirit of the Conference, Arthaya. In this context the work is expected to be meaningful to packaging designers, educationalists and those who concern themselves with culture.

Assumption

Culture and environment influence packaging. Together they place demands of container design and fabrication as well as determining the way it is used. In the end containers are closely associated with the culture of a people.

Design is a means through which containers are made to satisfy cultural activities. At the end of the design process cultural criteria are used to judge the product excellent or poor and meaningful or meaningless.

Modern containers and packaging is unnecessarily undercutting and displacing traditional containers and packaging. The meaningful culture of a people is being displaced and replaced.

Designers today have lost a sense of direction. Too much effort is spent on eating universal design concepts and their products. Politicians and other decisions-makers are simply ignorant and docile participants or helpless spectators in a game where foreign and meaningless products consume the very fabrics of our more meaningful existence.

Traditional Packaging

Here the Maasai is a case study. Maasai traditional containers, packaging and their designs therefore form core examples. However, other examples from other tribes in Kenya may also be mentioned. Why the Maasai?

It is expected that few changes have taken place in this area. Changes that may be due to the influences from other tribes and beyond. The Maasai tribe is outstanding and known to be too proud to borrow from other people. More traditional, authentic and representative example may be found in this area. Besides, there is much literature about the Maasai. One may perhaps find interesting comparisons and contrasts between this work

and those of other scholars. The location of the study area is Oletepesei Location, Kajiado District and Rift Valley Province of Kenya (FIG. 7).

In Oletepesei Location, it seems containers are used to satisfy the needs of products, milk, ghee, tobacco and alcohol. What really makes any product is its characteristic smell, taste, colour and physical form. The same applies to the Maasai food products. It is therefore essential that the characteristics are protected so that the products remain what they are.

Milk is consumed fresh or sour. Its desired quality may be lost when freely exposed to the agents of the environment. In this area dust and many insects prevail. Dust and flies are foreign bodies which greatly reduced the consumption value of milk. During the study it was observed that people never consumed milk which contained dust or flies. One considers the milk degenerated and its food value lost.

Flies, cockroaches and other insects which thrive on ghee and milk are also disease carriers. The insects carry bacterial and germs which they deposit on human food on which they are feeding. The bacteria and germs may not only cause reduction and degeneration of food items but also become sources and causes of ill-health.

What makes the Maasai environment is their way of life. Maasai pitch their manyatta and live around loose soil surfaces. Domestic animals continuously roam around, killing grass hence leaving behind loose soil surfaces. The animal dung when crushed by the roaming animals becomes dust. After fire ash is left inside or outside the huts. Ash is dusty. The floor of huts does not receive any special construction treatment to make it hard. With people frequently walking in and out of the huts, the floors become loose.

All in all, typical food surroundings are potential and actual sources of dust. Insects like milk and other fatty or greasy foods. Combine dust, greasy foods and insects the result is likely to be dirty, messy and marvellous opportunity for ill-health. Water is lacking in this part of Kenya. Its use for the purposes of cleaning utensils is reduced, irregular and relegated to secondary. This compounds the situation further, hence the magnitude and importance of performance to which containers must apply themselves.

Food items also need protection against careless handling, apart from the agents of the environments. Bad handling and accidents are common among children who are expectedly inexperienced. Any effort to recover spilled milk or even tobacco is a hopeless case. The product easily and quickly mixes with the dusty surface and is lost. In and area as this where there is little food, it is significant that the little must be taken great care of.

Maasai keep cattle and other domestic animals, their occupation. These animals graze freely killing grass and making a dry dusty environment. Food products are animal products which insects also happen to like. Containers are devised and made to protect food products and hence allow the Maasai continue living in characteristic style.

There seems to be distinct and deliberate features which enable containers to perform well in protecting products. The first evidence is the choice of materials, calabash gourds. The calabash fruit when made into a gourd is of

dead cellulose tissues which may discourage the growth and multiplication of germs and bacteria. The gourds are tall and slim and fitted with closures. The height and closures discourage spillage. Insects and dust are also discouraged from freely reaching the foods inside the containers (Fig. 8)

Apart from protecting products, containers are also used to protect people against products. People need protection and are protected against weapon such as arrows and spears. These tools of defence or aggression sometimes injure and prove dangerous to users.

Injuries seem to occur more frequently when the pieces of equipment are not in active use. However, one must carry weapons in readiness to attack or defend himself at any one time. It is well understood that the sharp blades and ends of knives or spears may cause injuries if they were nakedly carries around. But the potent parts of spears and knives are covered with sheaths made of animal hide. Poisoned arrows are carried in quivers (FIG. 9).

Maasai live in the wild where there are lions, leopards and other animals. Lions and leopards in particular, are a menance to people and their livestock. People need to protect themselves against these animals. Whereas the Maasai does not eat meat of wild animals, he may have to hunt down a lion or leopard when it kills or threatens to kill livestock. It is interfering with the very fabric of existence. The Maasai believe that all domestic animals belong to them. It is theft and an offence if anybody else has the same. They will, on the basis of this cultural belief, raid anybody at any place to retrieve what they consider theirs. Whenter for offence or defence Maasai need their weapons.

Let us now see how packaging marries with the need of weapon applications. First of all the hides from which the sheaths and quivers are made are tough. The weapons cannot ordinarily penetrate them. They do what they are designed to do. Secondly the positions of the body where the weapons in their containers are carried allow for easy and speedy removal. Knives are carried around the waist tied to the body with a belt or in the hand in the same way as spears are carried. The sheaths are flat and fit loosely, so they are easy to remove in order to expose their injurous attributes.

Quivers bearing poisoned arrows are carried at the back of the body (FIG. 10). In this position it is easy to remove the arrows and with the bow in one hand shoot as and when need arrises. The arrows also fit very loosely in tubular quivers. The quivers allow for safer transportation of greater 'ammunition' than otherwise in the hand. The tubular shape makes the arrows jut out of the body from where they can be easily removed.

Perhaps it should be mentioned at this point that there is a taboo associated with quivers. Women must not handle quivers. If a woman dares, she will be 'barren' for ever. In this society and worldwide, a women's pride is not to be impotent. Anyway, the point is that the taboo is intended to reduce the people who handle quivers and arrows and ensure further protection.

Everybody needs water. Here, as may be the case with similar societies elsewhere, women concern themselves with fetching water from wells or streams. Water is transported from the sources to homes by people or donkeys.

that bear greater relationships with local environments. It is time for the training programmes to be reorganized to envelope local cultures.

Modern containers and packaging employ economic arguments to persuade acceptance and survival. A viable industry that generates employment, exploits natural and national resources couses national development which raises per capita. In this jargon, per capita, the national wealth, is shared by every citizen including the poor. Yet the poor never gets this wealth.

The real point is that modern packaging still depends on imported expertise, technology and materials. Such importation is only one of the agents of under-development, a disservice to a country like Kenya. It is time that the benefits of modern packaging is reconsidered in the lights of true and more meaningful national development.

It is a fact that both traditional and modern containers co-exist in Kenya. However, the co-existence is not harmonous. Modern packaging is displacing and replacing traditional packaging. This is taking place in the face of many spectators: designers, politicians, anthropologists and educationalists. The event does not respect the facts that traditional packaging is more relevant and meaningful to indigenous Kenyans.

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Women carry water using steel drums. Before the drums Maasai used pots and gourds. However steel drums are now widely used to transport water. As can be seen in FIG.11 the ends of a rope are tied to the ends of a drum. A loop is left in the middle. The rope is placed on the head and the drum is balanced at the back of the body, around the hips. It seems this particular method of transporting loads is adopted from the Kikuya tribe who occupy Central Province of Kenya.

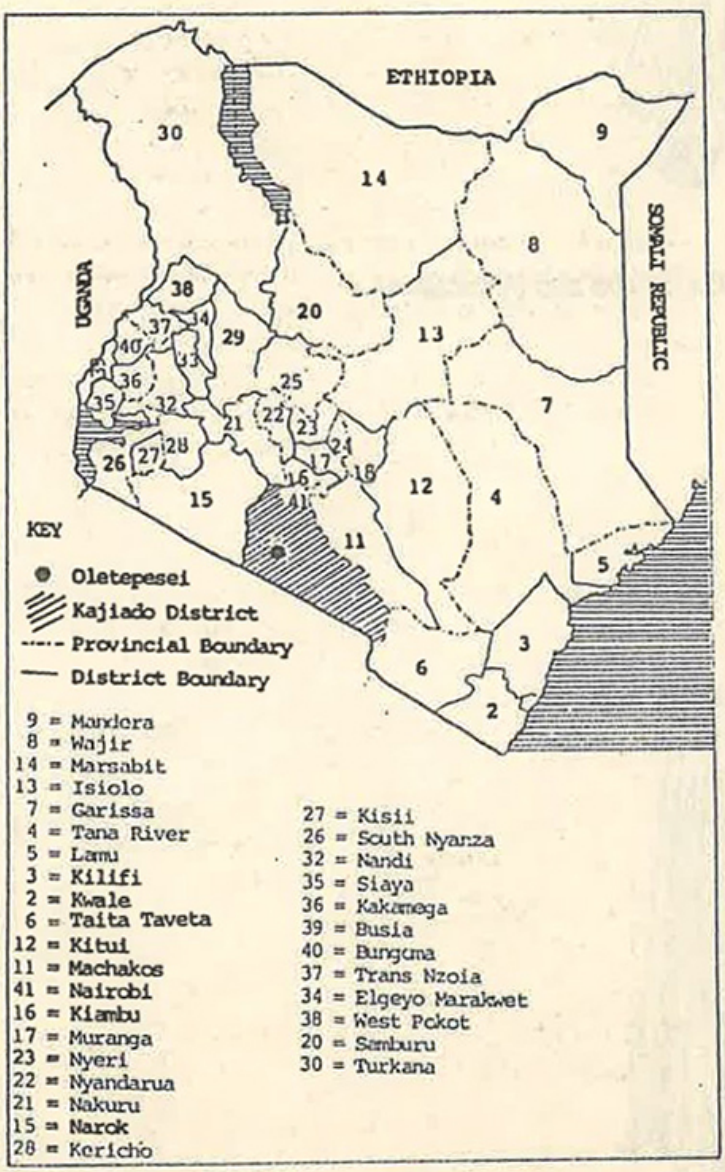

Fig 7: Geographical location of Oletepesei.

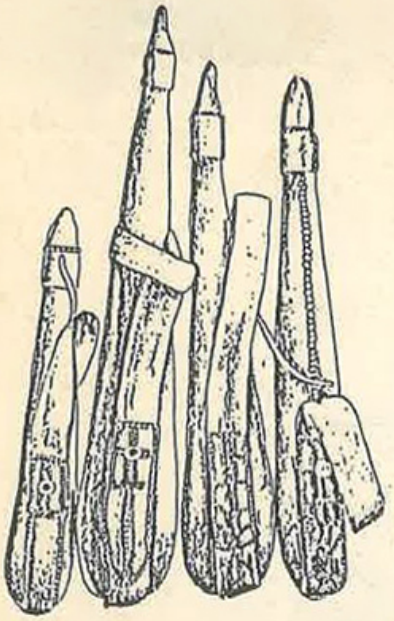

Fig.8: Long gourds fitted with lids, straps and decorations.

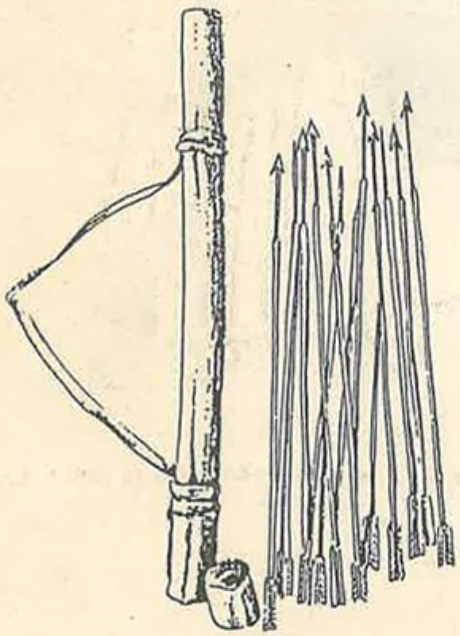

Fig 9: An arrow bag is made for user protection.

Fig.10: Transportation of quivers

Fig 11: Young girls use steel drums to carry water.

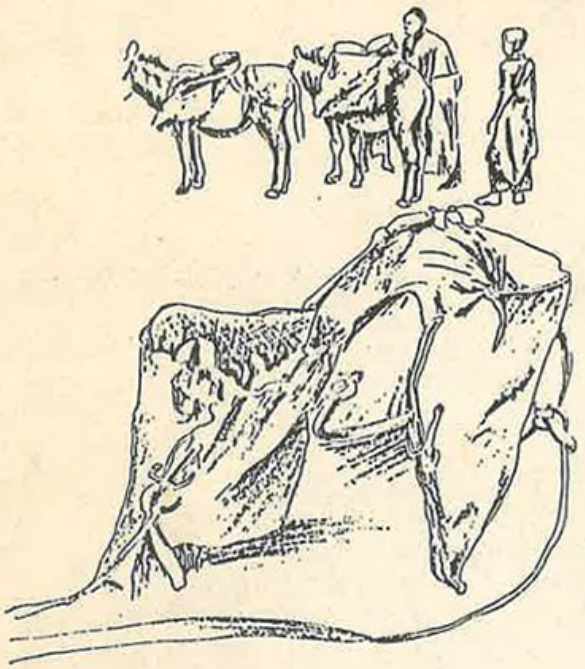

Fig 12: Olbene is designed for water transportation using donkeys.

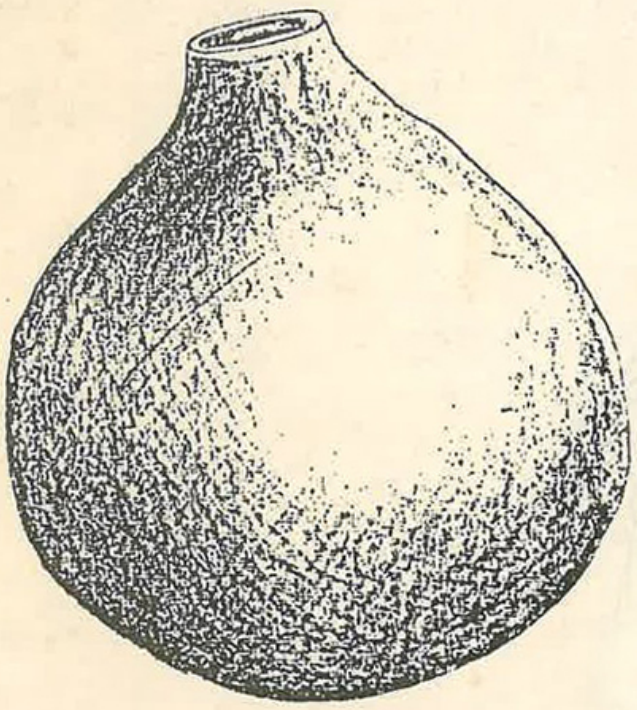

Fig 13: Emorkar, a large and round calabash gourd, used for brewing alcohol.

One can scientifically explain the design excellence in this traditional method of transporting loads. In the first place the rope is smooth, wide and flat. It

is easier on the head than another which may be rough, narrow and cylindrical. Secondly the rope is fixed at the ends of the drum which allows for a better balance of weight. The drum is delicately balanced around the hips. At this point a large weight can be supported without using too much energy and the load is evenly distributed through the body.

A donkey may be fitted to carry up to four drums of water. Through the use of donkeys as illustrated in FIG. 12, women do not only realise a greater quantity of water, but also spare themselves from getting tired. Women are expected to do so much in the day. Without using donkeys she would be dead tired by the end of the day.

The nomadic Maasai used 'Ildereta', a grand container, to put together and transport their belongings, whenever they are changing homes. As may be seen in FIG. 1 the load is mounted and strapped on donkeys. The same ildereta is at times used to partition hunts into rooms. When used to partition a hut, the same container is called 'esos'.

What is of critical design and social importance in the case of ildereta? It is multipurpose. One time it is a large transport container. At another time it is a partition. Here the time, energy and materials that would be consumed in fabricating two different containers are conserved. Today conservation is one of the major design consideration is one of the major design considerations. In this area, where women have to do so much with scarce raw materials, economy of materials, energy and time is even more critical.

Examples of food processing can be seen in the case of sour milk and alcohol. Milk is left in the 'elepet' where it becomes sour. Alcohol is brewed in a large and round calabash gourd illustrated in FIG. 13. Brewing alcohol entails putting water, honey and 'muratina' in the large calabash gourd called 'emokor'. The mixture is left for about seven days when alcohol is formed. Whether sour milk or alcohol, the container material of calabash gourd, is suitable and successful in processing food or drink.

In the process of use, containers may break because of normal wear and tear or accident. Repair is essential. A slight crack on a gourd is sewn using natural fibres and locally fabricated needles. However, when the damage is beyond repair, the container is discarded. Container disposal does not interfere with the environment. The natural materials from which the containers are made easily disintegrate to become soil. Termites, children and animals accelerate the disintegration of useless and disposed containers.

Containers get dirty in the end; no matter the amount of tolerance towards dirt. To maintain containers clean and in useable states, someone must clean them. As said before, water is scarce. Cleaning therefore is not thorough. For instance when there are many dirty milk gourds the same amount of water is used to wash all the containers. In this example it was observed that the last gourd could bot be very clean.

The gourds are given a 'sterilization' treatment. In this treatment the burning end of a twig is inserted into the gourd. The hot charcoal could be said to sterilize the gourds. Any remains of charcoal is removed with a brush of cow-tail hair tied at the end of a stick. The treatment also gives a characteristic flavour to milk and is expected to keep milk fresh for a longer period than normal.

There is also the need to inspect food which is in storage to verify it suitable for consumption. As usual, inspection is through seeing, smelling and trusting. Most milk gourds are longitudinal. Inspection of milk is easy when the container is full. However, when there is little left-over portion inspection by seeing is hard. The container shape also makes it very difficult for consumers to inspect left-over ghee.

It was observed that product dispensing from the containers is easy in most cases. Take a powdery product such as tobacco for example. The method of consuming tobacco involves pouring a small amount in the palm of the hand. A pinch is taken between the thumb and index finger of the other hand. The pinch is rubbed in the nostrils from where it is inhaled. Any left-over portion is easily returned into the snuff box. Here the mouth of the container is conceived and shaped to facilitate convenience, efficiency in filling and dispensing.

How does the making of containers fit in the Maasai cultural behaviour? There are no clear, distinct and routine patterns of container production. Life is not so strictly organised according to time among these villagers as may be the case in European type of cultures. However, these are some of the loosely organised pattern of container production. One, a woman makes containers when she gets married. She is ready to independently manage her life and that of her new household. Two, women make containers to give to a newly married one. These are gifts and a token of appreciation and good wishes in the new life. Three, containers are made when milk production increases. The additional containers are meant to accommodate additional food, life is going well. Eventually containers are made to replace useless ones.

During the research it was impossible to record the time one spends on making say one calabash gourd. This is because a woman does not fabricate a container in one continuous stretch. Her time is divided among and punctuated by many events in the day. Some of the events are moe urgent. It seems container production is done piece-meal and between more urgent agendas of the day.

Container surfaces are decorated in a number of ways. The surface is burned with hot metal. The resulting mark or impression is darker than other areas which have not received the hot metal treatment. The marks are V-shaped (FIG. 14). The other method involves a sharp metal blade, like a knife, and a fresh calabash fruit. The sharp metal is used as a stylus to draw on the wet fruit, removing the outermost cover of the fruit. The inscribed shapes are geometrical (FIG. 15).

Decoration of gourds using beads of leather is decorated with beads of different colours and shapes. Women of this area seem to like white, blue, yellow and orange colours. The shape of beads are generally spherical, oval and disc.

Decoration of gourds are of great social importance. A woman earns her fame in society through this art and craft. A husband may refuse to drink milk from a gourd which is not decorated. In many African socieities an offer of food is a token of friendliness. To refuse such offers means objection to friendship and therefore taken to be an insult. In the case of a

husband, an offer of food means affection and care. If that is refused, the meaning of a marriage is insulted. The situation gets very compound in the case of polygamy where there is regular competition for the hosband's attention.

A well-decorated snuff-box is sometimes given to an elderly male relative. In return for appreciation, the man may give a bull to the lady. Cattle are culturally important to the Maasai. In a way one may see the social significance of containers in this rural setting.

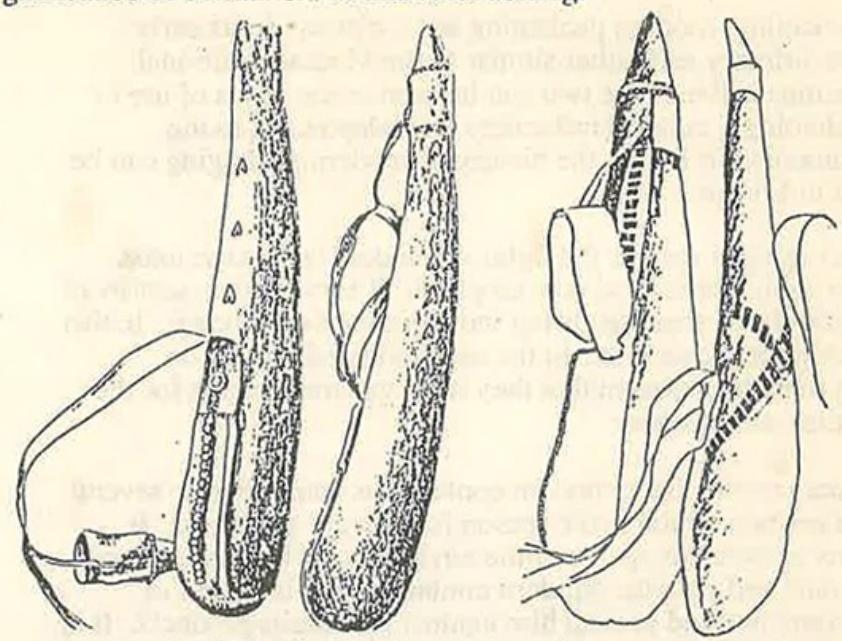

Fig 14 & 15: V - shaped marks on gourds and the scraping on the gourds which are geometrical in shape.

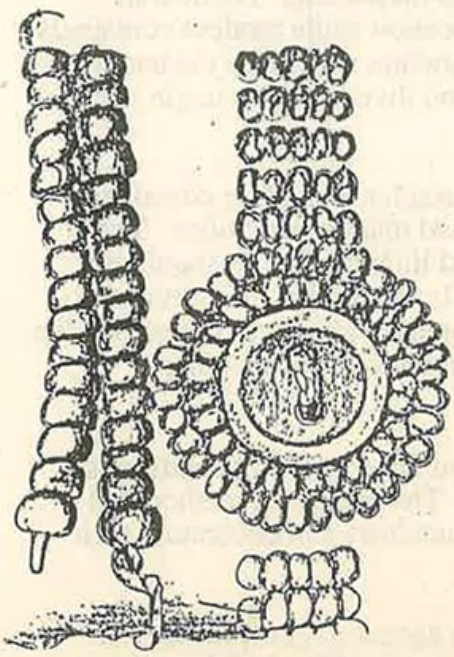

Fig 16: Women fashion beads in circular forms or straight lines while decorating gourds.

MODERN PACKAGING

Without mentioning modern packaging, efforts to compare and contrast modern and traditional packaging forms may be incomplete. The ensuing judgements of irrelevancy or unsuitability may also prove to be inaccurate. So, modern packaging is discussed here briefly and in close association with traditional packaging.

Like traditional packaging, modern packaging has a history. In its early development, it was primary and rather similar to the Maasai traditional packaging. Similarities between the two can be seen in the lights of use of local materials, technology, cultural influences and adaptations to the immediate environments. In Kenya the history of modern packaging can be traced until Britain in Europe.

Today modern packaging is seen in the lights of modern economy: mass production, distribution, market and consumption. It serves other sectors of the economy as agriculture, manufacturing industries and commerce. It also employs people and other resources. In the end, industries based on modern packaging must be viable in that they must generate profits for the manufacturer, retailer and designer.

Detailed analysis may reveal that a modern container is committed to several functions. It must contain which is the reason for its very existence. It protects its contents against the agents of the environment: bacteria, germs, rodents, weather, dust and people. Modern containers are intended to facilitate user convenience and protect him against poisonous products. It is also meant to be suitable for storage, time, space and other conditions.

Besides, a modern container is intended to transport goods from place to place. Up till now, modern and traditional containers are similar in functions. The only difference is geographical magnitude. Traditional containers seem to be confined to a smaller location while modern containers attempt to function worldwide. A universal attempt is perhaps the undoing of modern containers. The world is so vast and diverse that a single item may easily fail to meet all the conditions.

There are other functions which seem to be peculiar to modern containers. Those of identification, promotion for sales and market conditions. To be economically viable, the container should cost little money. It should not unnecessarily add to the cost of the product. In the market the container (pack) should win retailer and consumer acceptance as a means of selling the product. It must compete and win in the competition for consumer attention.

As may be illustrated by FIGS. 17, 18, 19 and 20, marketing conditions seem to dominate modern container designs. The materials, method and technology involved in fabricating modern containers and decorating their surfaces are also modern and advanced.

Modern containers (packages) and packaging appear to generate several problems. Many packages find their way to the dustbin. In other words packages are useless and are discarded once their contents are finished. Discarding packages is a waste or misuse of resources. Traditional

packages, however, are used again and again. They may therefore be considered to preserve and properly use resources. In most developing countries nothing much is done to recycle packaging materials.

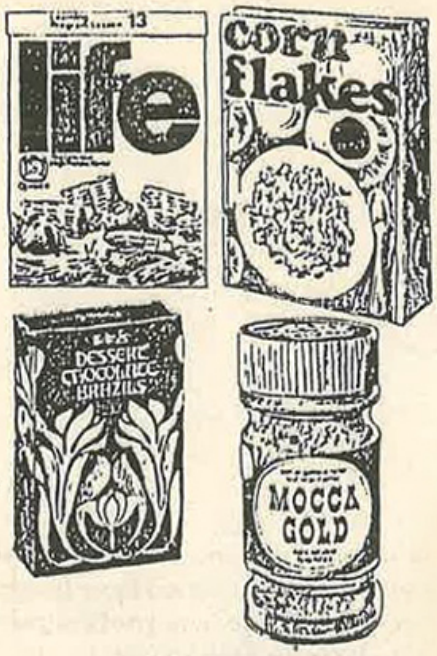

Fig 17: Outstanding brand names and decorations are results of competition (Source: Walter Herdeg, Graphics - Packaging ,1977)

Fig 18: Packaging for specialised consumers (Source: Walter Herdeg, Graphics - Packaging ,1977)

Fig 19: Packaging for self - selection (Source: Walter Herdeg, Graphics - Packaging ,1977)

Fig 20: Standardised containers (Source: Walter Herdeg, Graphics - Packaging,1977)

Discarding does not only waste resources but also a source of ill-health. Insects and other organisms find food remains in the discarded food containers as prominent feeding and breeding grounds. The insects and organisms are disease carriers and causes of sicknesses. The metal or plastic container materials do not disintegrate easily as those of traditional containers. Consumption of modern containers are greater in urban centres where they also become unsightly when left to lie around. Urban authorities are concerned and spend time, money and other resources collecting garbage. All they are trying to do is stop the ills of modern packaging.

At times modern containers do not agree with their contents; the case of acidic fruit products in metal cans. The acid in the fruit reacts with metal and the compound is often poisonous. The adverse chemical reaction does not take place in the case of traditional packaging. The use of lacquers to stop the chemical reactions in modern packaging has been a subject of debate. Many experts are questioning the use of lacquers, arguing that the organic chemicals have bad side-effects.

In the area of export trade, Kenya and many third world countries are greatly uninformed. There is little information and therefore lack of knowledge on packaging for export purposes. Too much resources are spent on packages that do not sell products abroad. When it comes to tourists' items such as handicrafts, the standard arguments are that these items are not standardised, too fragile and expensive to pack. But one may also argue that this is a failure. Those concerned are not creative and simly resort to using existing standards. Yet items such as curvings presently sell well in Europe and America.

Modern packaging depends on too many factors for its success. It depends on foreign expertise, materials and technology which in themselves can be considered factors of under-development. Expertise such as design is borrowed wholesale from developed countries. Local designers often meet with negative arguments along the lines of cost, means of production, the consumer and others. This can be viewed to be methods of killing authentic design innovations.

SUMMARY AND RECOMMENDATIONS

Packaging is now understood and taken to be a basic human activity. This activity involves the use of containers which are products. Early in history containers were used to collect, transport store and process food products.

In many developing countries container development and application was not left to a natural process. There was interference through colonisation. The effect of colonisation is that of under-development. It is a matter of hot debate whether or not true colonisation end with political independence from the colonial masters. In the area of packaging, there is little option. One is likely to accept that true colonisation persists.

Packaging design in its present state can be said to accelerate true colonisation. It encourages foreign design ideals and consumption of their products. The institutions that train designers were started by foreigners who have little regard for the cultures where such institutions are based. The trained designers and ineffective in generating containers and other products

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IN SEARCH OF MEANING IN MAN-MADE PRODUCTS AND IMAGES: THEORETICAL ASPECTS OF VISUAL SEMANTICS

Ingrid, Lempp

What is design?

Design is the definition of a product according to the needs of a user.

In perceiving a product, the user wants to be able to recognize the purpose of the product, wants to be able to interpret the way it works and wants to be able to estimate the efficiency and the easiness of operation and serviceability, as well as its value.

Why is the integration of semiotics into the design process useful?

Semiotics is the theory of signs. And products are in a way a combination of different signs. That the purpose of a product can be recognized without confusion, that function as well as its way of operation and service are easily understood, is the result of the successful application of signs.

Therefore, the integration of semiotics into the design process is a necessity.

This means that the main requirements of a design product, in order to be successful, are the efficency of its function, which to a large extent depends on the way the interaction between user and product is defined, and the ability for recognition and interpretation of this efficiency communicated by the appearance of the product.

In addition to these main requirements there are others which should be communicated by the appearance of the product, for example the impression of value, the manufacturer's image and - last but not least - animation and impact.

What designers really do is to generate "Gestalt". There is no expression in English or any other language which translates the German term "Gestalt" satisfactorily. It has, therefore, become an international term.

There are numerous publications of this topic in the field of "Psychology of Perception" from 1920 onwards. David and Rosa Katz, Gaetano Kanisza, Wolfgang Metzger, Hans Stadler and Heiner Erke are the authors of a few of them.

For application in the field of design, a book by Gyorgy Kepes seems particularly convenient to me. The title is: "The language of vision".

The contents which are expressed by the term "Gestalt" is the complex misture of forms, colours, texture, moveability, noise, smell etc. of a product. These are all perceivable qualities which can be used as signs for

expressing the required factors of a product.

What is a sign?

A sign can be defined according to the relationship between its syntactic, semantic and pragmatic qualities. Let me try to explain this relationship using a drinking glass as an example.

Syntactic qualities:

I can see that this is a container made of glass; it is transparent; it has colour and texture and its shape has certain angles, curves, edges and dimensions.

Semantic qualities:

By telling you this, I have already put a lot of meanings to this object. By convention I have learned that such a glass container is called a drinking glass.

Further impressions I receive may be:

The impression is not very strong, but the glass seems quite convenient to me, it is not very animating, however timeless, integratable and rather cheap. The semantic qualities communicated via elements of "Gestalt" can be conceived as a semantic function. These semantic functions are part of the specification or briefing a professional designer has to achieve by designing.

Pragmatic qualities:

According to these semantic judgements, I made associations relating to the syntactic qualities of the glass. I can decide whether I want to buy this drinking glass, whether its price seems to be agreeable according to the impression of value I have perceived, or I can decide that I wish to look for a different drinking glass which seems to me to be more animating, has better syntactic qualities, makes a modern impression and has a higher value.

I decide whether or not and how I want to integrate this object into my environment.

Our drinking glass can be described as a sign because it can be defined according to syntactic, semantic and pragmatic qualities.

Other appearances which cannot be explained in accordance with these three relationships remain signals.

Example:

Sorry, I cannot read Indian Newspapers, because I do not know the meaning of Indian typefaces.
I merely perceive the syntactic qualities of these graphic figures. The only semantic association I am capable of is finding that they are beautiful and dynamic.

A design product has to be understood in its syntactic, semantic and pragmatic qualities by means of its appearance.

Let me try to explain the requirements which lead to a successful design by the use of another example. The expression "Products for a global market" is often heard nowadays. Whether this should be practised or not remains to be seen. This means that the products' functions and their way of operation, as well as the ability for recognition and interpretation have to be communicated free of error equally well to people of different nationalities and geographical areas.

Which signs have a comparable meaning in different countries and which do not?

At this point it is even useful to differentiatiate between three kinds of signs:

1. Iconical signs:

These are signs which at least resemble the original a great deal, a photograph of an object, for example, is an iconical sign very near to the original, and helping best to communicate the qualities of the original.

In places where free of error communication is essential, for example at airports, in hospitals, on keyboards of electronic instruments, etc. the graphic signs are as far as possible icons in form of pictographs,or an example of the human body, of natural objects such as plants, fruits, animals, or objects which are familiar to everybody and can be recognized even by illiterates.

Such icons can also be based on objects which are used in daily life, for example, means of transportation such as cars, ships, aeroplanes, but also by instruments and tools etc.

2. Indexical signs

Indexical signs or indices are signs which work as indicators, for example, smoke as an indicator of fire, or an arrow as an indicator of direction, which are "basic signs" according to perception rules, are indices. Indices in our design work are means of differentiating, by visualizing f.e. direction, or clusters defining the positions of visual means as well as dimensions and structures.

Experience has shown over and over again that it is obviously difficult to apply these basic signs.

3. Symbols

Symbols are signs which were individually created and which are understood only as signs and are recognized again when their image has been stored in our memory. For example, letters of typefaces; the "Red Cross" as an institution of medical aid is familiar to all of us. All incorporate identity signs belonging to this category.

By asking this question how to cope with the requirement of a "global

design product", we realize that we have to differentiate between two large groups of signs to compose the "Gestalt" of a product.

The way somebody interprets the appearance of a product is influenced by a wide range of experiences. It is the storage of experience made which every

human being bears in his memory, and which enables him to recognize, to differentiate and to make decisions based on our interpretation, as designers while designing the expression of a product.

We know that a human being possesses criteria for the judgement of impressions which date back to the beginning of his existence. By analyzing these criteria, psychologists found the rules of perception. We know that they are interpreted, similar in different cultural environments, i.e. that they can be useful as neutral and common constants for design.

One category are those "basic signs" within the visual perception rules functioning as indices which we talked about earlier.

I want to show you the results of an experiment which I hope will allow for more insight into other categories of constants and phenomena of visual perception.

This experiment was done by Martin Krampen, Professor for Visual Communication at the "Hochschule fur Bildende Kunste" in Berlin.

Seven simple geometric shapes - a square, a rectangle, a triangle, a star, a circle an ellipse and a kidney shape were presented to different groups of test persons, design students and students who have nothing to do with visual arts in different countries - from Germany, Italy and Switzerland.

They were rated on scales of a semantic differential. Experiment Nr. 1: Results of impressions can be subdivided into three main groups: 1. impressions of "potency", concerning the subjective force of interest in paying attention to the impression engendered; 2. impressions of "activity" concerning the quick reaction of paying attention to the impression engendered; 3. impressions of validity concerning positive or negative evaluation.

The result can be seen by the positions of the shapes in the quadrants of a coordinate system formed by the x-axis, ranging from passive to active, and by the y-axis ranging from powerful to weak.

It shows that shapes with pointed angles are rated active (A) and powerful (M), rectangular shapes are rated passive (P) and weak (S).

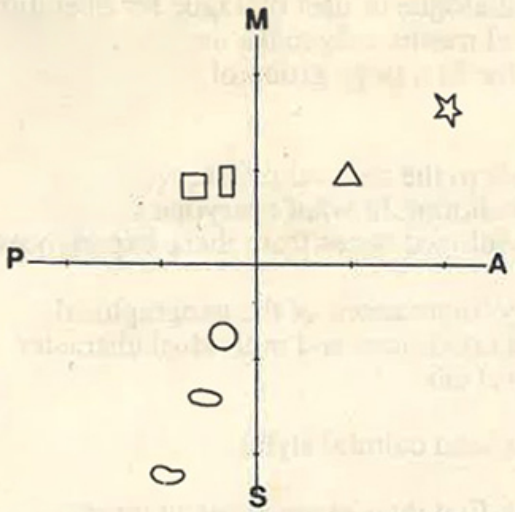
Experiment Nr. 2: was done with combined geometric shapes. All shapes containing a triangle either as a frame or as an included shape were rated active (A) and powerful (M). In all other cases the shapes of the outside frame dominated the enclosed shape, making rectangular frame passive (P) and weak (S).

Experiment Nr. 3: This shows how colours can change the meaning of shapes.
As we see, dark red strengthens impression in respect of the power and

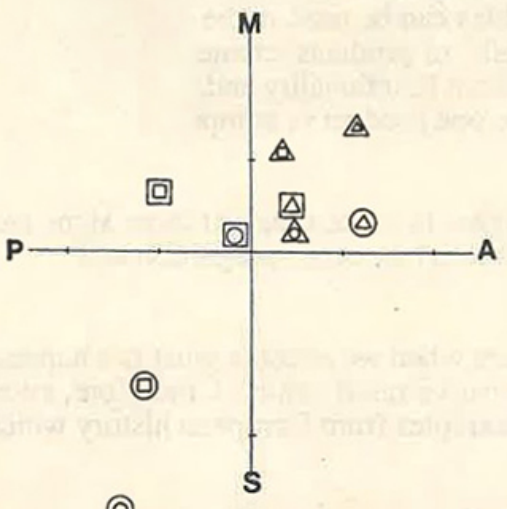
activity of the former weak impressions. Also dark blue strengthens impression.

Light blue weakens and deactivates considerably. Weak shapes retain their weak impression and even form a cluster.

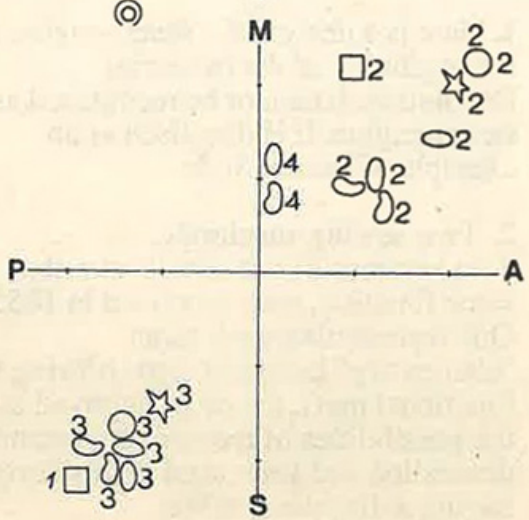
It is astonishing to see what happens to a star which is coloured light blue, and to a square which is coloured light red, both getting weak and passive. This means that colour has to be applied in a very careful, conscious manner.



Experiment Nr. 1



Erperiment Nr. 2



Experiment Nr. 3

Colours:
1 - light red
2 - dark blue
3 - light blue
4 - dark blue

Similar studies were done by Martin Krampen with three dimensional shapes with similar results. I myself made tests on textures built up with multiplications of square, rhombus and circular shapes and astonishingly enough, we found similar criteria of judgement concerning assessment of impression, of power and weakness, activity and passivity.

It is essential to make use of those "basic signs" according to the rules of visual perception functioning as indices when designing products for any market, but especially for the global market. We have to make sure that within areas where the man-machine dialogue or user dialogue for operation and maintenance takes place, the visual means only make use of such signs which are culturally neutral. That is the first large group of signs we spoke of: the constants.

The second group of signs corresponds to the cultural differences in human beings as groups and as individuals, resulting in what everyone has learned during his life-time, and of having developed tastes from these experiences.

These are variable signs influenced by impressions of the geographical environment, social, political, cultural conditions and individual character status, personality and educational level etc.

We experience such results as national and cultural styles.

They can be subject to changes which find their expressions in trends, fashions and life styles. These variables can be used in the design process in order to add character to the "Gestalt" of products, create and identification with it, because, apart from functionality and cost, it is the character which makes people choose one product in comparison to another, similar one.

But it is the responsibility of the designer to make sure that those signs are only used where functional and operational aspects, recognition and interpretation are not confused.

We learn more about these phenomena when we observe what has happened in the past. I come from a European background, which I, therefore, know better, and I, therefore, have some examples from European history which I hope you will excuse.

1

1. Here is a design of a steam-engine at the beginning of the Industrial Revolution. It cannot be recognized as steam-engine. It is disguised as an example of Dorian Style.

2

2. Two sewing-machines.
Two versions of one article with the same function, both produced in 1855. One representing itself as an "elementary" indexical sign showing the functional parts, the other deprived of the possibilities of recognition, because decoration had been used in this design, having a disguising effect.

3

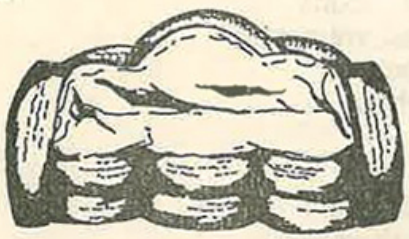
4

3. and 4. The emergence of new materials was followed by new shapes and appearance of products through the times. Here is a chair made out of 'papier-machee' and velvet. This style was followed up by the design of this appearance, when products started to be made of iron.

5

5. A computer work-station.
People who do not know about "visual languages" will evaluate this design as cool, clean, tidy, practical, impersonal etc.

6. A lot of experiments have been done during the past few years to break up what is called "functionalistic design". There is an example of "ecological design". A sofa made from rubber tyres. When ecological means are the main aspect of decision making, then this couch will be evaluated as a convenient and pleasant solution.



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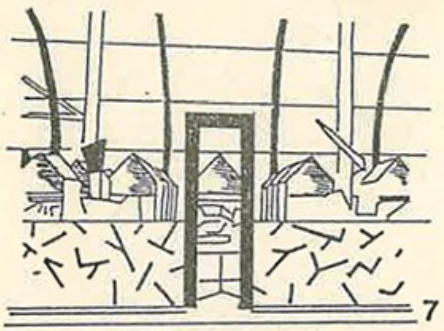
7. The "banal" or "trivial" Design (translation)
In summer 1980 a design exhibition in Linz (Austria) tried to make people conscious in a very spectacular way of the different aspects design can have, and stressed that times of so-called "functionalistic design" are over. One of the alternatives was that design should give the impression that anyone could have done it, simply and not as perfect as our industrial design products usually appear.



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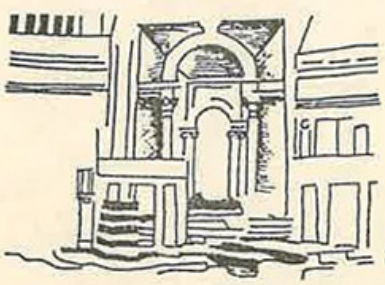
8. Post modern style.
Typical "indexical signs" derived from historical styles were used in opposing ways to their familiar interpretation and evaluation, opposing material quality and natural principles.



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9. A gas stove.
An example of adding richer form and colour elements beyond functional necessity to products in daily life.

9

10

10. A coffee machine.
Shall we call it a post modern design? It bears a rather specialexpression sometimes when seen today, but appears rather contradictory when used along with plastic cups.

Summarizing:

A product "Gestalt" consists of a complex mixture of form, colour, texture, movement, noise, smell, taste etc.

These are all perceivable qualities which can be used as signs of composing expressions.
We can analyse signs according to their syntactic, semantic and pragmatic qualities.
We have to differentiate between two large groups of signs:

1. Basic signs according to visual perception rules, which can be introduced as constants, because every human being applies similar meaning to them.

2. Signs which are variables according to influences of many kinds such as geographical, national, cultural, social and individual means.

We differentiate between Icon signs, Index signs and Symbols. Icons resemble images and Index signs as long as they are basic signs, are useful for designing functional means and operating issues; as therefore expressions have to be found which have to be understood without confusion.

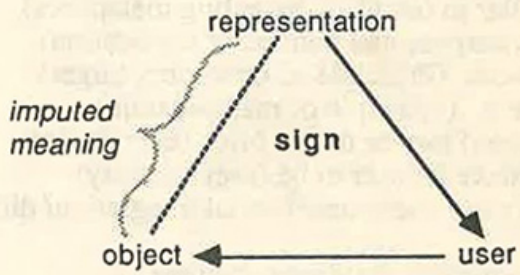
Variables may be added to those parts of the product where they don't interfere with the affordable constants to add character and identification means dynamism and impact.

RECENT DEVELOPMENTS IN THE SEMANTICS OF ARTIFACTS (PRODUCT SEMANTICS)

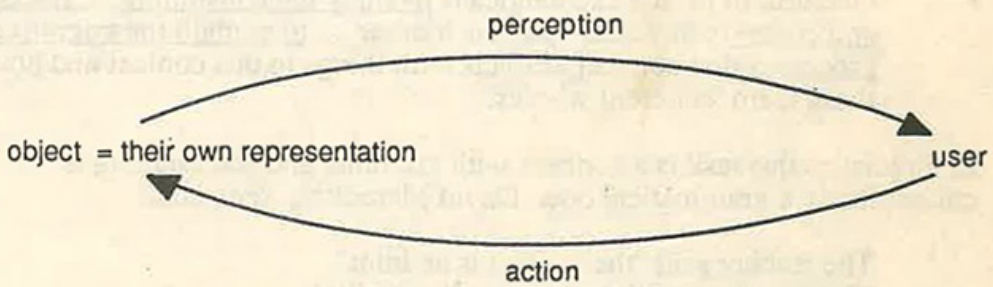
Klaus Krippendorff

Meaning

Linguistics often distinguishes between a world of language and a world of non-linguistic phenomena and locates meaning in the relationship between the two. It implies that the non-linguistic world of objects is accessible without language and that objects have no meaning by themselves. The famous semiotic triangle :



builds meaning as relationship between objects and representations into its geometry. Accordingly objects cannot mean anything. In contract, it is quite possible to ask someone " what does this object mean to you and receive a sensible answer, hence the injunctive distinction between things that represent something and things that are represented thereby does not make sense. In perceiving and acting on artifacts, the objects and their representations of the above triangle are collapsed and become one. Artifacts have their own representation, but in the context of interaction with users



When we ask "what does A mean to you", the answer "B" connects A to B within the context of a question - answer situation.

- meaning connects things within a context
- meaning should be a verb, making clear that it arises in a cognitive process of connecting (meaning is not a thing or a quality. The phrase "A has meaning" is seriously misleading as is the sentence "B

is the meaning of A")

The predominance of linguistic conceptions in semiotics suggests to ascribe different qualities to A and B, e.g. A is the form of an object, B is its content. This may be the case for designers who have developed a specialised language, e.g. geometry, to talk about objects in ways ordinary people don't. This specialisation does not justify to claim an ontological distinction between A and B. Experiments by the cognitive psychologists Ulric Neisser show ordinary people see = mean objects as one (a chair is a chair and may be of a certain kind). The distinction between a form and its interpretation is quite arbitrary in the reality of ordinary people.

Asked "what does this (A) mean to you", yields answers "B" in some such categories:

The category to which it belongs (A's identity)
The apparent qualities (attributes)
What it is similar to (similies, revealing metaphors)
What it is for (purpose and context of application)
How does it work (Principle of operation, target)
How to handle it (Principle of manipulation)
Who would (can) buy or use it, price (user access)
What does it make its user to be (user identity)
What do others say about user (social integration/ differentiation)
Material
Method of production, producer, designer
History and mythology of which it is (was) a part
Next user, disposal, ultimate destiny.

All responses set artifacts in particular contexts, e.g. context of sales, context of use, context of verbal discourse with others. Thus:

- The meaning of an artifact is the sum total of all the contexts in which it can (appropriately, legitimately), occur including all that can be said about it.

- One task of product semantics is to study the constraints, artifacts and contexts imposed upon each other..... to explain the cognitive processes that connect artifacts with things in this context and how these form coherent wholes.

In linguistics this task is a concern with grammar and the meaning is consequently a grammatical one. David Meredith's sentences:

The teacher said "the student is an idiot"
"The teacher" said the student "is an idiot"

suggest that perception of the teacher depends on which grammatical context the interpreters uses to make sense of the whole.

I see three kinds of grammers or better stories or models for making sense of artifacts: ecology, genesis and cognition. I can only sketch these for flavour :

Ecology

The idea comes from biology where it is defined as the interaction of population of species, usually of animals and plants, with the aim of understanding the relationships that develop between these population (e.g. competition, symbiosis) and to determine the equilibria that emerge.

Important features of the ecological model :

- Each population has its own environment including the species it interacts with but not all. The whole ecology stems from the overlapping of each species' environment.

- Relationships develop in interaction, are "negotiated" or come about and are not wanted by someone or imposed unilaterally.

- There is no overriding purpose, no hierarchy, no collective will but distributed wisdom that maintain variety and efficient use of resources.

There are very many species of artifacts, perhaps even more than biological species now existing. They range widely in size: skyscrappers are larger than elephants, artificial molecules are smaller than elephants, artificial molecules are smaller than amoebas. They range widely in complexity: Computer chips have more memory than many lower animals. Human beings are artifacts to the extent they are social beings, speak a language and assume roles with associated behavioural expectations. Organisations too are artifacts, man-made and interacting with one another.

Cars compete with horses and have depleted their numbers.
Cars cooperate with gas stations and have increased their numbers.
Cars cooperate with drivers and have increased their numbers.
Cars compete with oil reserves and deplete their volume.
Ultimately both species become extinct, followed by drivers and gas stations.
The interaction among species of artifacts is opportunistic.

Artifacts acquire meanings in an ecology of artifacts through interaction with others and by moving into particular locations or niches. A car is a car because it interacts with drivers, roads, etc. and carries people from one place to another. In an ecological model the meanings of importance are

- Identities - what something is, which places an artifact in the network of interaction.
- Qualities which compare artifacts with one another regarding dimensions relevant to their placement in the network of interaction.
- Typicality which suggests something like their substitutability.
- Similies which warn about mistaken substitutions on the one hand and suggest common organisational features (metaphors) across non substitutable artifacts on the other hand, thus superimposing and contrasting a perceptual symbolic order over the ecology which is principally interactional.
- Artifacts cluster around heavily interdependent species of artifacts or form what is called "cultural complexes", the automobile complex,

for example, it includes all of its technology, the language used to maintain and reproduce it, the institutions governing it and thriving on it, and the role of people supporting its existence. One can distinguish several complexes of interconnected hence meaningful species.

Designers are advised to create objects whose meanings direct them into their appropriate place in the colony of other artificats and enable them to interact with other artifacts in ways conducive to the very environment that sustains their existence.

Genesis

In this story or model, artifacts are seen as patterns that are continuously created, recreated and transformed into other patterns.

It is a social and epistemological myth that designers create objects. They never do. Designers create renderings to convince producers that the blue prints they could give them yield marketable and useful products. Designers are creators of communications, but their communications are not about something - as news is about important happenings, but yield transformations of the patterns they have invented. Designers are communicators of a certain kind. The pattern they create typically go through various stages :

Producers
Advertisers
Distributors
Display; sales and purchase
First user
Second user
.
.
.
Retirement
Recycling of parts or disposal

All objects of design go through some such sequence that ultimately ends up in material entropy. If something can't be sold it ends up in the trash before it can be used. No artifact can be used unless it is also producable, distributable, affordable, etc. Perhaps the task of industrial design is to create pattern and communicate them in such a way that the ultimate entropy is delayed or minimised.

In the process of genesis the designer's patterns must be layered and constitute self-addressing communications.

The blue print must instruct engineers to develop the appropriate production machinery to make the products. The products must enable the advertisers to advertise it. It must be packageable, displayable. After a product is sold, information on its origin, the package in which it could be shipped and sold are no longer needed but instructions for use must now appear. In large companies there are also different users in sequence, each must be able to comprehend the product as it is to be used. In the end there must be

information about the components that may be recycled, how others are to be disposed (like the financial incentives on aluminium beer cans in some states in the US to return them for recycling).

The patterns designers create and communicate must be layered like onions. After each layer is used, the next contains information about a subsequent step. The layer also must contain the "addresses" of people who are engaged in the next step and direct the patterns to the appropriate receivers.

Thus, designers do not design objects but use, which is an informed interaction involving users, material entities, symbols. The artifacts are mere sign-vehicles through which users are enabled to create patterns of interaction. A religious implement enables a priest and a community to proceed in a ritual. A spoon enables a user to interact with food, perhaps in the context of other people who observe the process and thus participate in it. Artifacts are parts of the process. They enable to come about and are in semiotical terminology metonyms (signs for wholes of which they are a part) (It is somewhat misleading to judge objects of design by pictures that exclude the very context these objects invoke. This is a practice that denies artifacts their possible meanings and misdirects designers' attention to a sculptural or context-free aesthetical concerns).

Cognition

This story or model concerns the role artifacts play in human cognition, in cognitive processes inside someone's mind in which designed objects participate. Interaction (perception and manipulation) with objects extends the circularity of cognitive processes into not directly experiential domains.

Without going too deeply into cognitive theory, I want to contrast the current conception with an alternative one and derive some directions for industrial design. The two approaches are control theory (CT) and pertubation of autonomy theory (PA).

In CT the brain is seen like a camera, stores images or representations of an externally existing world. Individuality of world constructions is denied and all deviations from "accurate perceptions" are labelled between biased and pathological.

In PA and mind is autonomous, has its own cognition, stimuli are merely perturbing mental processes and are incorporated in its constructions.

In CT, communication is seen as a sender's ability to make a reciever conform to his or her own intentions (see the aim of advertisement or military commands). In PA communications is a two-way process, contributes to understanding and is basically dialogue.

Architectural determinism, the belief that architects are incharge of the arrangement of spaces by functions conforms to CT whereas PA leads to a participatory approach in which the architect honors the users ability to create or contribute to how spaces are used.

With CT in mind artifacts tend to be designed machine-like, are specialised in function and hardware oriented forcing the user to adapt to the designed

objects by building adequate models of them. Being specialised, there often is only one right way of using them. With PA in mind artifacts tend to be designed multi-functional, transformable, combinatorial or smart and are soft-ware oriented. They predominantly enable (and minimally constrain) users to engage their environment. When artifacts are smart (computers or human-like), they might develop models of users to better serve their needs. In PA interaction resembles a dialogue, in CT that of a stimulus-response sequence.

With CT in mind, designers tab the user's extrinsic motivation, making artifacts a means to an extrinsic end which is the purpose of the object's use. PA encourages to add to this intrinsic motivations of which there are two forms. One derives from having fun with use, the motivation derived from play and the pleasure to act competently. The other derives from being part of a collective whole, the motivation derived from participation in rituals and the knowledge of being part of the larger universe, a cosmic dance.

With CT in mind, understanding the meaning of artifacts tends to require instruction e.g. by manuals, training sessions, a certified teacher or membership in a profession. With PA in mind, the meaning of artifacts tends to be acquired or made up by a user in interaction. Design aims to make artifacts self-evident, self-instructing. Users learn by exploration. Errors are not punished, their occurence is encouraged for they inform the user about limits of the range of possibilities. Artifacts must therefore be robust to user errors. Artifacts must also be designed to be semantically redundant, allowing user to exercise their preferences for visual, tactile or auditory explorations without difference in effect.

With CT in mind,artifacts are designed to be technically and operationally efficient or performance oriented.. With PA focusses attention to the cognition of the
user and designs are to match how users approach an object trying to understand and use it. This often calls for layered designs.

a) The overall appearance should inform the user what kind of thing it is, e.g. a xerox machine.

b) Upon closer examination some of its qualities may come apparent, e.g. it is fast, complex, automatic (as opposed to the qualities of other copiers).

c) The metaphors may inform the user about the work flow, input-output connections, composition and interconnections.

d) After understanding what it does, the user may want to know what is variable and how to control this variability. Machine invites exploration.

e) In case of breakdown or error, user needs to penetrate into another layer of interaction, there being informed as to how each error may be corrected. The machine assists the user in efforts to repair that machine.

f) A further layer may be accessible only to experts or repair persons. Ordinary users being prevented from access by unfamiliarity of the symbolism employed as well as inaccessible doors or fasteners.

With PA in mind, designers have to consider several levels of understanding:

Phenotype - the actual version of an artifact

Prototype - phenotype less accidental details

Ideal type - prototype less all non-essential details, the gist of an artifacts' meaning

Archetype - the largely unconscious idea, embedded in the collective unconscious of a culture and by which individuals connect with the mythology of that culture and to its history.

The surface meanings of the phenotype should be in resonance or in harmony with the deep meanings of archetypes. This may be responsible for the sense of beauty and being at ease with the world of objects outside. This ultimate symbolism (relations between conscious and unconscious) is due to C.G. Jung.

The practical consequences of design with the semantics of artifacts or product semantics for short is :

1) A concern with processes not with objects the merely participate in it and are merely contributory to human interaction.

2) A concern with the symbolic order of a culture not with the technological rational arrangement of objects. It is through the symbolic order that the life of individuals becomes meaningful. The technical order may yield remarkable technical accomplishments but has shown to be ultimately destructive of the environment which has so far supported it.

3) A concern with the user as a human being, neither with a buyer who is no longer of interest to industry once he has bought what he or she was asked to, nor with a consumer who is of interest only to the extent he or she consumes (eats up or destroys the usefulness of a product).

4) A concern with the environment of humans both symbolic, by preventing semantic pollution that decomposes the symbolic connections between things, material, by slowing down or minimising entropy.

5) A concern with liberating people from technological determinism (i.e. from the fact that we tend to surround us with things without apparent use and seem to live to keep an industry running that may no longer increase our psychological, social and political wellbeing).

SEMANTICS IN BASIC DESIGN

A.G. Rao

The concept of 'Basic Design' or 'Foundation Programme'[1] came into prominence with Bauhaus, the famous design school in twenties. In some design schools it is dealt as courses in 'Elements of Design or Form'. Pedagogy of Basic Design focuses on:

- Sensitivity to perceptual (especially visual) world.
- Articulation and Expression in Visual domain and
- Value orientation to result in self identity or self discovery of the student

Basic design become the preamble to learning 'design'. A student is ushered to the 'world of design' through 'Basic design'. And the quality of Basic design has tremendous bearing on the 'design personality' a student develops later. A student encountering Basic design has many similarities with a child learning language while encountering the world around.

This comparison is significant because 'children seemed to be innately gifted learners, acquiring long before they go to school, a vast quantity of knowledge by a process, Seymour Paper calls as "Piagetian learning" or 'learning without being taught'[2].

Seymour Papert[2] has also put powerful arguments on how a subject like Mathematics or Computers could be taught to children by creating a Math-culture or Mathland in which, it would be as natural to learn Mathematics as language in any culture. Similarly we can hypothesize that it would be natural to learn design in a 'design culture'. Probably this is the reason for high standards of 'Italian design', though there were no 'design schools' in Italy till late. Richness of Italian Art (Sculpture) and design heritage is well known.

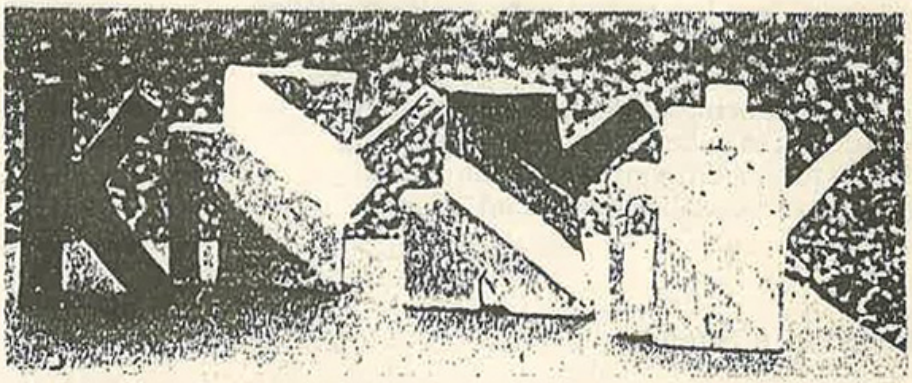
There is more to learn from looking at how children learn language before they are schooled. For a child, 'learning language' is a 'meaningful life action'. Language learning is not separated from life action or learning about the 'world around'. 'Meaningfulness' or 'ability to relate it to oneself seems to be the key factor 'Piagetian learning'.

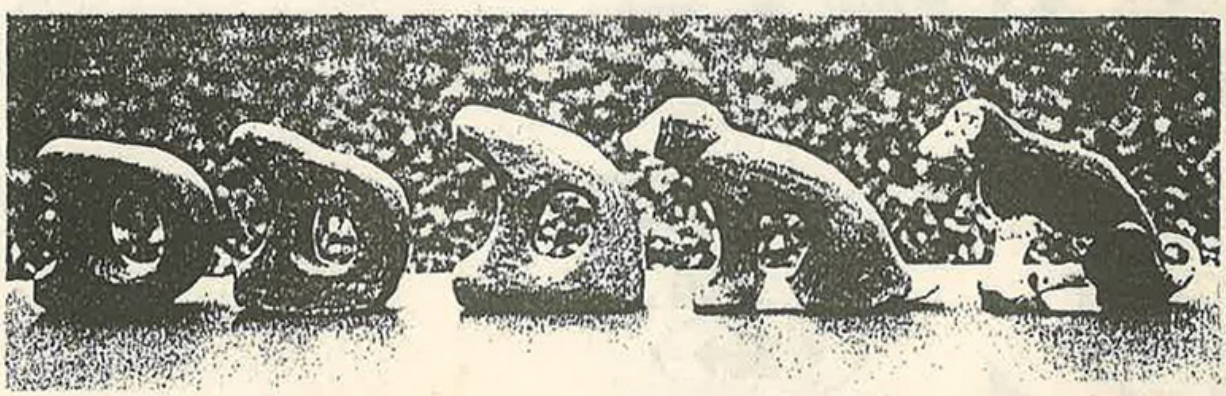
Today, if we take a look at the 'basic design' programmes all over the world, they are highly 'syntactic' oriented. The elements of design like 'line, form, texture, colour, proportion' ..... which form elements of the grammar of 'design language', are taught in an 'abstract' framework. The main contention of the given task is to 'play and explore'. There is no specificity on what is to be explored or achieved. Either student has to depend on the experience of teacher to learn what is right and wrong or depend on his/her inner feelings or 'self expression'.

A 'meaningful' framework is absent to the 'syntactic explorations' which a student is supposed to make. Main drawback in these 'syntactic explorations' is that the student is unable to connect 'these' with the knowledge he has gained outside this domain. Infact such connections are

1.2 Metamorphosis of letters

Here the task was to achieve 'metamorphosis' of a given letter in stages into an object or living thing starting from that letter. Thus letter 'A' becomes an Apple, 'B' - a butterfly and so on. The 'meaning' or 'metamorphosis' was discussed with examples from Nature. Metamorphosis became a meaningful task. For example a transition of cube to a sphere.





4.0 Flower in a Cube

Expressing flower in a cube of 'plaster' was a task sequel to the earlier. Hard, cold limitations of plaster cube provided an unevitable challenge to express a 'flower'. The nature of 'cube' with its possibilities and limitations was revealed in the process.

5.0 Spirals in Cube

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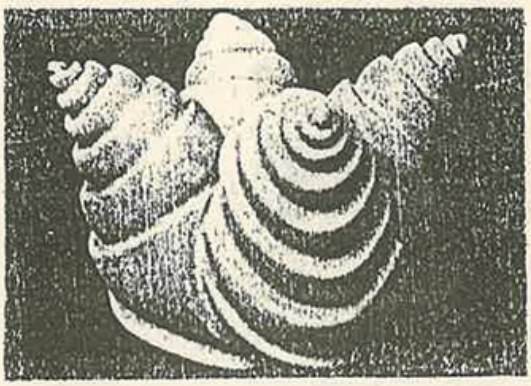

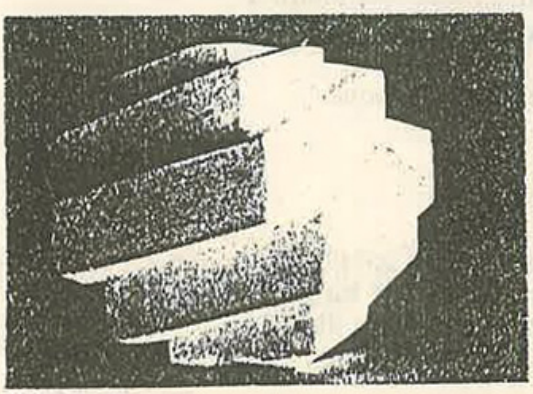

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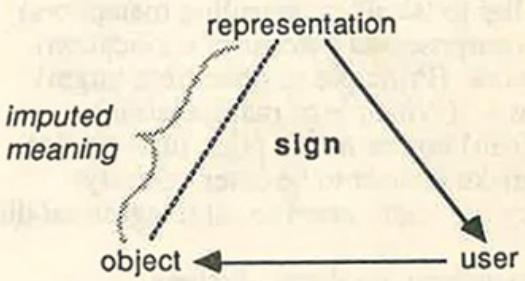
RECENT DEVELOPMENTS IN THE SEMANTICS OF ARTIFACTS (PRODUCT SEMANTICS)

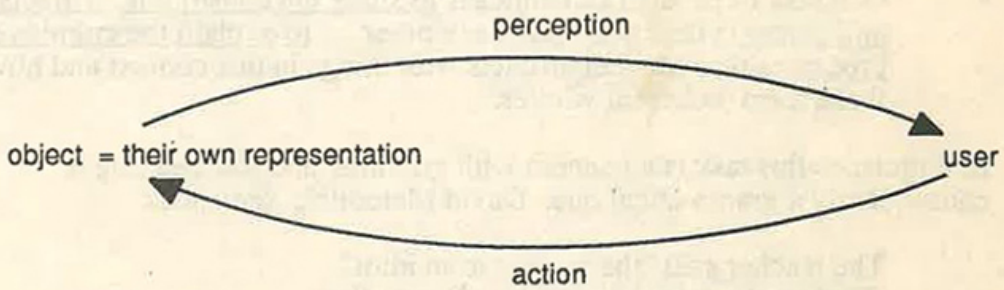
Klaus Krippendorff

Meaning

Linguistics often distinguishes between a world of language and a world of non-linguistic phenomena and locates meaning in the relationship between the two. It implies that the non-linguistic world of objects is accessible without language and that objects have no meaning by themselves. The famous semiotic triangle :



builds meaning as relationship between objects and representations into its geometry. Accordingly objects cannot mean anything. In contract, it is quite possible to ask someone " what does this object mean to you and receive a sensible answer, hence the injunctive distinction between things that represent something and things that are represented thereby does not make sense. In perceiving and acting on artifacts, the objects and their representations of the above triangle are collapsed and become one. Artifacts have their own representation, but in the context of interaction with users



When we ask "what does A mean to you", the answer "B" connects A to B within the context of a question - answer situation.

- meaning connects things within a context
- meaning should be a verb, making clear that it arises in a cognitive process of connecting (meaning is not a thing or a quality. The phrase "A has meaning" is seriously misleading as is the sentence "B

is the meaning of A")

The predominance of linguistic conceptions in semiotics suggests to ascribe different qualities to A and B, e.g. A is the form of an object, B is its content. This may be the case for designers who have developed a specialised language, e.g. geometry, to talk about objects in ways ordinary people don't. This specialisation does not justify to claim an ontological distinction between A and B. Experiments by the cognitive psychologists Ulric Neisser show ordinary people see = mean objects as one (a chair is a chair and may be of a certain kind). The distinction between a form and its interpretation is quite arbitrary in the reality of ordinary people.

Asked "what does this (A) mean to you", yields answers "B" in some such categories:

The category to which it belongs (A's identity)
The apparent qualities (attributes)
What it is similar to (similies, revealing metaphors)
What it is for (purpose and context of application)
How does it work (Principle of operation, target)
How to handle it (Principle of manipulation)
Who would (can) buy or use it, price (user access)
What does it make its user to be (user identity)
What do others say about user (social integration/ differentiation)
Material
Method of production, producer, designer
History and mythology of which it is (was) a part
Next user, disposal, ultimate destiny.

All responses set artifacts in particular contexts, e.g. context of sales, context of use, context of verbal discourse with others. Thus:

- The meaning of an artifact is the sum total of all the contexts in which it can (appropriately, legitimately), occur including all that can be said about it.

- One task of product semantics is to study the constraints, artifacts and contexts imposed upon each other..... to explain the cognitive processes that connect artifacts with things in this context and how these form coherent wholes.

In linguistics this task is a concern with grammar and the meaning is consequently a grammatical one. David Meredith's sentences:

The teacher said "the student is an idiot"
"The teacher" said the student "is an idiot"

suggest that perception of the teacher depends on which grammatical context the interpreters uses to make sense of the whole.

I see three kinds of grammers or better stories or models for making sense of artifacts: ecology, genesis and cognition. I can only sketch these for flavour :

Ecology

The idea comes from biology where it is defined as the interaction of population of species, usually of animals and plants, with the aim of understanding the relationships that develop between these population (e.g. competition, symbiosis) and to determine the equilibria that emerge.

Important features of the ecological model :

- Each population has its own environment including the species it interacts with but not all. The whole ecology stems from the overlapping of each species' environment.

- Relationships develop in interaction, are "negotiated" or come about and are not wanted by someone or imposed unilaterally.

- There is no overriding purpose, no hierarchy, no collective will but distributed wisdom that maintain variety and efficient use of resources.

There are very many species of artifacts, perhaps even more than biological species now existing. They range widely in size: skyscrappers are larger than elephants, artificial molecules are smaller than elephants, artificial molecules are smaller than amoebas. They range widely in complexity: Computer chips have more memory than many lower animals. Human beings are artifacts to the extent they are social beings, speak a language and assume roles with associated behavioural expectations. Organisations too are artifacts, man-made and interacting with one another.

Cars compete with horses and have depleted their numbers.
Cars cooperate with gas stations and have increased their numbers.
Cars cooperate with drivers and have increased their numbers.
Cars compete with oil reserves and deplete their volume.
Ultimately both species become extinct, followed by drivers and gas stations.
The interaction among species of artifacts is opportunistic.

Artifacts acquire meanings in an ecology of artifacts through interaction with others and by moving into particular locations or niches. A car is a car because it interacts with drivers, roads, etc. and carries people from one place to another. In an ecological model the meanings of importance are

- Identities - what something is, which places an artifact in the network of interaction.
- Qualities which compare artifacts with one another regarding dimensions relevant to their placement in the network of interaction.
- Typicality which suggests something like their substitutability.
- Similies which warn about mistaken substitutions on the one hand and suggest common organisational features (metaphors) across non substitutable artifacts on the other hand, thus superimposing and contrasting a perceptual symbolic order over the ecology which is principally interactional.
- Artifacts cluster around heavily interdependent species of artifacts or form what is called "cultural complexes", the automobile complex,

for example, it includes all of its technology, the language used to maintain and reproduce it, the institutions governing it and thriving on it, and the role of people supporting its existence. One can distinguish several complexes of interconnected hence meaningful species.

Designers are advised to create objects whose meanings direct them into their appropriate place in the colony of other artificats and enable them to interact with other artifacts in ways conducive to the very environment that sustains their existence.

Genesis

In this story or model, artifacts are seen as patterns that are continuously created, recreated and transformed into other patterns.

It is a social and epistemological myth that designers create objects. They never do. Designers create renderings to convince producers that the blue prints they could give them yield marketable and useful products. Designers are creators of communications, but their communications are not about something - as news is about important happenings, but yield transformations of the patterns they have invented. Designers are communicators of a certain kind. The pattern they create typically go through various stages :

Producers
Advertisers
Distributors
Display; sales and purchase
First user
Second user
.
.
.
Retirement
Recycling of parts or disposal

All objects of design go through some such sequence that ultimately ends up in material entropy. If something can't be sold it ends up in the trash before it can be used. No artifact can be used unless it is also producable, distributable, affordable, etc. Perhaps the task of industrial design is to create pattern and communicate them in such a way that the ultimate entropy is delayed or minimised.

In the process of genesis the designer's patterns must be layered and constitute self-addressing communications.

The blue print must instruct engineers to develop the appropriate production machinery to make the products. The products must enable the advertisers to advertise it. It must be packageable, displayable. After a product is sold, information on its origin, the package in which it could be shipped and sold are no longer needed but instructions for use must now appear. In large companies there are also different users in sequence, each must be able to comprehend the product as it is to be used. In the end there must be

information about the components that may be recycled, how others are to be disposed (like the financial incentives on aluminium beer cans in some states in the US to return them for recycling).

The patterns designers create and communicate must be layered like onions. After each layer is used, the next contains information about a subsequent step. The layer also must contain the "addresses" of people who are engaged in the next step and direct the patterns to the appropriate receivers.

Thus, designers do not design objects but use, which is an informed interaction involving users, material entities, symbols. The artifacts are mere sign-vehicles through which users are enabled to create patterns of interaction. A religious implement enables a priest and a community to proceed in a ritual. A spoon enables a user to interact with food, perhaps in the context of other people who observe the process and thus participate in it. Artifacts are parts of the process. They enable to come about and are in semiotical terminology metonyms (signs for wholes of which they are a part) (It is somewhat misleading to judge objects of design by pictures that exclude the very context these objects invoke. This is a practice that denies artifacts their possible meanings and misdirects designers' attention to a sculptural or context-free aesthetical concerns).

Cognition

This story or model concerns the role artifacts play in human cognition, in cognitive processes inside someone's mind in which designed objects participate. Interaction (perception and manipulation) with objects extends the circularity of cognitive processes into not directly experiential domains.

Without going too deeply into cognitive theory, I want to contrast the current conception with an alternative one and derive some directions for industrial design. The two approaches are control theory (CT) and pertubation of autonomy theory (PA).

In CT the brain is seen like a camera, stores images or representations of an externally existing world. Individuality of world constructions is denied and all deviations from "accurate perceptions" are labelled between biased and pathological.

In PA and mind is autonomous, has its own cognition, stimuli are merely perturbing mental processes and are incorporated in its constructions.

In CT, communication is seen as a sender's ability to make a reciever conform to his or her own intentions (see the aim of advertisement or military commands). In PA communications is a two-way process, contributes to understanding and is basically dialogue.

Architectural determinism, the belief that architects are incharge of the arrangement of spaces by functions conforms to CT whereas PA leads to a participatory approach in which the architect honors the users ability to create or contribute to how spaces are used.

With CT in mind artifacts tend to be designed machine-like, are specialised in function and hardware oriented forcing the user to adapt to the designed

objects by building adequate models of them. Being specialised, there often is only one right way of using them. With PA in mind artifacts tend to be designed multi-functional, transformable, combinatorial or smart and are soft-ware oriented. They predominantly enable (and minimally constrain) users to engage their environment. When artifacts are smart (computers or human-like), they might develop models of users to better serve their needs. In PA interaction resembles a dialogue, in CT that of a stimulus-response sequence.

With CT in mind, designers tab the user's extrinsic motivation, making artifacts a means to an extrinsic end which is the purpose of the object's use. PA encourages to add to this intrinsic motivations of which there are two forms. One derives from having fun with use, the motivation derived from play and the pleasure to act competently. The other derives from being part of a collective whole, the motivation derived from participation in rituals and the knowledge of being part of the larger universe, a cosmic dance.

With CT in mind, understanding the meaning of artifacts tends to require instruction e.g. by manuals, training sessions, a certified teacher or membership in a profession. With PA in mind, the meaning of artifacts tends to be acquired or made up by a user in interaction. Design aims to make artifacts self-evident, self-instructing. Users learn by exploration. Errors are not punished, their occurence is encouraged for they inform the user about limits of the range of possibilities. Artifacts must therefore be robust to user errors. Artifacts must also be designed to be semantically redundant, allowing user to exercise their preferences for visual, tactile or auditory explorations without difference in effect.

With CT in mind,artifacts are designed to be technically and operationally efficient or performance oriented.. With PA focusses attention to the cognition of the
user and designs are to match how users approach an object trying to understand and use it. This often calls for layered designs.

a) The overall appearance should inform the user what kind of thing it is, e.g. a xerox machine.

b) Upon closer examination some of its qualities may come apparent, e.g. it is fast, complex, automatic (as opposed to the qualities of other copiers).

c) The metaphors may inform the user about the work flow, input-output connections, composition and interconnections.

d) After understanding what it does, the user may want to know what is variable and how to control this variability. Machine invites exploration.

e) In case of breakdown or error, user needs to penetrate into another layer of interaction, there being informed as to how each error may be corrected. The machine assists the user in efforts to repair that machine.

f) A further layer may be accessible only to experts or repair persons. Ordinary users being prevented from access by unfamiliarity of the symbolism employed as well as inaccessible doors or fasteners.

With PA in mind, designers have to consider several levels of understanding:

Phenotype - the actual version of an artifact

Prototype - phenotype less accidental details

Ideal type - prototype less all non-essential details, the gist of an artifacts' meaning

Archetype - the largely unconscious idea, embedded in the collective unconscious of a culture and by which individuals connect with the mythology of that culture and to its history.

The surface meanings of the phenotype should be in resonance or in harmony with the deep meanings of archetypes. This may be responsible for the sense of beauty and being at ease with the world of objects outside. This ultimate symbolism (relations between conscious and unconscious) is due to C.G. Jung.

The practical consequences of design with the semantics of artifacts or product semantics for short is :

1) A concern with processes not with objects the merely participate in it and are merely contributory to human interaction.

2) A concern with the symbolic order of a culture not with the technological rational arrangement of objects. It is through the symbolic order that the life of individuals becomes meaningful. The technical order may yield remarkable technical accomplishments but has shown to be ultimately destructive of the environment which has so far supported it.

3) A concern with the user as a human being, neither with a buyer who is no longer of interest to industry once he has bought what he or she was asked to, nor with a consumer who is of interest only to the extent he or she consumes (eats up or destroys the usefulness of a product).

4) A concern with the environment of humans both symbolic, by preventing semantic pollution that decomposes the symbolic connections between things, material, by slowing down or minimising entropy.

5) A concern with liberating people from technological determinism (i.e. from the fact that we tend to surround us with things without apparent use and seem to live to keep an industry running that may no longer increase our psychological, social and political wellbeing).

SEMANTICS IN BASIC DESIGN

A.G. Rao

The concept of 'Basic Design' or 'Foundation Programme'[1] came into prominence with Bauhaus, the famous design school in twenties. In some design schools it is dealt as courses in 'Elements of Design or Form'. Pedagogy of Basic Design focuses on:

- Sensitivity to perceptual (especially visual) world.
- Articulation and Expression in Visual domain and
- Value orientation to result in self identity or self discovery of the student

Basic design become the preamble to learning 'design'. A student is ushered to the 'world of design' through 'Basic design'. And the quality of Basic design has tremendous bearing on the 'design personality' a student develops later. A student encountering Basic design has many similarities with a child learning language while encountering the world around.

This comparison is significant because 'children seemed to be innately gifted learners, acquiring long before they go to school, a vast quantity of knowledge by a process, Seymour Paper calls as "Piagetian learning" or 'learning without being taught'[2].

Seymour Papert[2] has also put powerful arguments on how a subject like Mathematics or Computers could be taught to children by creating a Math-culture or Mathland in which, it would be as natural to learn Mathematics as language in any culture. Similarly we can hypothesize that it would be natural to learn design in a 'design culture'. Probably this is the reason for high standards of 'Italian design', though there were no 'design schools' in Italy till late. Richness of Italian Art (Sculpture) and design heritage is well known.

There is more to learn from looking at how children learn language before they are schooled. For a child, 'learning language' is a 'meaningful life action'. Language learning is not separated from life action or learning about the 'world around'. 'Meaningfulness' or 'ability to relate it to oneself seems to be the key factor 'Piagetian learning'.

Today, if we take a look at the 'basic design' programmes all over the world, they are highly 'syntactic' oriented. The elements of design like 'line, form, texture, colour, proportion' ..... which form elements of the grammar of 'design language', are taught in an 'abstract' framework. The main contention of the given task is to 'play and explore'. There is no specificity on what is to be explored or achieved. Either student has to depend on the experience of teacher to learn what is right and wrong or depend on his/her inner feelings or 'self expression'.

A 'meaningful' framework is absent to the 'syntactic explorations' which a student is supposed to make. Main drawback in these 'syntactic explorations' is that the student is unable to connect 'these' with the knowledge he has gained outside this domain. Infact such connections are

expected to be made by the student somehow. We have experienced this difficulty in our programme3, way back in semantics. 'Syntactic based' basic design tasks remained abstract and hardly meaningful to the student. Basic design had very little influence on the later tasks in product design.

Considering 'Piagetian learning', it is obvious that the basic design tasks become 'meaningful'. Such 'meaning in the tasks' could be easily brought through a 'Pragmatics' based approach. For example a student can directly work on a 'live design project' as an apprentice to a senior designer. But this approach which was being followed before design schools came into existence, has its draw backs and cannot satisfy the needs of Industry for trained designers. In fact it may defeat many of the contentions of Basic design which demands a free learning environment.

As a new solution, I propose a semantic based approach to Basic design. "Semantics' which will make the basic design an enfolding process, enabling the student to absorb and articulate the various life experiences will form the core of such a programme. It would become possible to bring the spiritual and ephemeral aspects of experiences of students into syntactic structures of design, through such an approach.

I shall elaborate this approach through the results of some of the basic design tasks we (I and my colleague Mr. A. Gaffoor) have been trying out with the students of M. Des. programme over the past 5 years.

1.0 One day tasks in clay

1.1 Masks of Gods

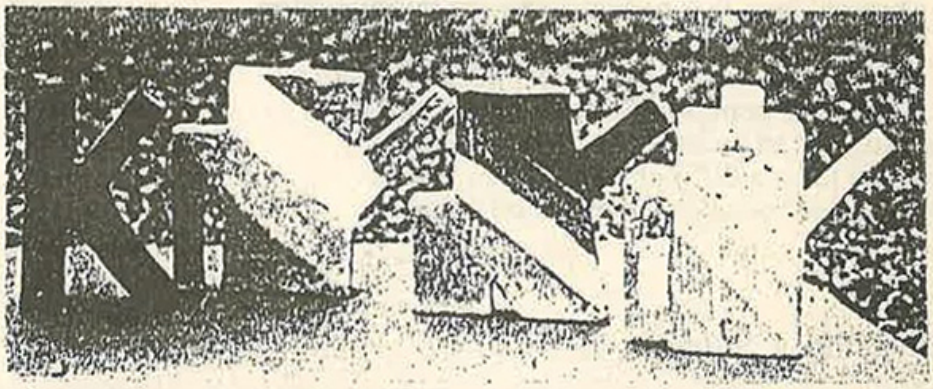
For us Indians, Gods and Myths are very real. They are live symbols in the present-day culture; not foreign, exotoric, myths. A theme of masks was chosen for an introductory one day task in clay with the spirit of early man as stated by Giedion [4].

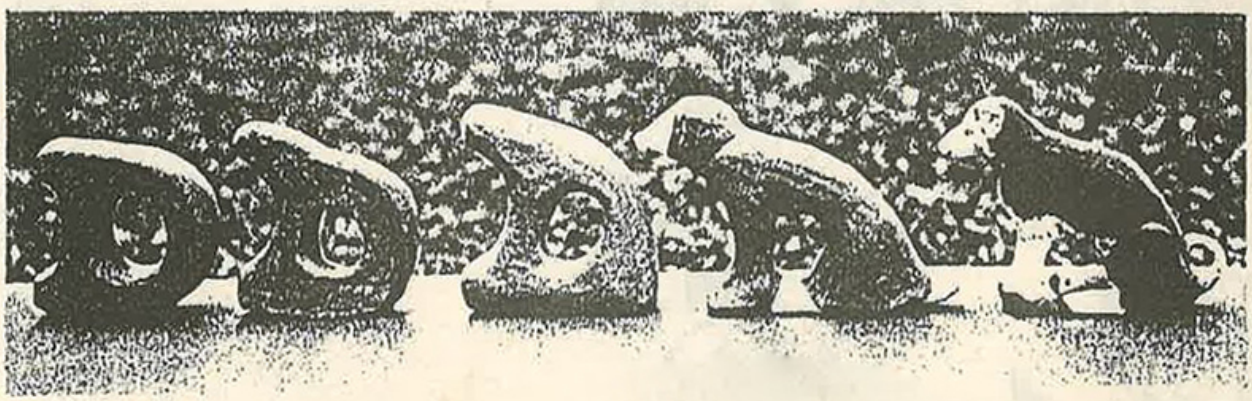
Pre-mythological man was completely embedded in the world which surrounded him. He formed one with it, he did not stand above it, he did not feel himself to be the centre, but a humble element in it. His fate was ruled by powers he could not comprehend. To him the animal was a superior being, a creature greater than he, and at the same time a personification of invisible powers. All primitive symbols are rooted in this zoomorphic age. However simple or complex these symbols, they all represent invisible formes in a universe not yet reduced to a battle-ground between man and man".

Each student chose an Animal, bird or insect to make a Mask of God in clay. Second day each coloured the masks. The task, thought strange, provided a 'meaningful challenge'. Students played with forms and colours to create Gods. Various expressions of Gods like powerful, ferocious, peaceful, deathly were brought out by students after initial discussions. Typical Indian colours were used in uninhibited manner.

1.2 Metamorphosis of letters

Here the task was to achieve 'metamorphosis' of a given letter in stages into an object or living thing starting from that letter. Thus letter 'A' becomes an Apple, 'B' - a butterfly and so on. The 'meaning' or 'metamorphosis' was discussed with examples from Nature. Metamorphosis became a meaningful task. For example a transition of cube to a sphere.





1.3 Akshara devatha or Letter form as God.

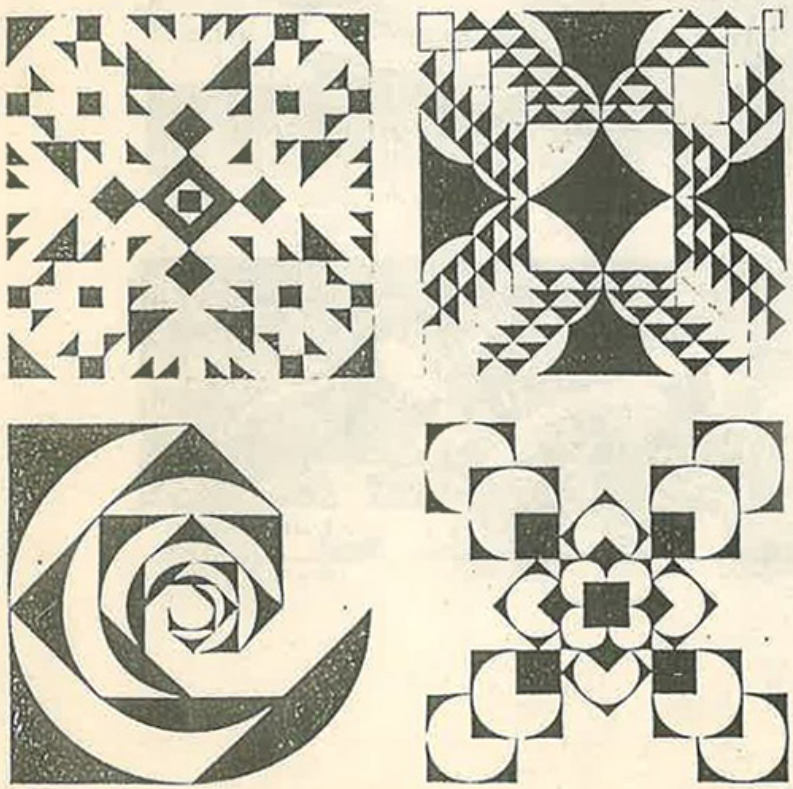
In Asian culture, letters are worshipped as Gods. Letter forms as objects or worship were 'culturally meaningful' to the students. It was comparatively easy to comprehend the requirements of 'formal syntax' as the 'meaning' was already known.

2.0 T - becomes Old

The challenge posed here was to find a graphic interpretation of letter 'T' becoming old. Various metaphoric comparisons were made to understand 'oldness'. 'Formal changes in Nature when things & beings become old were analysed. Parallels were drawn to understand 'T' becoming old. Though it proved to be a difficult first task in 2-D, it provoked thinking to focus the attention on 'graphic language'.

3.0 Flower in a Square

Task in this case was to create a flower in square with squares and circles as graphic elements. The 'meaning' of flower was discussed with many frames of references. Flowering of persons, thousands pealed lotus of enlightenment, ... many familiar meanings and associations provided material for expression of flower revealing its physical & metaphysical nature.



4.0 Flower in a Cube

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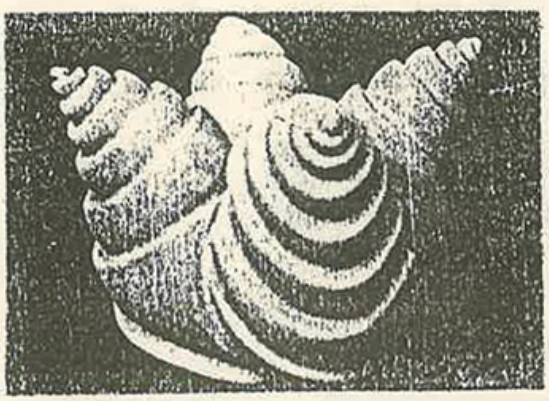

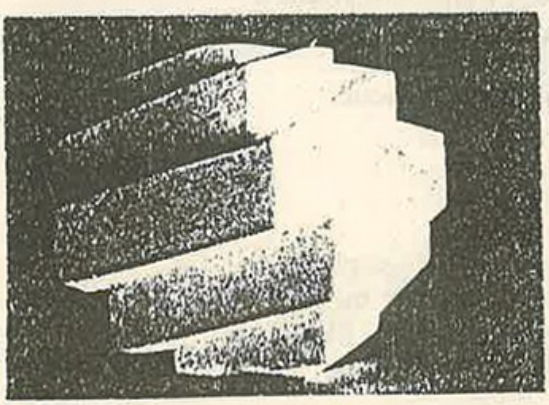

6. Family of Forms

The task here was to create a 'family identity' in three dimensional turned forms. The meaning of 'family resemblence', using the notions of the famous philosopher Wittgenstein, were discussed. In the beginning it became difficult to create a 'form identity' which is recognisably unique. 'Naming of the families' was suggested to students, which became powerful tool. Students used metaphors like Pea-nut, Humburger, Padmasana, Nandi to find 'meaning' in turned forms, and create 'families of turned forms'.

7. Use of Generative Metaphors

In this task the challenge was to generate a new form for a perfume bottle, using metaphors which can be associated with perfumes. Students thought of wide range of metaphors like 'vortex' to bringout the strength of perfume, 'dewdrop' to suggest freshness, 'sprout' to tell the slow spreading of perfume, 'sail' to float with the perfume and so on.

8. Zodiac personality through surface texture

Zodiac personalities were taken as the base for 'meaningful' expressions using industrial textures. The characteristics of each zodiac personality served as a frame work to achieve a composition in textures.

9. Expression in a Product-telephone

Expressions[6] like soft, Hard, Rugged, ... were studied in details. Meanings of each expression in Nature, literature, personality, ... were looked into. This formed a 'meaningful' basis for form variations on a telephone.

10. Telephones as messengers

Another group of students explored the form of telephone using 'metaphors' as base. In Indian mythology 'birds' have often been messengers. A modern instrument like telephone was looked through a culturally meaningful metaphor to achieve new forms.

All these example I hope, would provide a basis for serious consideration of 'Semantics' as a base in the pedagogy of Basic design programmes.

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WEB OF IMAGES WITHIN

U.A. Athavankar

It is significant that the human brain is far larger than that of any animal. Human beings also have a higher ratio of brain to body weight than other animal. It is even more significant that, unlike in other animals, a very large part of our brain is uncommitted to sensory motor functions and is consequently available for higher mental process. This large uncommitted area in human brain offers an almost unlimited capacity to store symbols for objects and events from the real world.

How do human beings use this capacity to deal with the ever increasing complexity of the world around him? The mind forms its notions of what exists outside. It develops its own symbols for objects/events in the outside world - perhaps distorted to a degree. Its representation in the brain is based on a very efficient retrieval strategy that influences the organization of these symbols. The mapping process involved is largely directed by the nature of the objects encountered in the environment.

Constraints of a Retrieval -

The need for effective retrieval from this vast store house of information has prompted human mind to develop a storage strategy based on semantic coding and organization of the input information. What makes it significant to the field of design is the fact that this coding is based on sensory information and for most objects it is primarily the visual component of the information about the object, that is used in processing. Perhaps as students of product semantics we can learn to deal with semantic issues more effectively if we understand how the coding process exploits the semantic information available from the objects.

Unique Human Ability -

Human intelligence is based on some unique abilities in which he is far superior to even the most sophisticated and intelligent machines. Perhaps this difference needs to be illustrated. Not long ago artificial intelligence researchers developed a sophisticated programme, hooked to a mechanical arm, that could understand and respond to a handful of spoken commands. This intelligent behaviour was somewhat flawed by the fact that the robot arm could only respond to voices of its designers. Compare this with a performance of a child, who can respond to so many voices with ease[1]. Many of the mental processes, that are relatively easy for human beings, turn out to be extremely hard to simulate in systems based on artificial intelligence. Imagine a problem of recognizing a vacuum flask in a picture

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[1] More recent knowledge based intelligent systems can do much better. Yet an average adult can understand and comprehend instruction from very wide range of speakers, speaking without particular care and against variety of background noise.

containing similar objects. The enormous variety available in shapes requires that the computer matches certain stored general characteristics or rules and tests them in a sequence. While the process looks simple, generating the list of characteristics is not. Think of what rules must be used to discriminate a water bottle, a plastic liquid pack or a kettle as being distinct from modern vacuum flask. The rules should include all legitimate example of vacuum flasks and reject others. Yet human beings can also do it effortlessly, all the time and for very large number of objects.

Categorization leads to Concepts -

It is only the human species that assemble their experiences into categories at various levels of abstraction, label these categories with lexical terms and use these terms effectively in communication and thinking. The strategy used to construct categories and to form concepts is uniquely different and can offer clues on how visual information can be controlled. A study by William Lobov, a linguist, illustrates this effectively (Lobov, 1973).

Lobov's study shows a relationship between the meaning of the concepts and the variations in product form. He randomly presented the objects shown in fig. 1 to his subjects. The object was identified as a 'cup' when its width was almost equal to its depth. As the width became greater than depth, the probability of its being called a bowl increased. Deeper the object was, it tended to be called a vase.

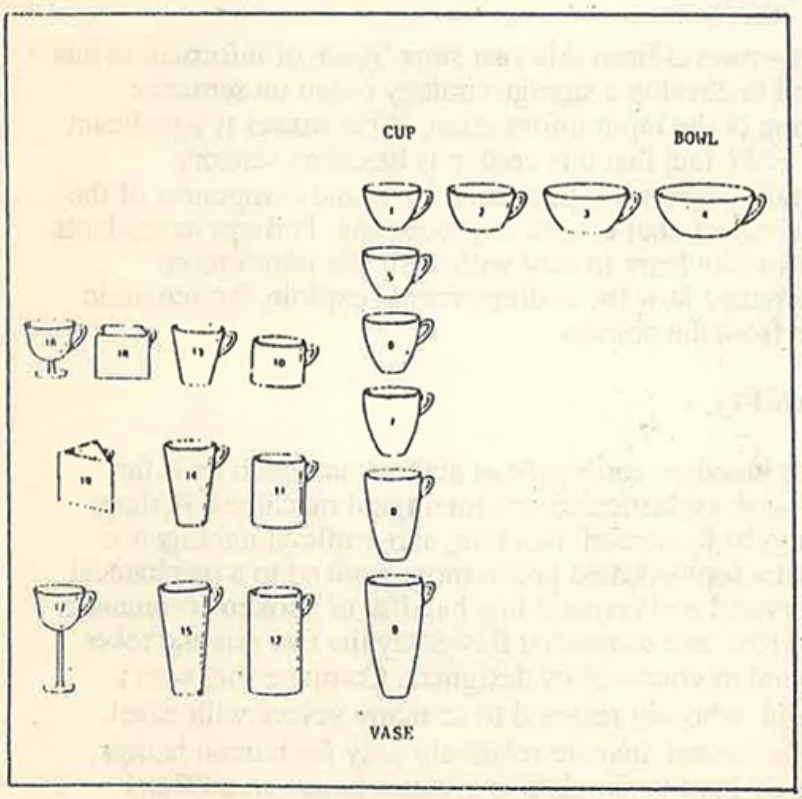

Figure 1

Our ability to recognise range of hand writing is enough evidence of this ability. We can not only read familiar hand writings, but also comprehend writings not previously seen. We seem to have a well developed sense for spotting regularity in raw data and develop overall coding rules (or a flexible

description) for the entire class of objects. This process of categorization is one of the ways by which mind develops order out of chaotic variations that occur in the real world. Human beings can effortlessly take similarity decisions and discover laws and rules from the observation of objects/events and effectively use them to deal with the new objects.

I believe that the approach to product semantics as well as architectural semantics can be based on the unique system of information processing used in cognitive
process than on the model used in semiotics. The paper attempts to explore this possibility further.

I PRINCIPLES OF CATEGORIZATION

The process of categorization shows the ingenuity of human information processing strategy over the intelligent machines. Even when objects show variations, so far as the behaviour and properties of the objects within the category remain predictable, it is advantageous not to differentiate the object from others. So instead of categorizing objects into large number of finely discriminate and tight concepts, the mind automatically chooses the cognitively economical option of behaviourally and cognitively usable proportions. The categorization process treats nonidentical objects as equivalent when differences are irrelevant to the human response. (Rosch et. al. 1978.)

In developing these categories, human mind is further aided by the existence of structure in the world. The fact that it is almost possible to guess the category name even when very small portion of the object (or organism) is seen, suggests that for most objects. Perceptual and functional features occur in somewhat unique bundles.

In other words, objects within a category appear to substantially share features that show a clear co-relation. For instance, creatures with feathers are more likely to have wings than creatures with fur. Existence of structure based on co-relations within the category also helps develop natural discontinuities across the categories. During the initial learning phase, this structure is used in perceiving the categories as distinct concepts.

Internal structure of categories -

The Labov experiment also indicated that the concept boundaries do not show sharp discontinuities and they seem moveable when context or subjects change. People appear to define the meaning of the concept cup, bowl and vase to offer a fair degree of flexibility. The fuzzyness of the boundaries, an important characteristic of the human categorization process, does not create operative problems because the categories are not defined by its boundaries but by its centre. This unique scheme allows flexibility in dealing with wide range of deviating instances of the concept.

In the above experiment, subjects could identify a shape that everyone unmistakably called a cup. This suggests that we seem to consider a particular example (form) as a typical member of the class - a best cup, a doggiest dog, a typical bird or a chair. Even when agreement is difficult on category boundaries subjects invariably tend to agree on typical example. It

may be single example or a large number of similar examples that collectively represent typicality or the central tendency of the concept. Treating this central tendency as a prototype representing the entire category helps to develop discontinuities between objects. For example the shapes shown in cup-bowl experiment had no natural discontinuities. However on the basis of already developed prototypes for cup and bowl, human mind could develop cuts in the series of shapes presented (refer fig.2)

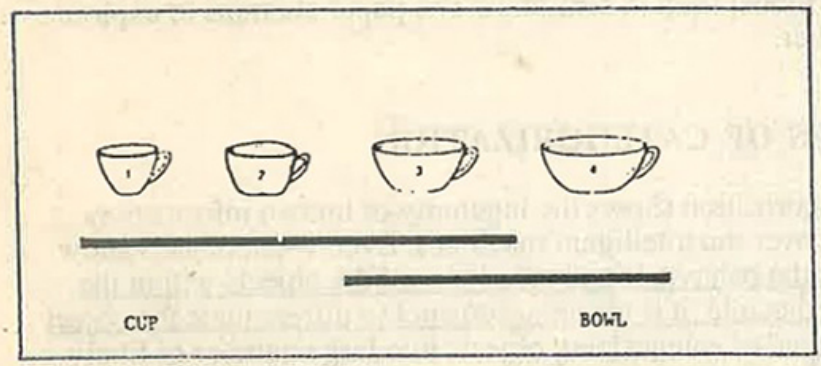

Figure 2

Category Structure mirrored in Natural Language -

Typicality and deviations from typicality manifest themselves in natural language. Typical instances or the prototype represent the core meaning of the linguistic term. It is the essential definition of the concept i.e. the cupness of the cup or the bowlness of the bowl. How do we then handle not-so-typical instances in communication ?

A typical examples tend to be always referred to with specific qualifying terms, often called as 'linguistic hedges'. Terms like 'almost and 'virtually' normally precede citing of instances fairly close to the prototype. Other terms like 'rather big' or 'unusual' show a relational distance from the prototype. The relation between use of linguistic hedges and a typical examples is explored by Smith. (Smith et al, 1974.).

It is significant that once the culture has accepted the term, it is also likely to affect the way the real world is perceived later in that culture. So natural language could be considered as a potential manifestation of the category system as well as an influencing structure for that culture.

Frequency as a Basis of Typicality -

Typicality depends primarily on what is available as examples of that category. It is mainly the numerical strength than good and bad that appears to matter. With the popularity of the new products, the typicality or the prototype will continue to shift with time, accepting and assimilating changes. This shift has as much to do with value system of users as with the powerful marketing efforts that have gone in promoting the new products. The transition in images is apparent now in urban products like cooking ranges, men's shoes and suit cases in India. Perhaps the prototype of family car in India will shift to accept Maruti-Suzuki, which infact is now, only a sub-prototype for a concept 'small car'.

Most unselfconscious and vernacular creations tend to be closer to the prototypes. The creators main basis is towards communication of category belongingness and thus on display of individuality. Tree temples, sign boards and interiors of small shops are some of the examples that manifest typicality - a result of a dialogue between the client and the craftsman. The story is quite different with formally trained designers. Perhaps we can understand the process as a hypothetical storage system. We accumulate similar memories in the same region of the memory network, building up a centre of greatest density - a centre that is often referred to as a prototype. A new example can be seen as positioned with respect to the centre, on the basis of the degree of typicality in its features. It is significant that the decision on positioning is done primarily on the basis of the visual information, when dealing with concrete objects.

Design Approach -

Its implications to product design are clear. People appear to have perceptions about the cupness of a cup, the sawness of the saw and torchness of the torch. Product semantics cannot neglect investigations into the nature of prototype, which represents the core meaning of the product concept.

It is important that product form shows its belongingness to the category in order that it would be potentially recognised as its legitimate member - not by default, but through conscious and systematic efforts. But should the design reflect typicality? If so, to what degree?

Theoretically, it is possible to treat category belongingness as a scalable variable - allowing designers to carefully position the product form at a measurable distance from the central tendency. The key issue is how close or distant you want to be from the central tendency?

Balance as a Key

New product forms always look for new interpretations around the typicality and choose to influence it. It is a search for an approach for effective communication achieved by

- a balance between conventions reflected in typicality and formal innovation.

- a balance between positive clues declaring its category and the deviations needed to give it an identity.

- a balance between continuity of tradition and individuals idiosyncrasies.

The actual decision tends to be highly context dependent. But as a first step, it is important to inquire into the nature of the prototype as well as its fuzzy boundaries. It is the understanding of prototypes that will ensure continuity and it is the exploration of fuzzy boundaries that will give clues for potential deviations. (Number of methods have been explored for such an inquiry. They are not listed here for want of space).

The balance is the key. The world will not be interesting enough, if we have

objects which are almost close to the respective prototypes. But it is even more difficult to visualize living in a world where the opposite is true. To a designer seriously concerned with semantic issues, it is a tight-rope walk.

II THE WEB OF CONCEPTS -

Are concepts and prototypes so independent that they can be investigated individually? Human mind in its search for still more efficient and economic information processing strategy, learns to map the objects more holistically as a part of larger network of objects and concepts. It is aided in this by our extraordinary ability to deal with relationships between information inputs. The human mind maps the real world, where concepts are intricately related to each other with functional links. In perceptual mapping, concepts hardly occur in isolation. In fact overlapped and completely tangled concepts are more a rule in information processing, than exception. The mind recreates a working model of real world through these links.

Rosch (Rosch et al., 1978) has conceived and presented a model of a category system spread along vertical and horizontal dimensions. In this model each category within a taxonomy is entirely included within one other category at a higher level. A typical representation is shown in figure 3.

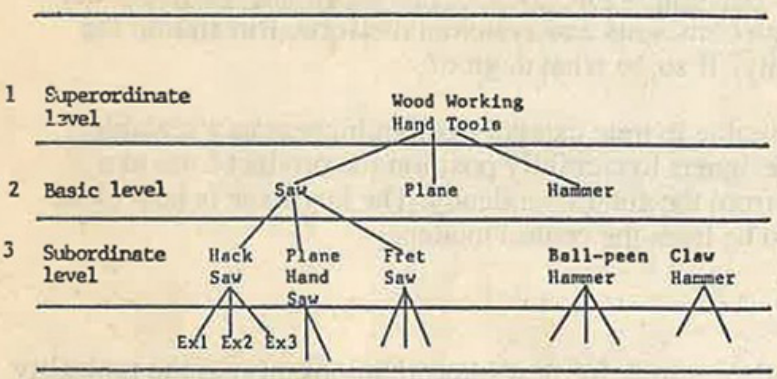

Figure 3: Categories and Levels of Abstraction

It is important to understand how the levels along the vertical dimension work in defining the concepts. An example will illustrate the point. The shared semantic features in the actual instances of the subordinate level concept 'hacksaw' help define this concept. In other words these features contribute to the meaning of the term 'hack-saw'. In turn, hack saw as well as other subordinate level concepts like fret-saw and plane handsaw share semantic features that define the meaning of the basic level concept 'saw'. Similarly features of basic level concept saw, plane, chisel and marker help in defining the meaning of the superordinate term 'wood working tools'. In number of cases, features shared at this level are very few. They are difficult but not impossible to comprehend. Category belongingness along the vertical dimension automatically means sharing semantic features. The relationships along the vertical dimension establish the rich links between the concepts.

Clue to the Category Prototype -

We can look at the earlier described concept of prototype in this new context. Rosch has convincingly proved that it is primarily at the basic level that the categories can mirror the structure of attributes in the world. This is also the highest level of abstraction where the categories tend to become defined in terms of prototypes or typical instances, that contain attributes most representative of items within the category. So the typical perceptual tasks like in recognition, the objects are first seen as members of the basic level category. To process objects at super-ordinate or sub-ordinate level requires further processing. To designers, this not only underlines the need to investigate the nature of prototype, but also shows a possibility that it can be investigated through subordinate level product concepts.

Subordinates as Conjoint Concepts -

For designers, the other two levels also offer interesting directions as well as challenges in study of product semantics. Returning to the earlier example of wood working tools, it is possible to ask a question 'What makes a hack-saw a legitimate deviation of the basic level concept saw? What exclusive semantic features should the product contain, that will give it the subordinate level identity?'Shifting our attention to deviations (differences), we can look at the other concepts like plane-saw, fret-saw etc. The subordinate level concepts are conjoint in nature. Their definition is based as much on the prototype at the basic levels as on semantic (and also functional) features exclusive to that subordinate category.

Unless seen as a part of the taxonomy, the dependence on basic level category belongingness is likely to be underplayed in design. But the importance of this primary belongingness to the basic level category is clear in any efforts to describe the subordinate level concept in natural language. Newport and Bellugi's study of American Sign Language (ASI) for deaf reveals the nature of dependence on basic level category in communication (Newport et al. 1978).

Product concepts do not loose their identity by being meshed deeply with others. In fact it is quite the opposite. The identity of the concept lies precisely in how it is connected to other concepts. It is the system of links that gives the product its identity.

Nature of superordinates -

1 Superordinate level concepts pose a different challenge. Above basic level, very few semantic features are often shared. With the result images of the concept are likely to be fragmented and only collectively represent category as a whole. What semantic features are shared by the category 'wood tools'? Obviously it is possible to understand what features give the tools 'wood toolness'.

2 This is one of the issues that modern movement tried to tackle. By assigning features at superordinate level, large and independent design programmes could develop identity in diverse categories of products at basic level.

Conflict -

3 Human mind works to balance two contradicting requirements. It seeks deviations that interests it but also simultaneously searches for belongingness. This personal conflict reflects in an individual's selection of products in his environment. He seeks assurance and psychological comfort that comes from predictable responses that are expected from the category and also looks for deviation for personal identity.

4 There is a lesson to be learnt in this conflict, particularly now when function does not seem to have deterministic influence on product forms. New product forms should seek to work around a prototype, so that people can respond to them with confidence. There is an assurance that comes from visual indication of category.

5 Design approach in modern movement under-played the need for systematic inquiry into semantic issues, because it believed in projecting functional features as its semantic devices. This logic is being increasingly questioned now - without an alternative framework to guide decisions. Formal representation of taxonomy offers an elegant analytical model that reveals the nature of primary category belongingness[2]. To designers it can also offer an excellent strategy to approach formal issues. It suggests directions to borrow new semantic features from each other and yet retain communication.

III FURTHER EXPLORATION OF BELONGINGNESS

6 Need to respond to function, environment and culture requires that most real world products simultaneously belong to more than one system of categorization. For instance, concept of belongingness acquires additional complexity when product forms are also required to respond to specific sub-cultures. This is where alternative ways of charting the taxonomic structure shows new exploration possibilities.

The lexical term studio lights itself indicates its membership of dual concepts (Ref. fig. 4). The mapping in two different ways further indicates how semantic features could be borrowed by moving within these spaces to achieve dual membership. This form of mapping is an excellent generative tool for designers. The approach is useful also to explore the semantic issues involved in design of product components. These studies have shown interesting directions for legitimate deviations from the primary category prototypes towards another concept.

Dealing with New Products -

New product ideas continuously support changes in modern life style. What significance will such an approach have in dealing with totally new products?

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[2] Mapping of taxonomic structure appears to have interesting applications in architectural semantics - issues are normally discussed under the general title or architectural typology. Some preliminary studies at IDC have indicated promising results.

I believe that this kind of analysis is even more important in new products, since the first product output is likely to substantially influence the category prototype and shape consumer perceptions. Most new products do retain relationships with categories that they substitute functionally, however loose this may be. (Sometime they are likely to be perceived metaphorically as substitutes.) Such clues are normally available in natural language descriptions of new ideas. Using these, it is possible to develop maps that can deal with semantic issues connected with new products. Such an approach will ensure that new ideas are semantically rooted in the culture and are not alienated from it.

The first product to get an acceptance in the new category is likely to influence typicality. Unfortunately appropriateness of the form does not seem to matter at all. By being first, it has a very high chance of becoming a part of the rapidly emerging prototype. It is then difficult to wipe out already formed perceptions

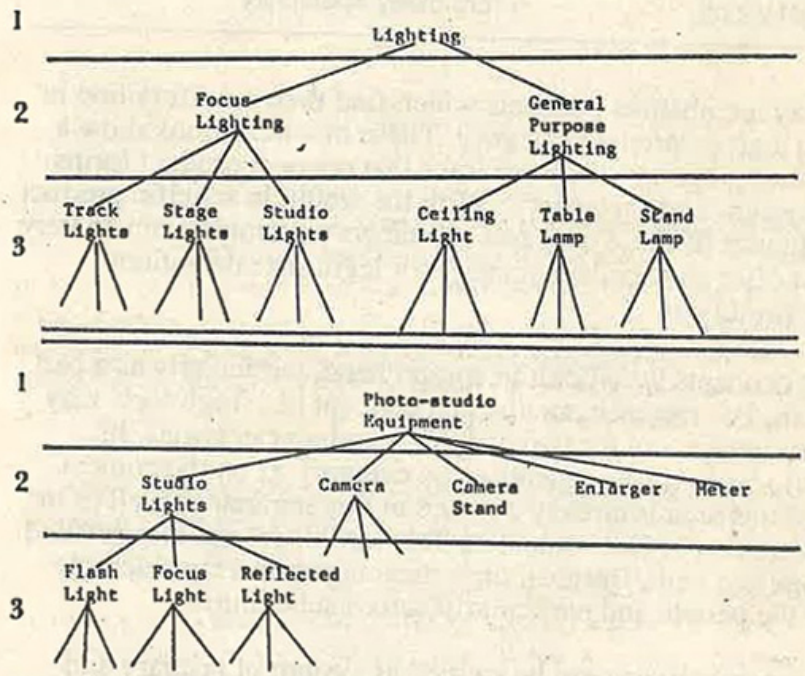

Figure 4 : Belonging to Multiple Categories

without an intense and well organized effort. The other products to enter later in that category are forced to consider this reality. Typical Indian example is the water filter with ceramic candles. The form radically departed from category prototype of domestic water storage and to a certain extent its super-ordinate 'storage devices'. Instead it favoured contemporary kitchen vessels and appliance images from its environment. These perceptions are now difficult to displace.

Social Meaning - Another form of Belongingness -

Expressing the primary (or multiple) belongingness to categories is one of the major concerns in product semantics, but real world objects are infact complex product concepts with multiple links. For example take the following complex concepts. -

Subordinate Category	Nature of secondary belongingness
Baby shoes	User specificity
Sport shirt	Attitude specificity
Evening Dress Wedding Sari. Dress	Occassion specificity
Five star hotel room Delux hotel room Janata Chair	Class specificity
Sankheda chair	Region and craft specificity
High tech wrist watch	Technology specificity

Delux, janata, sporty are abstract concepts which find their manifestation in specific features in a given product category. These manifestations show a different kind of belongingness - they are links that connect product forms with user's value system and aspirations. With the result, in specific product categories, the influence of these concepts on category prototype can be very strong. They infact offer an excellent strategy for legitimate deviations around a category prototype.

Nature of abstract concepts is difficult to comprehend, particularly as a part of the product form. For instance, an abstract concept like 'high tech' may be quite differently interpreted for two different product categories. Its expression seems to be as much dependent on category as on the context. The importance of this area is already stressed in this seminar as well as in most of the literature on product semantics. It is for this reason that detailed discussions are omitted here. Besides, their meaning shows considerable variations across the people and particularly across subcultures.

Product related semantic issues can be studied as system of primary and secondary links that reveal category, identity and symbolic values. When dealing with formal issues, design can be considered as an ability to develop a coherent formal concept by consciously balancing the two aspects. Considering the current published design output, one cannot but stress the need to emphasise the concept of balance. The perceptual cost of neglecting it is enormous. We may inadvertantly overload the uncommitted area in the brain with routine task for no extra benefit.

Most product concepts not only show complex links with other objects but also with specific abstract concepts. Decoding this intricate system of links is an important aspect of human information processing. Overlapped and tangled links are the very identity of that product. The tangle not only reveals the richness of meaning of the designers statement, but also helps him position the new object of his personal world map in his head. Designer looking for a new meaning (or interpretation) must understand how to untangle some of the present links and build new tangles, hoping that it will influence and interest the users.

The paper argues that systematic inquiry into the nature of concept at superordinate, basic and subordinate levels can offer some clues to people's perceptions about the category and its members. So fare designers have intuitively dealt with some of the issues discussed here. However, understanding people's perceptions is not easy. Access to their visual imagery associated with concepts is even harder. There is a need to experiment with new and simple methods that designers can use.

This paper only projects a theoretical framework for discussion on semantic issues in synthesis of form. However new methods and approach are already in an experimental stage at IDC. Some of it is showing excellent promise. Though discussion on this is beyond the scope of this paper, it is worth mentioning here that the approach has yielded a much deeper understanding of the product concepts at various levels as well as of the semantic issues.

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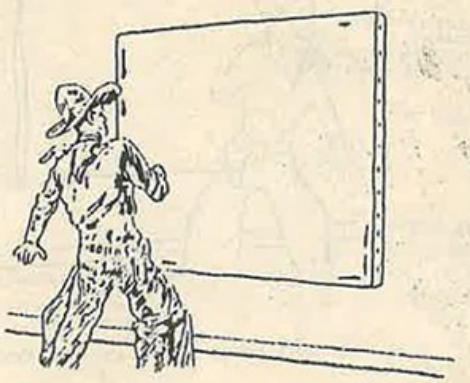
ZEN AND THE ARTHAYA OF THE FLUORESCENT TUBE

Roger Connah

Closure of meaning - first brushes - sporting with Edmund Leach - Vivaldi and volvas - From Liminal to Littoral - Simple mistakes like assuming communication? - Carnivalisation of Theory - Voluptuous Resistence - Screening the scene and scening the screen - Cartian patterns of play - The Theatre of sign - Chameleon Readings - Digital anxiety - Privileging messages - The Terror of Images - Images of Terror - Peep-shows of meaning - Barthes put to the Edmund Leach Test - Catastrophe or Contestation - Zen and the Arthaya of the Fluorescent Tube - Postscript: Fiction Mr. Barthes!



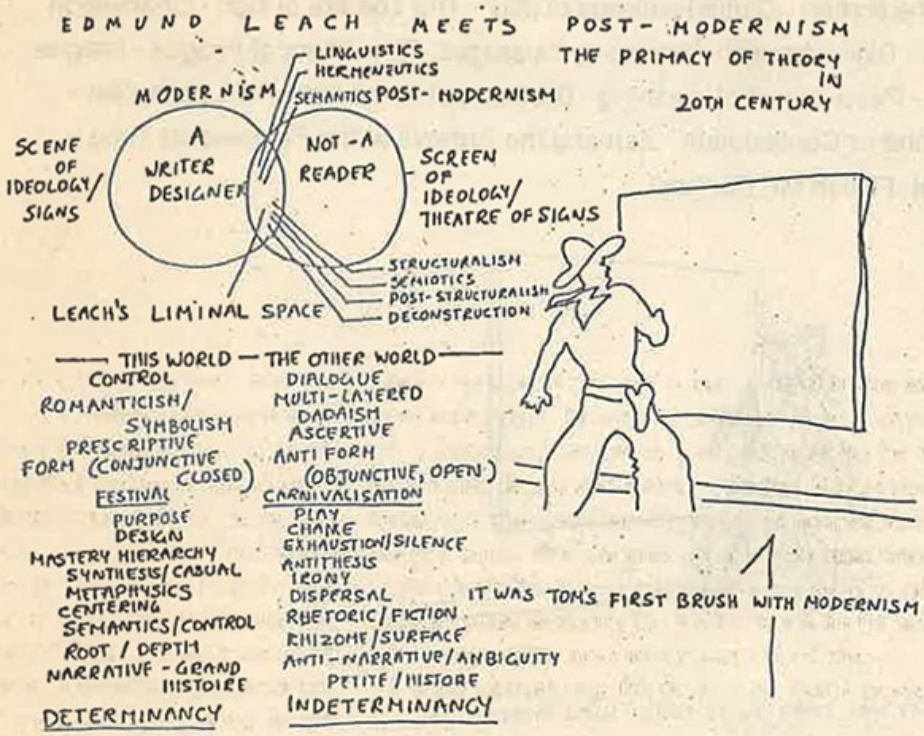
IT WAS TOM'S FIRST BRUSH WITH MODERNISM

1

A closed and open frame is something we are perhaps more familiar with in cinema. A closed frame tends to be self-sufficient. It is from within that frame that we derive the meanings presented to us. An open frame suggests that there is an off-screen space; a space in which events may be going on that alter the meanings of the frame itself. Hollywood tended to be 'closed' frame relying on the idea of the 'whole' picture; New Wave cinema from the 1950s onwards has tried to explore the notion of beyond-the-frame. It is a notion of boundary and the desire to close or delay that closure of meaning. Here at the end of the day I am in the rather ambiguous situation of having to 'close the day'. Though silence may be a questionable assent and though the enquiry and traces left here are western traces, each Indian in the audience may begin an interrogation of their own culture if merely to discover that many of the ideas discussed here are already part of philosophical and aesthetic disciplines in India.

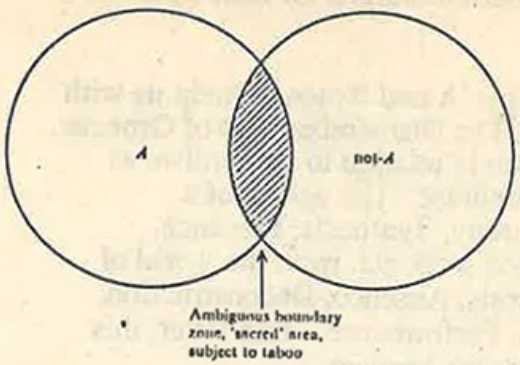
The West at present might be seen as interrogating itself. Interrogation is incessant, tortuous and anxious. Listening to these talks that have gone before there appears to be a recurring problematic, that of singularity/plurality. Either speakers are rushing through theories and

models, diagrams and metaphors to converge on some singular meaning. Often others, though less turbo-like, still, however want to leave divergence behind and they too converge. Communication doesn't appear to be that simple wishful-thinking, direct route from the utter A to the Received B. There are edges, zones, boundaries; they are ambiguous in implication, their anxiety and conflict are messages too. We should recall here the warning from Edmund Leach: The extent to which any particular sequence of ritual activity (is not communications a ritual activity?) can be seen to fit will depend to some extent upon the ingenuity and imagination of the anthropologists (theoretician) who is making the analysis, but I personally find such diagrams helpful."



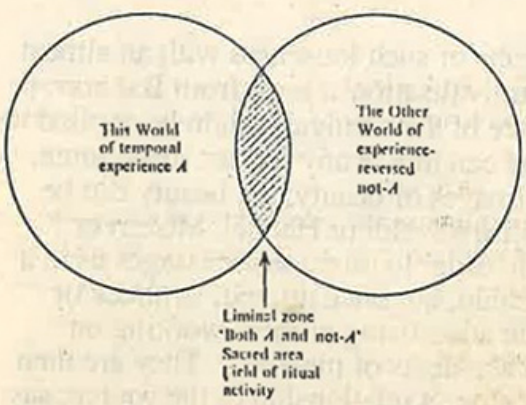
Forewarned, I too find diagrams and models helpful and being with Glen Baxter's 'Tom'. Let us imagine Tom is returning to the beginnings of semiotics; he is approaching a canvas. Without the legend - 'Tom's firstbrush with modernism' - legend, the canvas is empty (and modernist?), the situation ambiguous. In the West modernism itself has become a rhetoric. It can thus be signalled by a representation of an apparently 'empty' canvas. Whether abstract, painted all white or just begun, the canvas connotes 'modern'. Even the lack of the frame would probably be enough to indicate 'modern' and hence close the meaning of the 'emptiness'. But closure is not so simple; Tom is dressed in another guise, a rhetorical set of clothes from the garment code. Again there would be little argument about converging on Tom as a cowboy. From here on the messages begin to displace themselves. A cowboy may appear 'not' to visit an art gallery. Or then Tom, a fine-arts-loving cowboy, is just discovering 'modernism': Tom is confused, amused, befuddled. His situation may include all these states. He, as much as we the reader of the drawing, is faced with displacement and juxtaposition. Strangeness or an ambiguity results. He may continue to stare or, if this were an animated cartoon, he may walk away, spit, curse, laugh, begin painting, spray graffiti (now

considered painting?) or bring out his gun and shoot holes through the canvas. The possibilities are endless but that next frame, that next step would confirm or alter our understanding of the drawing.



During a seminar or conference I have always been fascinated with the number of models and diagrams that are put forward to explain the way meaning is produced, symbols are created, communicated, connected. We live in polysemy; we have a plurality of models for information, disinformation, communication and miscommunication. Knowledge models everywhere depending on the ingenuity and imagination of every one of us as readers able to take the message on!

Recalling Edmund Leach - I always admired his own frankness and freshness in the use of diagrams - I decided to sport a little using Tom's sensibility to the empty canvas and Leach's own Euler Diagram from his book 'Culture and Communication'. In discussing the symbolic ordering of the man-made world and its boundaries of social space and time, Leach presents us with a binary model of A and Not - A, where the overlapping zone is indicated as an ambiguous area, a boundary zone, a sacred area, in anthropology subject to taboo. Later when discussing the logic of sacrifice Leach expands this same Euler diagram to over 'This World of temporal experience A' and 'The other world of experience reversed, not-A'. In between now is a liminal zone, 'Both A and not-A', a sacred area, the field of ritual activity.



The liminal zone may have wider applications to communication, to knowledge itself. It is that space where you leave one particular place but have not as yet arrived at another. A fair assessment of semiotics at present too. It is the travelling not arriving; or the continuous state of arriving with all the enigma it entails. The liminal zone I suggest is present within us all; its role can be seen as an area of enquiry that keep us Both A and not-A,

both hot and cold, both clear and ambiguous, both writer and reader of messages, both understander and understood. It is within this zone we might say that much contemporary academic work is being (has always been) conducted. For instance, post-modern literature. Or then what has been termed post-modern literature.

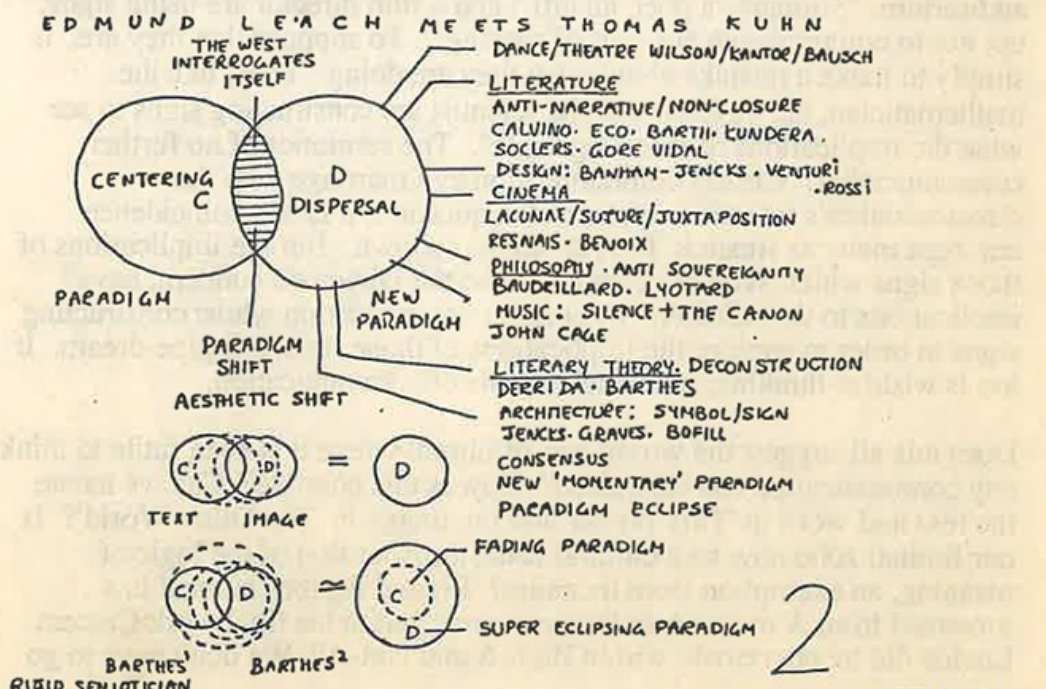
Can we use This World - That World, This 'A and Not-A' to help us with the mechanics of literature? In his book, The Dismemberment of Orpheus, Ihab Hassan characterises post-modernism in relation to modernism as oppositions. These opposition I will paraphrase. The agents of a modernism (A): Purpose, Design, Hierarchy, Synthesis, Presence, Totalisation, Centering, Mastery, Finished work etc. meet the world of Not-A as play, chance, Anarchy, Antithesis, Absence, Deconstruction, Dispersal, Exhaustion, Silence, Process, Performance. This latter, this Not-A, for argument's sake let's call post-modernism.

Is the west epistemologically moving from This World to The Other World? Are we dwelling in this liminal zone which to most of us appears ambiguous, unclear, anxious and upsetting? Can it be re-read and see us over such trauma, both in the western world and the eastern world? Can we identify this in some of the more questionable areas of society like advertising, terrorism and sports; can we enquire into aesthetic to re-constitute late twentieth century ethics? Is this all part of our interrogation, this liminal zone which is being saturated with information theories, communications theories, literary theories. The liminal zone has perhaps become 'theory' itself. In asking for more play in our design what is it we require? More looseness (not fuzziness?) More structured looseness? More rigorous looseness, not shoddiness. Concrete poetry, dadaism were structures of looseness, too quickly disarmed by the failure to understand the ambiguity of its received message. The anarchy or disarray proposed too quickly closed itself off as meanings; the liminal space, necessary for interrogation, was lost. Through movements like surrealism, dadaism, abstract expressionism and concrete poetry, a rigorous anti-structure, or the structure of looseness has passed on to many ohter areas in our society, philosophy, dance, cinema, television, architecutre, photography, journalism, terrorism.

Images themselves have taken on aspects of such looseness with an almost frightening rigour and discipline. 'Carnivalisation' a term from Bakhtin, (a suspension of official rules for the space of the carnival) might be applied to images. It seems today that any image can utilise any fodder, any source. Images of war can be used alongside images of beauty; the beauty can be reversed. Volvo and Opel cars can utilise Vivaldi or Handel, Mozart or Sibelius, The Who or Dave Brubeck in order to direct the messages as in a theatre. There is no apparent casual chain, but once uttered, Brubeck or Vivaldi become Volvos or Opels. The advertising process working on images themselves can organise such accidents of meaning. They are then no longer accidental and depending on one's relationship to the source, say Vivaldi music, one may, like the Austrian government find it necessary to censor the use of 'classical music' with car advertisements. But then presumably, Brubeck remains accessible? How can such control remain? Where are the edges of such censorship? The appropriateness of music and its 'historic' dignity? A classical deception of history and respect? And who is it that the Austrian government is protecting; those who will receive and interpret the message of Vivaldi in the 'wrong' or contaminated way? Or is this the wrong use of play?

Turning to our 'Other World' the Not-A let us consider an anti-thesis. It is possible that disciplines like hermeneutics, semantics, semiotics, post-structuralism are operating within this liminal zone, and in the notion of the boundary as a dimensionless space are helping us bridge even redefine communication. In this way we may see the limitations of This World and temper them with the extremes of this Other World. Far from being ambiguous this appears to me to be a very definite situation; its indefinite edges are clear much like a littoral. A littoral is that part of the land that is not the sea and sea that is not land. It is that forever place, neither always wet nor always dry. Somewhere, in all one's reading, all one's research into knowledge and meaning, the logic by which symbols are created, produced and received, there is a littoral in every one of us. A littoral we want to dwell within, if not remain forever, pause within if not to stay long, or then just visit fleetingly. It is an area of meaning beyond meaning. Clear, crisp and seductive, it depends very much on how far each and every one of us want to push it, want to dwell within it. Concrete poetry has lived in it as has post-Beckettian literature and so is the architecture of Eisenman and Tschumi or the work of Delevze and Derrida, the latter exploring a radical deconstruction of philosophy as language which will only remain a force if it can avoid being institutionally numbered or castrated. The littoral is as treacherous or as safe as any bridge can be.

To continue sporting with our models let us now add Thomas Kuhn's model of a paradigm shift to Leach's Euler Diagram and 'Tom's first brush with Modernism'. Kuhn must have written what has become, atleast this century, the most used, abused, misused 'text-book' (and I use the word cautiously): 'The Structure of Scientific Revolutions'. And no doubt I myself am going to add to this abuse. Science, to paraphrase Kuhn, is conducted on a set of beliefs, traceable caboos or confidences that operate in some moments as a consensus, a 'rule' for science, a paradigm for that time (and often much longer) influencing the scientific and non-scientific communities. Until that is, a new set of confidences, higher proof etc., make their presence felt in the scientific community. Then there is what is termed, a paradigm shift. A shift in some fundamental way of thinking science which often forbids return to any previous belief.



Returning to our own discussion on signs and communication, meaning and knowledge, I would suggest that there are some indications that a new set of beliefs or confidences are shaping our cultures as we approach the third millenium. Whether we need to inhabit the littoral for a much longer time before any more formal world of 'Not-A' establishes itself remains conjecture. Fritzjov Capra, Laing, Toffler and many others are stuttering towards ways of seeing us through this 'turning point'. Is this enough to signify aparadigm shift? Certainly it is enough to identify it, to suggest it but perhaps this is too pompous. Perhaps beyond the domains of high literacy and the increases in visual literacy in the west there is nothing of the sort. No littoral, no 'other world'. Simply, we are still in 'this world'! Or then too close to the heat, we may all be living within such a shift, such a liminal zone however illdefined, limited or resisted. Identifable it may be, but irreversible I think not.

Semiotics too as a much abused study of signs and the way signs produce meaning has nourished the shift. Cinema is but one examle. Alain Resnais is the sort of director who belongs to a generation who 'structure' their work 'semiotically'. The multiplicity of forms, the apparent ambiguities yet readings offered demand a different approach from the unequivocal. The lack of a single, explicable narrative does not preclude clarity; clarity explores thematics, psychological motives, emotional contours. Clarity is shifted towards floating areas, a plurality of experiences, a network. There is both ambiguity, an openness in Resnais and yet there is closure. We do 'descend' or finally dwell (however brief) within some received messages more than others. This so often depends on us the readers, or ingenuity, boredom or imagination. Ennui and ecstasy are equally closures. Resnais imagined the humour in his film 'Providence' reaching an expression of rare laughter, a high irony. Instead the film became popular probably for its crushing brutality and its terrifying elegance.

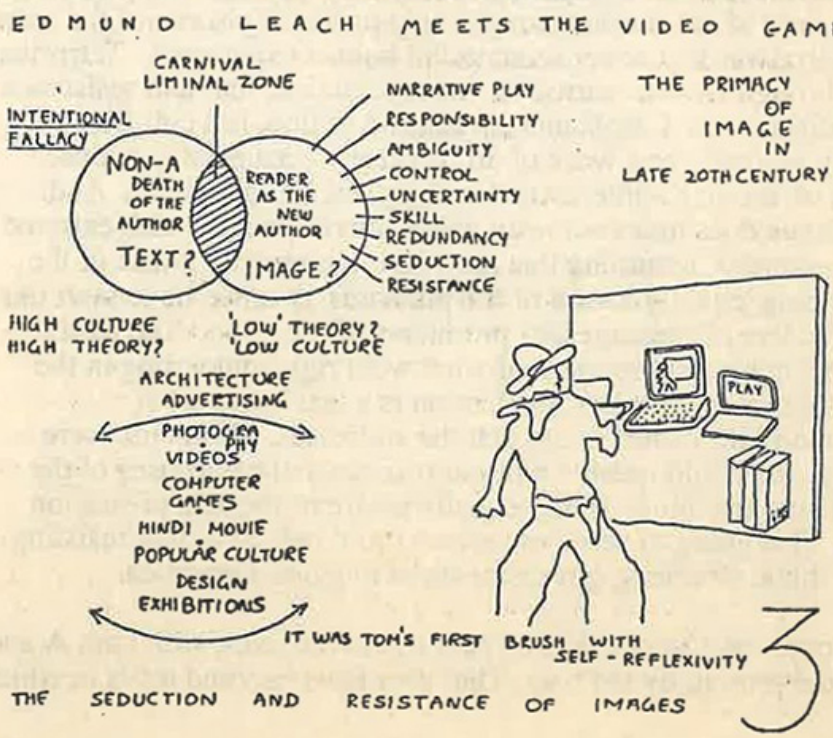
Readings are always possible. Whether they serve as communication is more complex. I suppose it is the latter that Wollen has in mind if one recalls his extracts on the Rogues' Gallery of Semiotic Pioneers outside this auditorium: "Similarly a poet, an artist and a film director are using signs, but not to communicate any sort of message. To suppose that they are, is simply to make a mistake about what they are doing. They, like the mathematician, the traveller and the scientist are constructing signs to see what the implications of those signs are". The semiotics of no further communication? Clearly communication as a marriage with the director/author's intentions is out of the question; it is one coincidence amongst many as Resnais' Providence has shown. But the implications of those signs which Wollen considers to be the Director's concern, have implications to the receiver. To annual communication whilst constructing signs in order to explore the implications of those signs is a pipe-dream. It too is wishful-thinking; not an anti-thesis of communication.

Does this all suggest the wrong sort of littoral where it is even futile to think any communication can take place? How is this possible? Can we locate the text and word in 'This World' and the image in 'The Other World'? Is our liminal zone now an a cultural zone, a suspension of the logic of meaning, an exemption from meaning? Roland Barthes himself has traversed from A to not-A in his own work; but in his final work Camera Lucida did he not remain within Both A and Not-A? We don't have to go

much further in such schematic play before we can imagine an eclipse, where Euler's Diagram reverts back to becoming a circle, one on top of the other. Which world, This or The Other World would be uppermost, and how then would we trace the effects of the one on the other? Is this what happens in censorship, or in extreme examples of a totalitarian structure, where propoganda of the image eclipses the possibilites of the text. Or vice versa?

Wollen's extract recalls the Death of The Author, a phrase used by Roland Barthes. Does this imply that the author no longer exists? Or that the author has been eclipsed in our model by the Reader? Is there no liminal zone left, no space for taboo, sacrifice, or a tampering with meaning? Here then the reader as the receiver of the messages is able to use it as one source amongst many in order to write his own text. And in which case by writing his own text from the signs he receives from others, he opens himself then to his own death. For he has now become an author; if he is to communicate this 'text' that he has written to another, the cycle ensures his redundancy.

But there is no eclipse of the Author by The Reader. They are both in fact both A and not-A, they are both travellers; and as travellers they alight on some meanings, some confidences more than others. Until their confidences are altered, encouraged to change, they remain resistant; obviously stubborness is high resistance to occupying a liminal position and low resistance might be those that can take a more floating attitude to knowledge. Neither positions are necessarily ambiguous. Such resistance can also be explored through Umberto Eco's early work on semiotics and the role of the reader. Eco is of particular interest in that he has been able to explore oppenness, the open work, and 'closure' in his academic work, in his novel "The Name of The Rose" and in his newspaper essays collected in "Travels in Hyper-Reality". As Eco takes us through a whirlwind of reading lessons in his novel, Barthes took us through the perverse a cultural longing to be beyond meaning, finally not to have to mean. Barthes for example asked us to consider the perverse effect on knowledge his use of the word 'migraine' had rather than 'headache'. Eco told us of his corporeal anxiety when wearing blue jeans. John Fowles proposed twelve endings



for his novel 'The French Lieutenant's Woman' and an aghast publisher finally got it reduced to two. Obviously to converge on two endings satisfied the publisher's anxiety of oppenness.

All these authors seem very much alive to me; and very much, despite the pronouncements to let their signs disappear without trace, present in the absences of their texts.

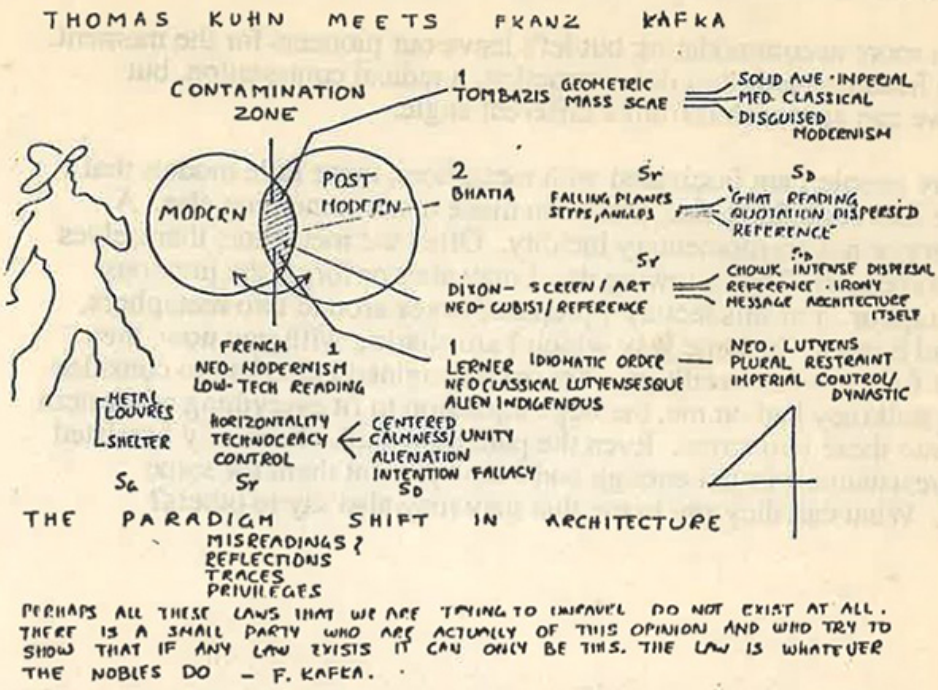
Presence and absence. Perhaps this is merely my attempted ingenuity to enjoin this cultural cavalcade into a carnivalisation of theory, that liminal zone where theory itself has begun to play such an important role, in western culture at least. It is possible that the Orient subjects theory to a much more contemplative resistance and disbelief, a much more unquestioning play that can both alter yet remain within beliefs and confidences. The Orient may already be occupying both A and not-A.

Advertising is abused so often for its 'late-capitalist tendencies', its consumer promises, its packaged, unsubtle ideologies etc. Yet in resorting to an increasing number of aesthetic devices like irony, ambiguity, plurality and play, it both furthers its 'intentional' message (the product) and allows us to deconstruct, even mock its own process. It has become a performance, meaning become theatre. It too is being forced into some ambiguous zone where it is both advertising and not advertising.

The 'intentional' exposure of brand names is now taking less explicit forms. In a tiredness of conventional meanings what previously might have been considered a redundancy communications wise, is now being integrated into the message. Messages are now diverging because of the very tiredness of the 'intention'. An ideology can be communicated in parallel and sometimes in competition with the product sign.

If this is so then such devices may be among many other devices, cultural or commercial strategies, that will help to redefine the communications act. To semioticians designers, writers, critics, the mechanics of one form, one code, may illustrate how an extension of foray may be made into another. Rhetoric, the study of suasive acts, might help us identify some of the more archetypical narratives that never seem to fail human experience. Terrorism may operate through similar 'narratives' of expectation, fear and resistance as some advertisements. Casablanca, according to Eco, is a cult film and not necessarily aesthetic or a work of art, precisely because it is a loose, ill-defined set of 'movies' - intertextual archetypes, he calls them. And: "What Casablanca does unconsciously, other movies will do with extreme intertextual awareness, assuming that the address is equally aware of the purposes ". Being 'equally aware of the purposes' is as we have seen our loop hole as readers of messages, as producers of meaning. The sordid somewhat predictable post-mortem of what went right and wrong in the 'Image' campaign of the last British election is a text-book set of misreadings and remarkable beliefs that the addresses, the voters, were 'equally aware' and could receive without resistance the purposes of the party's advertising machine. Being equally aware of the acts of suasion used upon us all is going to serve as a much more radical tool in resisting than we may think. Resisting governments as much as cigarettes.

That these moves may be considered post-modern moves, still 'both A and not-A' is for the present by the way. That they have become ways in which



we can cope with our own 'intertextual awareness', our own carnivalisation whether in literature, architecture, cinema, design or advertising, seems to be more important. The more excavation done, the more quotation possible, the less radical the variations. The wrong resistance? Semiotics suffers like much communication theory. It is often the wrong 'Casablanca' where it is assumed we are all equally aware of its purposes and its source. Yet why does the crowd erupt every time Bogart says "Here's lookin' at you, Kid" and why is Reagan unable to get the same lift from the same sentence, yet is seduced by its use? The study of semotics, Jencks has it, is itself of form of sign behaviour - a form of rhetoric and politics with its own responsibilities - so the theory and practice should grow ever more sharp, voluptuous and persuasive." Voluptuous? Where is the enemy from within resisting semiotics as much as governments and cigarettes.

2

The Rogue's Gallery outside is more interesting than I thought. This is what Alan Sekula has to say on the image: "Photographic literacy is learned. And yet in the real world, the image itself manifests an illusory independence from the matrix of suppositions that determines its readability.... if we accept the fundamental premise that information is the outcome of a culturally determines relationship, then we can no longer ascribe an intrinsic or universal meaning to the photographic image."

Have we been so foolish to do this? How many of us think an image we see has a universal meaning? Or is Sekula now uttering with more confidence what was considered doubtful in the earlier years of photography? In which case this is an example of the paradigm shift; images have never had any universal meaning. Yet are we not now beginning to step into the liminal and over and actually 'believe' with confidence and take the consequences of

that statement. If so, much communications theory, expecially in the Third World will need radical revision from primary school upwards.

Barthes is more accommodating but let's leave our pioneers for the moment. They are heading towards a deconstruction, a radical contestation, but perhaps we can approach it from a different angle.

Like many people I am fascinated with metaphors, those little models that I can make into something else, that I can make mean something else. A momentary or not-so-momentary lucidity. Often the metaphors themselves can be momentary. The following day I may alter or forget the previous day's metaphor. For this lecture I prepared notes around two metaphors, Scene and Screen. In some way which I am sharing with you now, they represent for me western culture. Yet once imagined I also had to consider the huge pull they had on me, the huge attraction to fit everything of western culture into these two terms. Even the paradigm shift. Obviously I resisted but that resistance was not enough and I now present them for some scrutiny. What can they say to me that they may also say to others?

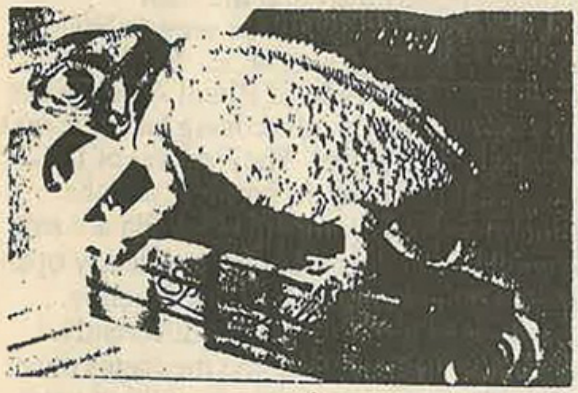
The screen suggests depth of the cinematic type. The screen itself is 'screening' messages of an institute (Channel 4 Television) that operates through the television screen. Scene on the other hand suggests as set of illusions, a space within which to act out or mimic reality and the scenographic suggests a depth of the theatrical type. A scenic chair that has broken up (deconstructed?) function into ergonomics and symbol. Decentered, dispersed. Yet it is the scene, the apparent construction of elsewhere, the stage of suggested symbols and their transfer (the liminal space?) that appears to be saturating western culture. It is here I see some sort of parallel with spectacle in the twentieth century and those of mediaeval spectacle, follk culture and the culture of the market place. Our theatre of sign today may resemble the carnival forms used in the Renaissance and middle ages, carnival pageants, parodies of officialdom and popular cursing. And it may be as Bakhtin says... "the basic carnival nucleus of this culture is by no means a purely artistic form nor a spectacle and does not, generally speaking, belong to the sphere of art. It belongs to the border line between art and life. In reality, it is life itself, but shaped according to a

certain pattern of play". This borderline, dimensionless and wavering, is our liminal zone. Signs are bombarding us from all directions. Semiotics does not make our world polysemic. Photography and cinema may like to think they have done and yet all eras seem to have been exposed to signs. Is it only in the twentieth century with the terrifying ambiguity of any global village and its impossibility, that we have finally shifted ourselves within this theatre? And if this theatre is situated between art and life then post-modernism whilst proliferating the play of signs can be seen to have also taken us some way towards understanding this spectacle. What was once a sacred area, Both A and not-A, a Leachian field of Ritual Activity has now become somewhat common place. Not only in advertising have the text and the image become the culture of the market place. The Festival of India recently inaugurated in Moscow is a fine example of the carnival and the market-place culture as leather bags and other Janpath paraphernalia are sold to festive clients for 35 roubles. Methods of communication are clearly open to Humphrey Bogart as much as Ronald Reagan or Mikhail Gorbachov. Utilised for different purposes they will naturally be received differently. Within the scene, it will depend on the privilege given some messages over others. Naturally my own privileging of scene over screen is nothing new; within the scene Eco has already indicated this difference: "this has the effect of privileging oblique angles, transverse perspective and asymmetric frames, as any western movie maker does when he wants to suggest power. But present Chinese iconographic sub-codes are obviously different.... power, stability, monumentality are expressed through frontal and symmetric shorts. The denotation was the same (the Nanking Bridge) but the connotations were based on different sub-codes."

My own connotations are obviously responsible for why I have previleged 'scene', linked it to carnival and prompted what some may find as a lucid error, borrowed or not, the carnivalisation of contemporary sign. That so I would like to make a quick scanning of this image of Benson and Hedges. Let's treat this image as theatre. What can we glean from it? Does it tell us that it is a cigarette advertisement? What is its immediacy and what is the hierarchy of our readings? Point scanning or cluster scanning? The punctum or the stadium? Are we familiar enough with the feint though not obscure insignia; B&H? Thecalligraphic sign. Or then the linguist code of which calligraphy is part: 'Special Filter. King Size' Does this register before or then after the image? The iconic code also includes the 'image' of the calligraphy. Florid script for the insignia, Government 'official' white-paper sign for the warning. Is there as Barthes suggests, a literal sign, part of an anthropological knowledge that tells us that this is an advert and not a press photograph or copy of a painting, with a chameleon on top of a box. Any box? Do we need the reference, the quotation back to another 'world', a chain of images that can bring us this far, like childhood and produce recognition. Noticing this advertisement in between an article on Reagan and one on apartheid in South Africa will alter the theatre of the same advert interspersed between an article on Rajiv Gandhi and Hymenoplasty costing 1200 dollars. What is our way into this advertisement? Through culture, circumstance, psychology? Can we control it, destroy it by over-reading it. Can we dismiss it? Is it visual concrete poetry to be left aside without any immediacy?

Interrogation is exhausting like the captured terrorist who will not give up but continues to say to his captors when asked where he got such a sophisticated weapon that they have plenty more of them. Clearly there is a

seduction at work in this image that is perhaps redundant to the advertising intention of Benson and Hedges but which nevertheless continues signalling to us. We either fall for this seduction (it is probably not a simplistic digital on/off) or then we resist it. To be mischievous, this digital anxiety, neither on nor off, neither hot nor cold, seducing and resisting, sounds like another liminal zone. In fact like this other image by Helmut Newton we are both drawn into yet probably resist the pull at the same time.



Newton's image characterises for me the dynamics of both seduction and resistance at work in any image. Here I am using this image metonymically for all images. Within the frame, we have both seduction and resistance at work and if we are to survive this 'carnivalisation' (by survive one means being both seduced and resisting it; survival means just how far in the 'theatre' to go) we must try and structure the received messages we get from images. This involves a type of deep subjectivity where we try to understand the ways a rhetoric can 'play' on our desire for meaning, our desire to close off an image, to privilege parts of it, our desires to want to see it mean what one thinks the photographer wanted it to mean (even if he is merely constructing signs to see what the implications of those signs are!). Our desires to open, close, ride or remain exempt from meaning all operate similarly; the privilages we give the messages do the rest.

Newton's image is manipulated. (This of course is already a privilege I have given the image). It can be read in many ways, yet the oppenness of that image does not necessarily make it an ambiguous image. If one is appalled by something in it, a stylised seediness or voyeuristic tackiness, this anxiety will then close it off. The message of anxiety might turn into horror, then join a repertoire you have of disgust and recall similar images and narratives. This immediacy may alter if you linger just a little more on the image. The disgust may resettle and a second look may turn the coldness into an erotics. And upon realising that such a calculation may exist, a third look might bring back that disgust in the form of repulsion. Repulsion may then excite or disgust you further as you notice the camera whilst filming the staged disrobing, is also filming you the voyeur-audience looking in on a peep-show of undressing. Who has undressed who in and through this image; don't all images resemble peep-shows?

In the theatre of sign then we are left with the question whether an increasing permissiveness in reading will eventually make no carnival possible. Would a metatextulity take over; signs would resemble literature as that 'dishonest and healthy liberating trick' from the given language. In our hyperactivity I suspect we could follow Eco on this. Whilst relying on a predictable determinism in this permissiveness we might still see seduction and resistance as primary elements in the control and regulation of signs. This is because our own commerce and consumption of them allow an accessible consensus. A consensus that then allows us to step briefly from the littoral, from the margins we preserve for ourselves to alter our strategies, change our minds.

Returning to our Benson and Hedges advertisement; what happens if I give you further information? Most advertisements for cigarettes have to be accompanied by some sort of warning against the dangers of smoking.

How does the warning operate? Is it unequivocal? A literal obvious message level like 'Smoking kills' or 'Smoking causes lung cancer', Smoking can cripple your child! Smoking is the foetus' drug! Do you want your child born an addict? Simon says! The Government says! These statements become less denotative, more connotative. Like 'One from the heart' it is not the ambiguity that makes it any less a Government warning it is the multiple ways it could be read in relation to cigarettes. Benson and Hedges appears less brutal, less connotative. The white text, Danger; HM Governments' Warning: Is this not already an abdication, lifting the information to an official zone which is supposed to take care of itself? Official unequivocal phrases that we have become so used to that we often ignore: Live Wire! Caution! Men at Work! Electricity! Radio Active! This warning by its official sign appears not to belong to the real world of the Benson and Hedges cigarette. It belongs to the advertisement and its rhetorical form only (that is, cigarette adverts must be accompanied by a warning).

The continuation is even more revealing. Think. An unsubtle command, another 'Simon says! Then after a pause, before smoking! The stress is plainly on continuity. In England from childhood one is taught through the imperative. Think first before doing anything. Look before crossing the road. Read before writing the exam. Learn before announcing knowledge. And so on. The emphasis is always on the continuity of the act, first Think, then do it. Crossing the road. Stepping off a bus. Making love. Or smoking cigarettes.

Here we have a cigarette advertiser (the company accepts, endorses the advertisement clearly) who knows it is perhaps more unpopular to advertise cigarettes in a sophisticated subtle way. They also know such an advert full of rhetoric obviousness like Gold Flake-For the Gracious People/Quality that's forever is merely a matter of emphasis. Quality forever is metonymically available using the iconographic consensus around Gold (as Silk Cut utilises the regality and 'papal' nuance of purple which cannot but signify 'quality' however misread. The advertiser also knows that his product causes some harm (hardly comparable to terrorism but the extent to which they harm is mutually unclear). Is it not then possible within the same image then, the same text (for we are reading the image as if 'written to us') to create a message system that can be both for and against the product. It is the way after all terrorism must proceed in its use of harm and terror to

strengthen its support through goodwill to a cause. Why is this image not an anti-smoking image? How many of us would like to 'reach out' for the packet from under the chameleon? Those that would do so are obviously seduced by an image that resists others. The duplicity is well-meant, conscious, permissive. Both literal and ironic, first order and double meanings; your seduction and resistance must remain mobile, an historic, temporariness is giving way to momentary systems, momentary threats that can interrupt our confidences and beliefs. Whilst I write, the terrorists in India, the supposed extremists from Punjab, have threatened to 'kill' 500 children before August 15th. It is the momentary shock to an otherwise 'stable' system that entertains the horror of this act, and thus achieves partly what the terrorists are after. In India however to destabilise the confidences in a law and order which is already destabilised by inherent lawlessness and corruption will necessitate more extreme tests on the public vigilance, on their collective psyche. The terrorists too exploit the liminal zone in justice and injustice; they too operate in a carnival alongside the official body politic.

In smoking you may want the risk offered, you may need some prodding to resist it. Or vice versa. Benson and Hedges by using the iconographic possibility of gold, (a converging connotative enormity around the sign of 'quality') have illustrated how an archetype can become a consensus, even temporarily. I contend a huge paper sheet of gold colour erected on one of the hoardings in Victoria Station, London, would be enough to signify Benson and Hedges. And of course then, all that Benson and Hedges means to the reader - including the sign of smart or clever advertising! The behaviour of semiotics itself, vomptuous and sharp!

The gold as iconic sign has become the 'scene' for all the messages aroused by it; a simple gold screen perhaps becomes the whole repertoire, encyclopaedic collection of previous advertisements and advertising history. Some peep-show!

3

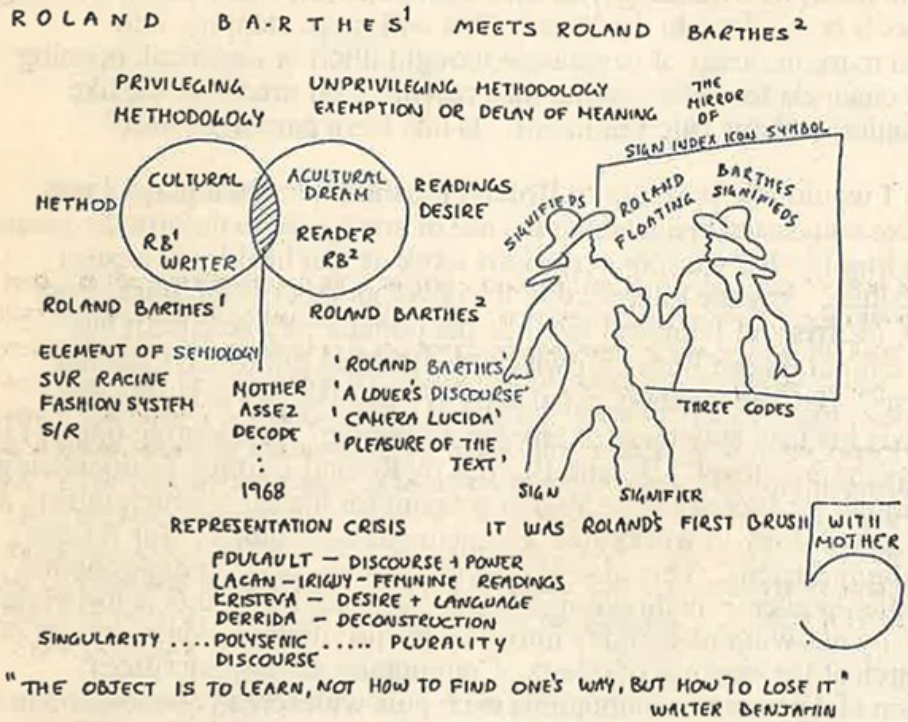
A positive use of ambiguity then? Can this be translated into design as much as it is being used in theatre, cinema and literature? Has the scenographic code created a rush of symbolic connotations? In architecture

continuous meanings have become so open, so widespread in connotation as to threaten function. In which case such ambiguity is usually considered to have gone beyond the limits of communication. But as we have seen, perhaps the limits of communication are shifting, communication has become the mobile system, both A and not-A. Newer insights are possible to understand why some messages get through and some not. And why in India the simplistic view of communications as the shortest-distance-between- two-points Transfer of Uttered message to Received message is breaking down in the obvious inapplicability of universal messages. Even terrorism varies from state to state in India and whilst terror may (it is possible) be received universally, the message of terror varies for every one of us. It is this same co-presence of terrorism with Government theories on destabilisation which carnivalise Indian society at present. India's task appears more and more obvious: Can India interrogate itself, its own image, its own communication as wishful thinking as much as is being done in the West? This will mean stepping into ill-defined margins, areas of negotation thought illicit or unethical, opening up newer channels for debate rather than resettling on tired rhetoric like destabilisation and dynastic sentiment. Is this too a paradigm shift?

Playfully I would like to return to Roland Barthes. His own playfulness, the positive and casual brilliance in his use of ambiguity to deform the given language implies that we should read his work as that healthy dishonest play, literature. Anyone interested in the development of semiotics, from Saussure, Morris and Jakobsen towards the popular neo-science it has become, cannot ignore Barthes' own route. Barthes put to the Edmund Leach tests? Barthes as taboo, ritual activity? Did Barthes step into the littoral, wet his feet, stay there or emerge elsewhere? Considering one of his key texts (another novel?) Roland Barthes by Roland Barthes, fictionalizing RB is enough for Barthes to be able to account for his early structuralism, a willed methodology in works like 'Elements of Semiology', 'Sur Racine', 'The Fashion System'. This also allows him not so much to dethrone his willed, often perverse methodology, but deconstruct it (debunk is too trivial for RB!) by allowing us insights into why he 'privileged' some aspects of his research at the expense of others. Connotation already sacrifices denotation and perverse connotations even puts widespread connotation in danger. Barthes began a research into himself as carnival, high carnival rather than high literacy; he asks us to go beyond the methodology into a liminal zone, both A and non-A, where methodology is both resisted and seductive. His later texts including RB by RB, 'Fragments of a Lover's Discourse', 'The Pleasure of the Text' takes us into if not beyond this liminal zone. And 'Camera Lucida', the book he wrote before his death and just after his mother's death, is the novel he always wanted or rather threatened to write. The elgant ambiguity of his thoughts on photography, the slipping from reluctant methodlogy towards rejection of methodology, from A to not-A, wet and dry at the same time, is Barthes jouissance, with a delightful clarity even a precise ambiguity about it.

Is Barthes key in western circles? Semiotics became a major movement in the 60s and 70s, often dangerously partnered with structuralism. Around 1968 it seems we have one of those incidents where a shift is considered to have taken place, the sudden turn, the catastrophe according to Rene Thom, where the slow process of variations and adjustments reach a no-way back. Society enters the liminal space, reforms itself slowly and crawls out again to remake its own confidences. The French were pioneers in this process;

both in the sudden turn and in the casual effects leading up to that sudden turn. An area beyond the sign was envisaged. Foucault, seductive and resistant like all philosophers, worked through representation, fine arts and an epistemic provocation of systems like prisons, mental asylums, sexuality until reaching a semiotics of power itself. Power not strength. Most of the academic work or commentaries grappling with Foucault are concentrating on his provocation of power in relation to strength, but might usefully turn their attention to the seduction of such thinking itself that sometimes threatens to eclipse reason. Resisting this type of seduction, being seduced by reason and non-sense, Jacques Derrida has also shown us insights into the liminal zone and too briefly at present, glimpses of what it is like on the other side, not-A.

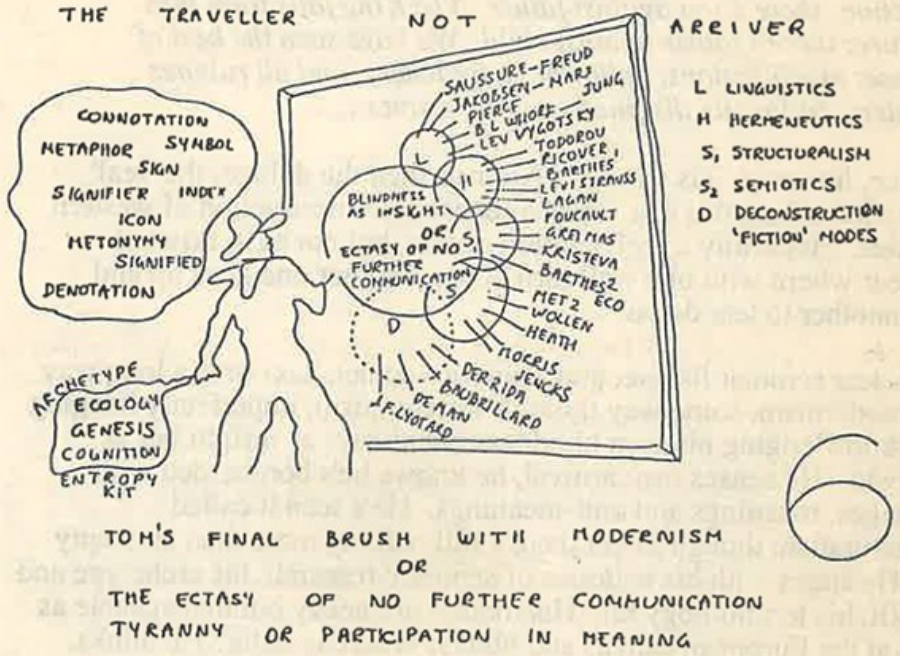


There are signs enough, even beyond the sign, to indicate a major shift in western culture and its understanding of itself. Sudden turn, catastrophe or slow gradual adjustments, the liminal zone appears to be the field of this activity. To draw the carnival to a close, to explore permissiveness of sign and whether it will as is likely regulate itself, I would like to finish with two further diagrams.

Tom, by now is befuddled with all the theories, all the sets of knowledge systems, possible and impossible, all the models. Yet he senses that most of us must live - and live on - by creating some sort of consensus, some hierarchies in all the connotations received, in all the ambiguities presented. These allow us to be both seduced by yet resist newer meanings and gradual change. All of us obviously close off in some way, some to preserve their sanity, others to reach the next opening (which may be the same strategy). Even I myself have done it with momentary metaphors like scene and screen. Even now they appear troublesome.

Semiotics, the study of sign, a visual semantics, has come a long way from

Saussure's course in Linguistics. It is no coincidence that the linguists began to explore the privileging of the image which early photography and cinema introduced. Perhaps the terror of the image eclipsing language was only too clear. The primacy of the image needed controlling; did they sense the catastrophe to meaning, the plurality and ambiguity inherent in the image? Those early linguists must have sensed the carnival of video and television, the carnivalisation of the image itself. To pull the images back and see them structured as a language was admittedly an attractive ordering principle, a useful way to stem the polysemic reality.



Is this unfair to the gallery? Saussure, Jacobsen, Whorf, Vygotsky, Wright, Morris, Todorov, Ricouer, Levi-Strauss, Barthes, Foucault, Lacan, De Man, Greimas, Metz, Lyotard, Kristeva, Baudrillard, Virilo, Jencks...such a shift if coincidental is a huge coincidence. And I do not think it will be by-passed or re-routed by considering that we have reached a not-A of only irony, play, reference and revival. I do not think this does justice to the 'real' play, the real carnival shift in post-modernism or the real irony it must have if it is to survive its own disintegration. Post-modernism, the littoral seekers, whatever we like to call them are trying to question, radically interrogate the structure of both image and text, the ensuing meanings we use to coincide with each other other and the structure of knowledge in all its historic temporariness. Deconstruction may approximate to a useful term for all this, and thereby degenerate itself in the process. A post-semiotics perhaps. Deconstruction filters into all areas of art; not that it wasn't present before this radical question of sign and meaning; merely it had not been privileged in this way, to this extent. A super-structuralism I have heard it called now, where through the real danger lies in its conscious over use, its dry (unlittoral) application will, if we are not conscious self-interrogators, mean that we merely begin reading Casablanca as Eco says and it will be that sad day "When a too smart

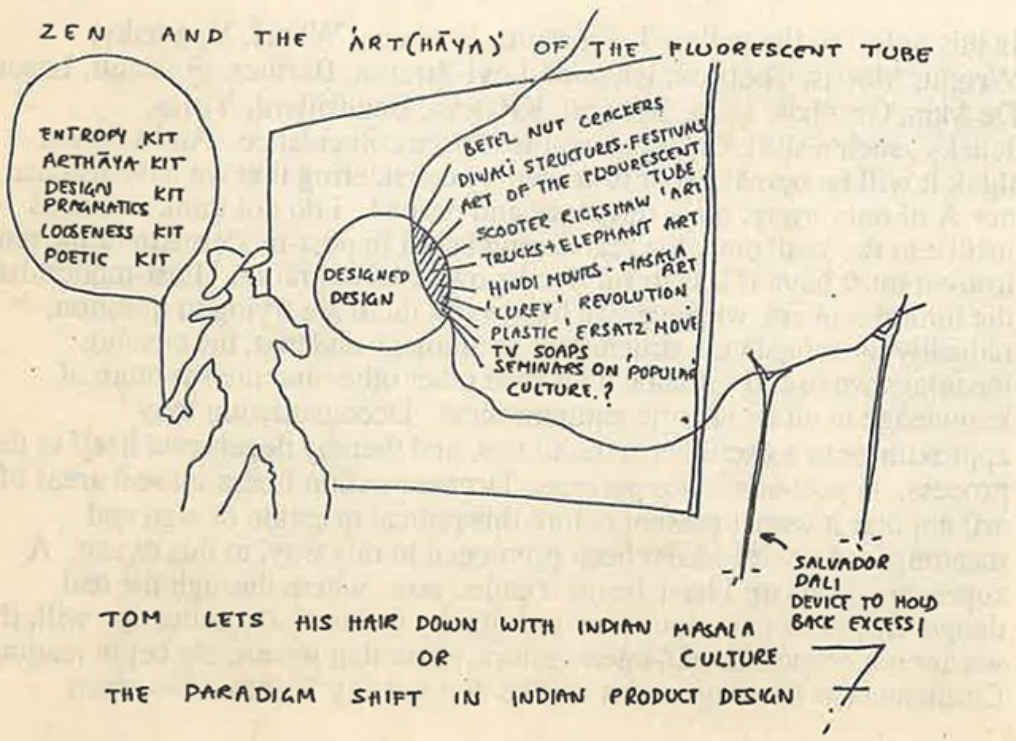
audience will read Casablanca as conceived by Michael Curtiz after having read Calvino and Barthes. But that day will come."

If this is true, the melancholy aspect of the carnivalisation takes over. The smart, over-quoted carnival; a game for ourselves, without blindness, without insight. Without the blindness of insight and the insight of blindness, without King Lear, without Gloucester's eyes and words:

> *'These late eclipses in the sun and moon portend no good to us. Though the wisdom of nature can reason it thus and thus, yet nature finds itself scourg'd by the sequent effects: love cools, freindship falls off, brothers divide; in cities, multinies; in countries, discord; in places, treason; and the bond crack'd 'twixt son and father. This villain of mine comes under the prediction: there's son against father. The King falls from bias of nature: there's father against child. We have seen the best of our time: machinations, hollowness, treachery, and all ruinous disorders, follow us disquietly to our graves.....*

His offence, honesty! 'Tis strange. After us then the deluge, the 'real' carnivalisation where this one is just a rehearsal. A destruction of western metaphysics. Hopefully a regeneration occurs, but not as in Edward Bond's Lear where with one wall torn down, another one goes up and becomes another to tear down?

Tom, our dear seminar listener and semiotics addict, has come a long way through modernism, some way through structuralism, imperfectly hanging on but acknowledging his own blindness not always as insight but as stupidity too. He senses the carnival, he knows he's bombarded with signs, images, meanings and anti-meanings. He's seen it called superstructuralism though as yet there's still nothing more than an empty canvas. He stares with his balloons of semiotic research, his archetype and entropy kit, his terminology kit. His models are heavy but manageable as he stares at the European canvas and blinks: Where is India? He thinks.

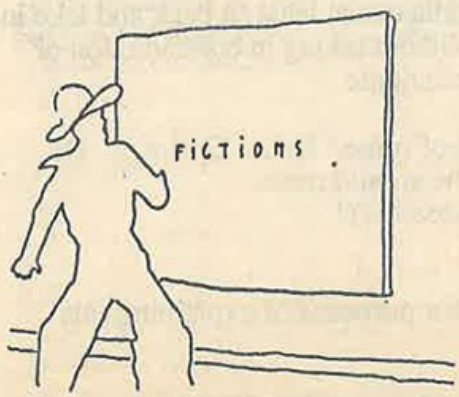


Yes, he knows we need a looseness in design and society. But not the chaos he thinks there is now. Yes, we need a playfulness and yes, perhaps we need a new theatre. Yes we also need the carnivals and the festivals but we need fallibility not infallibility. Yes we need positive carnival to counter unpleasant laughter. Yes we need to entertain Bakhtin as much as Barthes and we need the loop holes in our knowledge (for where else would it drain away?). Yes we need the reader as much as the writer. But it needs above all to be rigorous. If it's laughter, it should be rigorous laughter, liberating the obedience to temporary consensus.

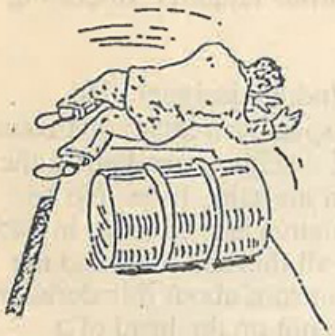
Tom contemplates the paradigm shift. Tom is an Indian designer. He wonders whether he should even enter the liminal space, a treacherous zone it seems for he knows he is not of such conceptual discipline, he knows the ease yet the difficulty of being Both A and not-A at the same time. No one ever told him it could be fluid, it could be contemplative and accurate in such a treacherous zone. And he's not quite sure about all this zen stuff and the fluorescent tube. He knows it is scoffed at but is unsure about this derision. He knows also that if three fluorescent tubes were put on the head of a person in New York and paraded into an art gallery, it would be the hottest performance in the art circles. At Ascot if someone struck upon the same hat, on Derby Day, they would be instant sensations. Yet here, it's considered degenerate and people disown these wedding gangs with the carnival lights. Even he has occasionally, to his shame. Tom still wears a cowboy outfit but is coming to realise the limitation of his blue jeans and sweat shirt. He is only just beginning to develop his Entropy Kit.

The fluorescent tube is a key to our designers' dilema. There are other strategies in the sign war. Tom may have his Entropy Kit, a way to carnivalise; his Arthaya Kit, a design pragmatics kit, a looseness kit, call it what you will. Far too heavy these kits will begin to plunder popular culture, irrationally at first, indiscriminately like The Festival of India in Moscow. The interrogation has begun and unfortunately with communications crashing along at breakneck, A-B simplicity, it has all but been blinded by the patronisation and scorn, as 'low culture' events like films on a sunday afternoon keep the crime rate low and the terrorist indoors.

But Tom? Some fictions. If some of our design solutions strategies and products could be as fictional, as rigorous as delightful and ordered as some of our fantasies and dreams he knows they'd be marvellous.



Postscript: FICTION, Mr. Barthes!



EAKINS SPENT MOST OF THANKSGIVING WORKING ON HIS OIL DRUM TECHNIQUE...

Radical equivocation? Is that what I produced after speaking for nearly an hour? A congress usually only approximates to a casual nexus. It is organised and structured in some way. Thematics allow imagined topics to be put next to each other, flow is suggested, days are subdivided. For theorists of communication, this at least appears as a gesture towards formalising the channel of communication in an international situation where one is asked to reveal one's privileges in not 30 minutes but twenty five.

But what happens? A free for all takes over where papers are coming at you faster than it seems any digestive faculty can cope. Learning and understanding groupe, the bridges are few. The saturation (drowing) is complete we might say long before the seminar is complete. Closed off. Then: the mind wanders. Images have long gone into our own image repertoires and through some mystical play on one's own boredom, some images invite profound participation, some profound boredom. Some even go beyond boredom; a new seduction that must be resisted. This process of slide presentation blurs exposition techniques, the mechanism of symposia themselves become suspicious and often whimsical commentaries result. Terminology is still being invented and used loosely; not perhaps for the provocative purposes possible merely because looseness (or fuzziness)? is inevitable. A contemplative culture like India can at least sit back and take in radical contradictions, radical ambiguity without taking in contradiction or ambiguity at all. My talk produced three reactions:

1. Mr. Connah! you should meet a friend of mine. He's a Godman. He sits on a mountain. He thinks. You and he should meet.
(Identification1:one thinks. How is this possible)?

2. Mr. Connah. I'M Tom
(Identification 2: I reinvented a character for purposes of explaining this saturation and congress semiotics)

3. Mr. Connah. I've thought most of your thoughts before but always end up confused. I despair at the metafiction of it all.

(Identification 3: The type of person who will use Salvino, Barthes, Eco and semiotics to read Casablanca. The person Eco feared: but remember - their day will come!)

No one came to me to read the missing quotation from the rogue's gallery all copied out in real 'fake; manuscript sign:

... the absence of the code disintellectualizes the message because it seems to found in nature the signs of culture..... the more technology develops the diffusion of images, the more it provides the means of masking the constructed meaning under the appearance of given meaning."

Fiction, Mr. Barthes!

Is there no way out except the ecstasy of no further communication? Let's go back. I sat listening as speaker after speaker seemed to be out of a filmscript called 'Desperately Seeking Meaning'. Harmony was encouraged, deeper meanings that would yield to us the 'whole' meaning. Alchemy,Zen, the Gita, Pirsig were brought up to announce a coherent system of language, where unity comprehensibility, legibility and simplicity were privileged. Sovereignty was sought, newer disguises for more familiar tyranny, and the past was cited as Creator and Source. All is one and one is all seemed to deny what I had in mind, that area of the democracy of the image and its meanings and I suddenly became terrified at the thought of my 80 slides as fodder. 80 slides and The Primacy of The Image? Not an original idea at all but considering cultures are colliding with communications and theories at different rates, the exposition in relation to India might at least be fresh. And contrary to what many of the speakers were doing (tyrannising the image with indisputable meanings) I thought at least they could be read differently. That put me on the side of the Reader.

At what stage did all this become dubious as a lecture? At what point did I suspect myself? Did I imagine that beginning with French cinema from 'Diva' to 'Havre' would be enough to set the metaphorical scene and screen? Did I doubt the floating signifiers of Helmut Newton and their relevance to this audience? The alligator devouring a woman was destable enough before going into the theatre of sign in Peter Greenaway's films. Did I doubt even the idea of carnival? The control of meaning seemed to belong to aesthetics. But the control of the hierarchy of meaning belonged to politics.

The tyranny was very real. Traps of argumenation would be set which I couldn't answer, couldn't avoid. I would be guilty of a regeneration of terminology, and even if not deliberate, provocative! Was it even worse? Would I like many before me confuse the form of the message, the code, the channel and end up with little more than a 'boutade'?

Quelle horreur! That type of shudder went through me. Theories of communication were now increasing per hour. Semiotics was a type of Whisky-flavoured marmalade that could be spread on bread with amul butter (that connective tissue!) without really altering the taste. Information theory crashed with Communications Theory. Linguistic with Semiotics. Structuralism with Superstructuralism. Post-structuralism with Deconstruction. The last time I recall being present on such an occasion was at a conference in Centre Pompidou in Paris. The speakers were the American architect Peter Eisenman and the french philosopher Jacques

Derrida. Eisenman decided all was radical play, his words were fiction (which allowed him to change or revoke any statement. Question: why then was he so interested in checking the traslator and cause a scene when it proved inaccurate?). Barthes had begun it in the1950s with a no doubt innocent and charming phrase, Le Degre Zero. Eisenman uttered a helter-skelter of such rich school-boy bow-tie grinning new yorker semiotics, an ecriture where The Degree Zero feature endlessly. It was clear from what Derrida said: a rigour was missing. In architecture and language. Though both men would clain to be using rigour in their talks and work 'clearly' both men approached rigour differently. The result: Radical blur. But behind the grimaces (greimases?) of Derrida as he listened to Eisenman elbows on table, face covered in hands I sensed the pain, the real pain at the waywardness of the speaker's rigour.

Meanwhile back at Bombay, this tyranny and panic had been translated into a rash. The Doctor said: Fish. I was not too sure. I began a small reductive exercise and with the help of an Indian brandy or two reduced the 80 slides to 40. Pleased with myself I poured another brandy, lit a cigar and thought the communications game conquered, if not easy. 40 slides. 20 this side A. 20 That side Not-A. Scene. Screen. Communication. A to Not-A.

But the doubts remained. The rash increased. I had what ammounted to a paper. Three sides of schematic notes, key phrases, diagrams, twenty five minutes. I slept uneasily. What was I to say? Was I any nearer understanding what was going on in India, the logic of the symbols, the production of meanings they lived by. How was I to see the changes occuring because of a new channel, a new code, a new way of articulating that code, the messages give, the messages received? All the time I could not stop thinking about the terrorists in Punjab eating into the collective psyche of the country, a collective psyche so low at present. Where the terrorists a new code? Where they altering the channels, rearticulating a code or demanding their messages to be read unequivocally, singularly? Did they rely on a collective sensibility which they too could put into a radical blur? In India, what then was this sensibility?

The medium and the message? The message the terrorists were aiming at, intending (were they intending something unrecongnisable, within the new code?) becomes the messages the receivers make of their act. Punjabis will read it differently amongst themselves. In Amritsar it will be read differently than in Delhi. In London differently than in Bombay. And if those readings are particular to each 'reader' they will probably not coincide with any terrorist's intention, neither will they match the scholars of communication. They would be private, personal, fictional even. A new code?

The last utterance was like a guillotine in my sleep. Could we hope that fiction is pulled back into some collective sensibility, confidence with ourselves?

The talk I would give would be something out of Bouvard and Pecuchet, for Flaubert knew and laid once again in contaminating obviousness for all congresses that anything looked at long enough becomes interesting. It's all a matter of reading. In the early 1970s I remember having the beginnings of a very crude theory of reception. I thought all messages were received by

us in a four dimensional floating system; collisions around redundancy, infancy, absence and fluency. It was as neat as it was rude. A Professor of Geochronology once said it seems you have something there, perhaps the tiger by the tail though I for one can't quite make it out. I know it's not ambiguous and it's not - he laughed - redundant. Somewhere in between I suppose.

Somewhere between a usefulness and a uselessness I thought. That recalled I sketched my talk whilst listening to the second day's proceedings. I would talk on ambiguity. Zors shides. Precisely! And I felt as the 20th speaker that I had become Eakins who not only had spent most of the seminar working on his oil drum technique but now had to perform.

NOTES ON VISUAL RELATIONS : A GRAPHICAL ANALYSIS

Ravi Poovaiah

The aim of this exercise is to understand various possibilities and limitations that are involved in the representativeness of the graphic medias. Presented are a number of charts (and their summaries) explaining different relationships and classifications of visual representations. The visual representations here refer to static representations (not those that are dynamic in time dimension as in film/television) which use both the written language as well as visuals like photography,illustrations and drawing. Hence these charts are to be seen from this viewpoint of static visual representations.

The charts are derived from various outlooks and these are meant to aid in classifying, analysing and generating visual representations.

The emphasis in these charts has been:

- To relate the graphic representations to the other medias (Charts 1, 2, 3 and 4), with their perception (Charts 5, 6 and 7) and to the priniciples that help organise meaning (Charts 8 and 9);

- To examine the graphic representations in isolation (vis a vis each other) as also in conjugation with the other medias (Charts 1, 2, 3 and 4);

- As a pointer towards representative possibilities that are not yet fully explored (Charts 4, 5, 6 and 7).

- To group together the relations of visual representations - a need that has arisen at various instances in the course of teaching visual language.

Given in the following pages are an abstract of what the charts signify:

Chart 1 : This chart refers to participation (in general) of our senses to different medias. It shows that the medias of graphic representation ie., photography, illustrations, verbo-visual and written language depend predominantly on uni-sensory perception - in this case the sense of sight (as against this majority of the other medias need the participation of more than one sense) .

Participation of our senses

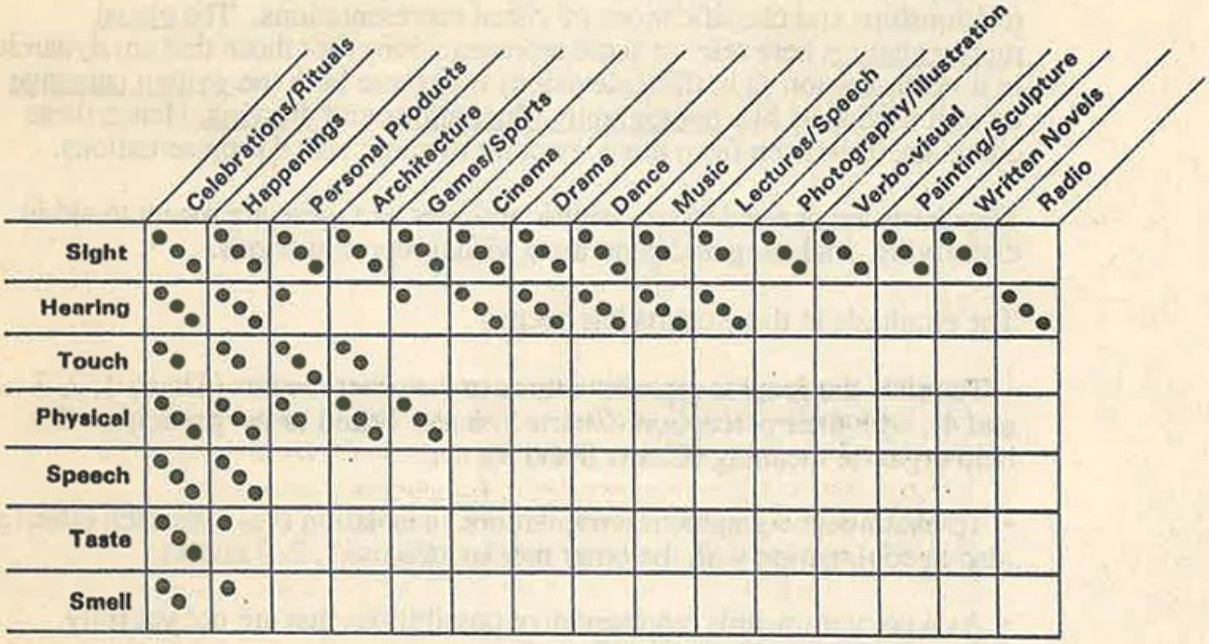


Chart 2 : This refers to the use (in general) of one media by an other. The medias have been plotted against the used media. The chart shows that the medias of graphic representations (ie., comics, caricature, photography, illustraion and written language) are largely drawn upon by the other medias but by themselves are not dependent on the others.

Use of one media by another Media

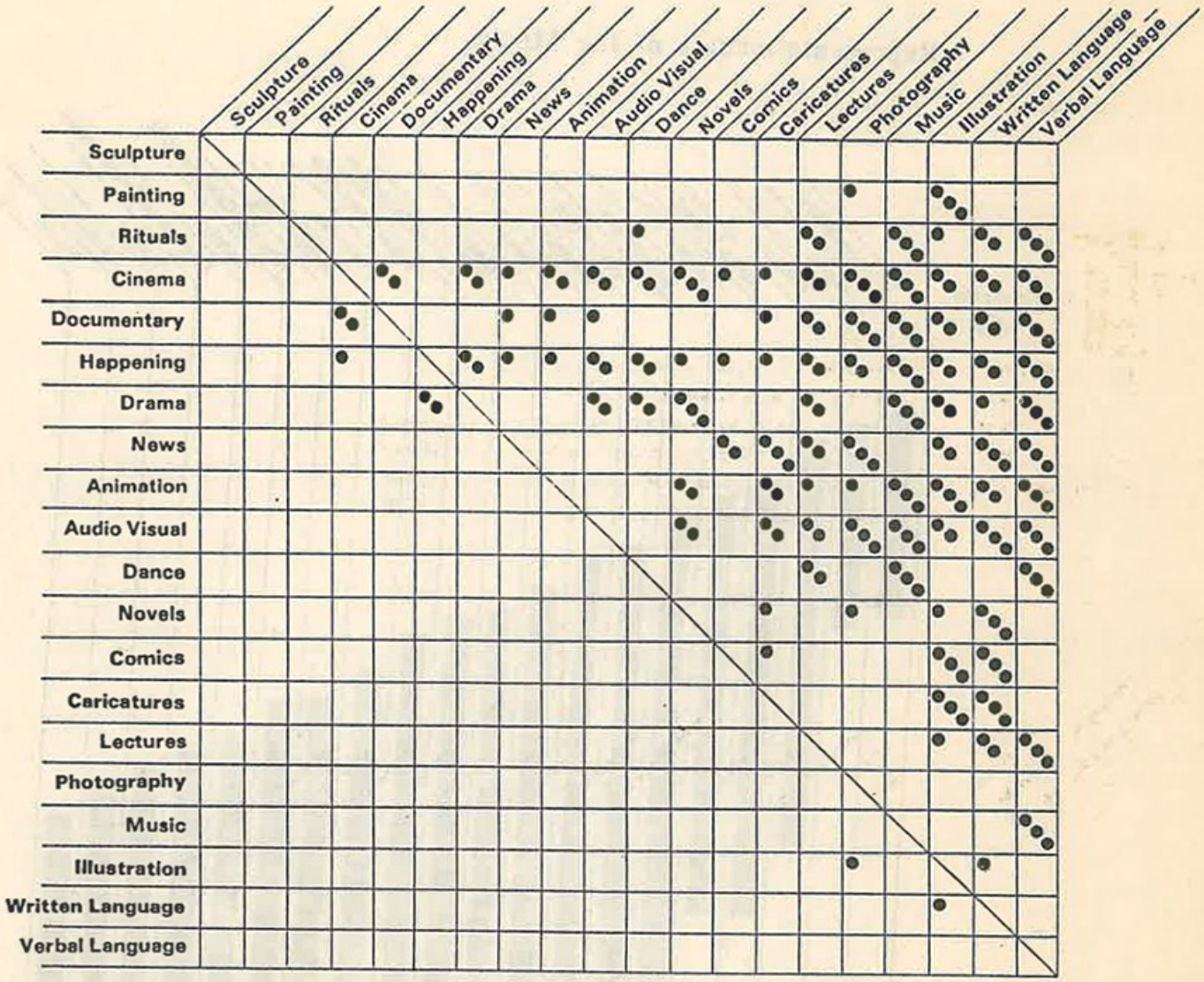


Chart 3 : The representativeness (again in general) of different medias are being expressed on a scale of realistic to being abstract. Some of the medias (for example a documentary film) in their representations are more realistic just as some others are more abstract in their representations, ranging from the realistic to the abstract, the medias of graphic representations (namely photography, Illustration, written language, comics and caricatures) cover a fairly large spectrum of representativeness.

Representativeness of the Medias

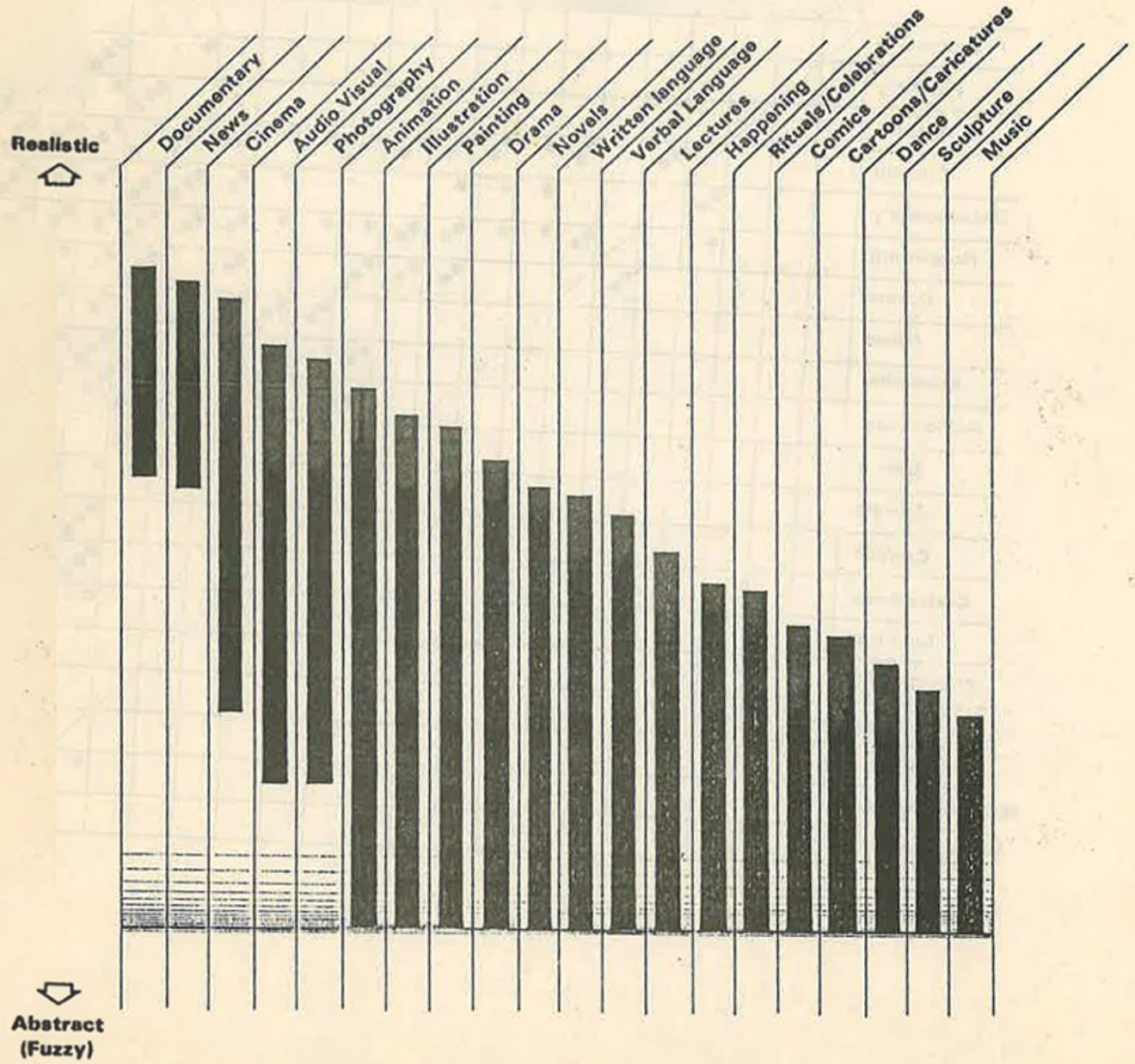


Chart 4 : It is not always possible to convert each verbal statement into a visual and vice-versa. But whenever possible a verbo-visual integration offers possibilities of signifying a statement with enriched information. Here as an example, the word 'EYE' and an illustration of the eye are used to see how it transforms from a verbal representation to a visual form.

Verbal and Visual :

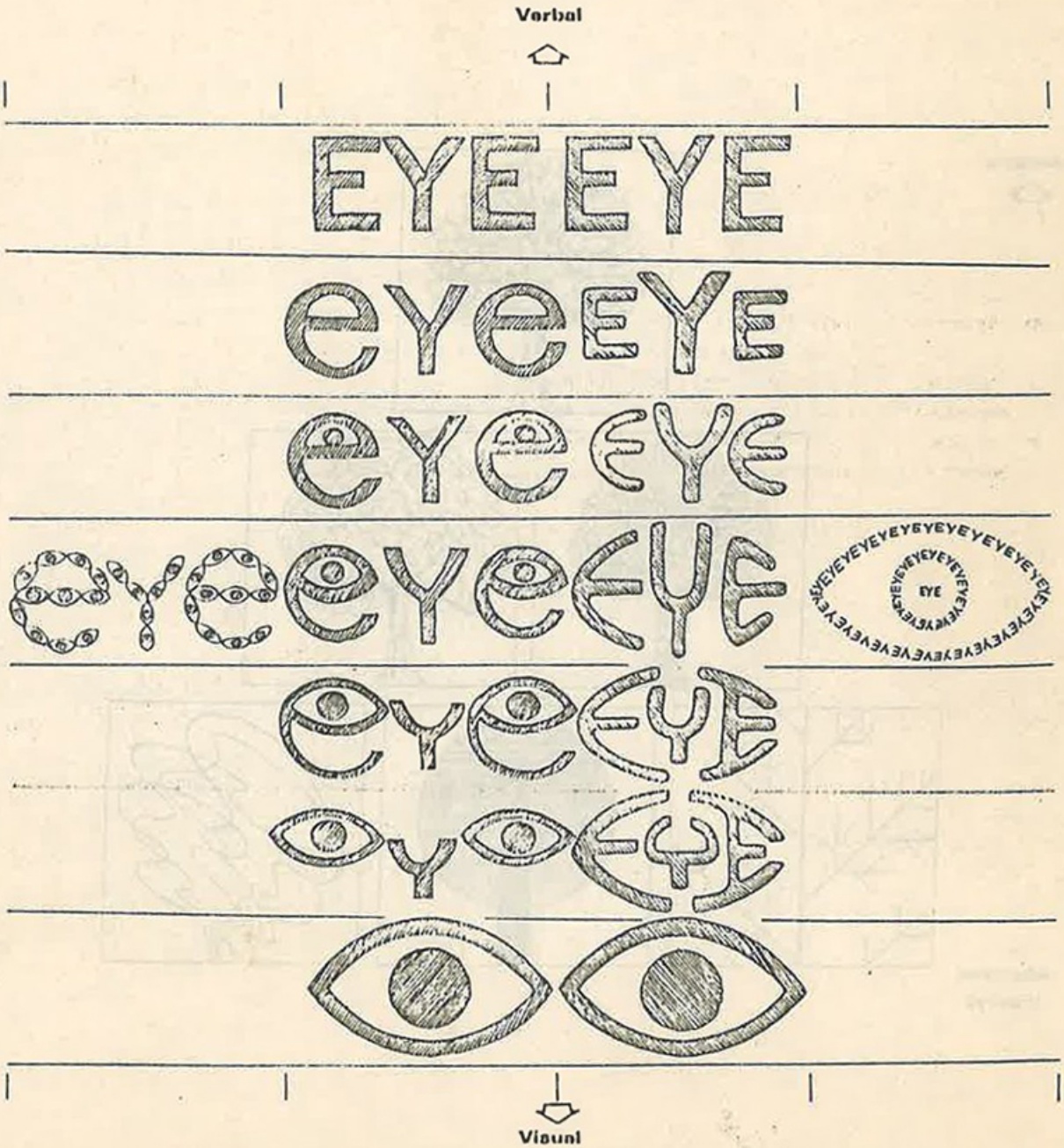
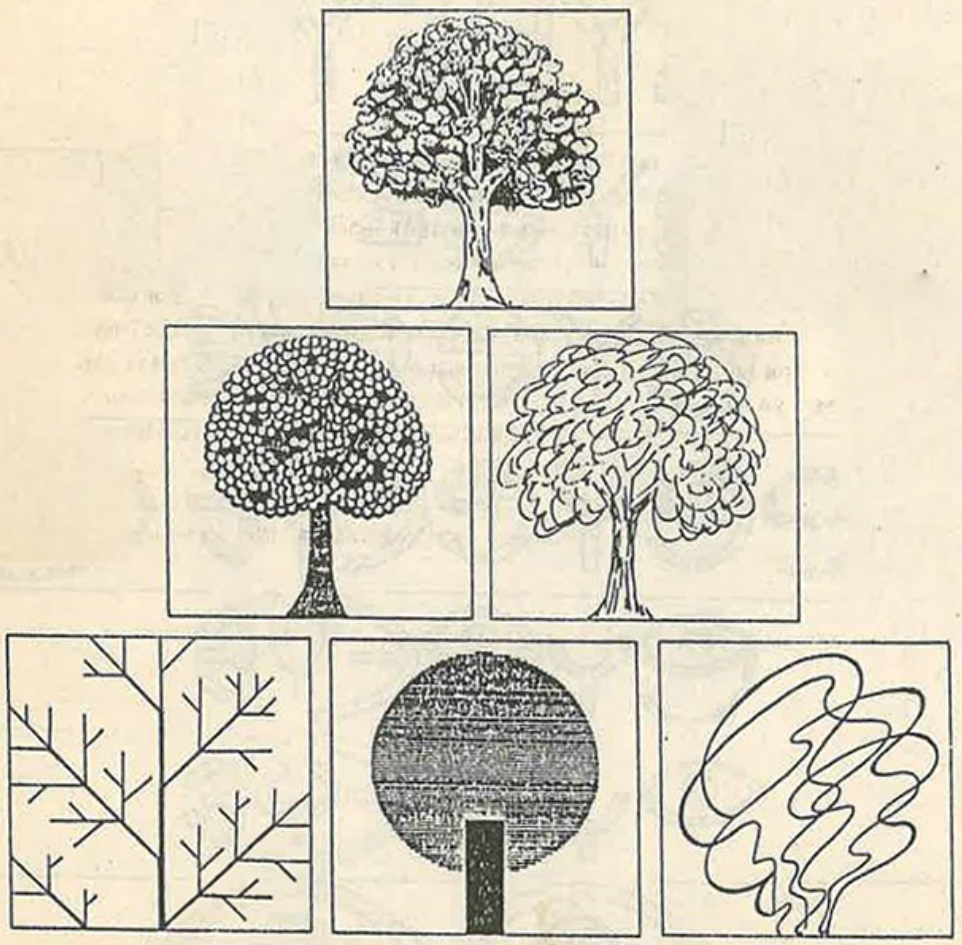


Chart 5 : Our conception of a realistic representation is fairly clear and concrete. On the other hand as we approach an abstract representation we find that we have many ways and possibilities of what goes on to make a representation abstract. The perception of a representation that is abstract can be fuzzy and may lead to several possibilities of interpreting its apparent meaning. As an example an illustration of a tree is shown from being realistic to various possibilities of it being abstract.

Fuzziness in abstraction

Realistic



Abstract (Fuzzy)

Chart 6 : The perception of information in a visual representation is both holistic and sequential, whereas that of the verbal medium is by and large, linearly sequential. An interchange in the use of the above conventions can lead to interesting possibilities in representations.

Path of information

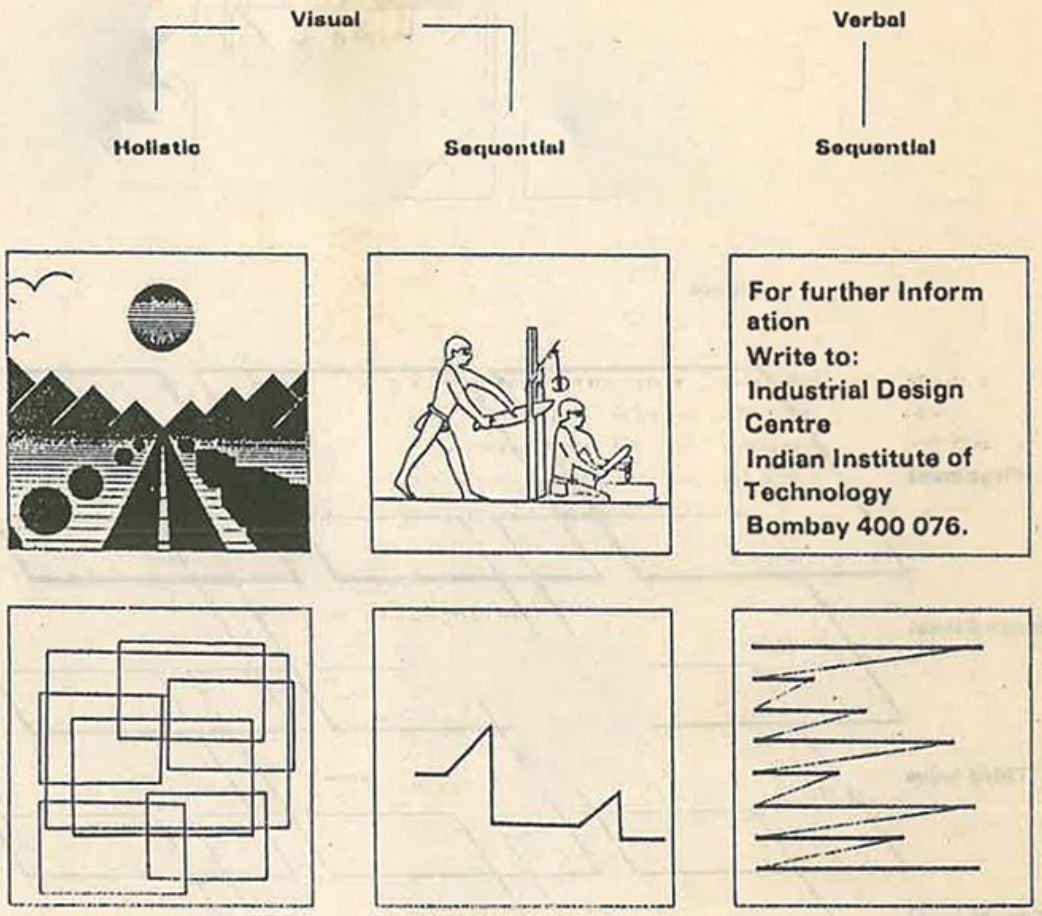
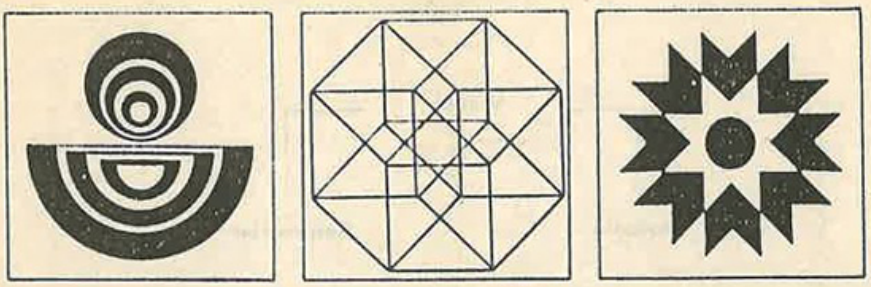


Chart 7 : Information can be conveyed at various levels of perception in a graphic representation, as in the case of a figure inside a figure inside a figure inside a figure and so on.

Levels of representation



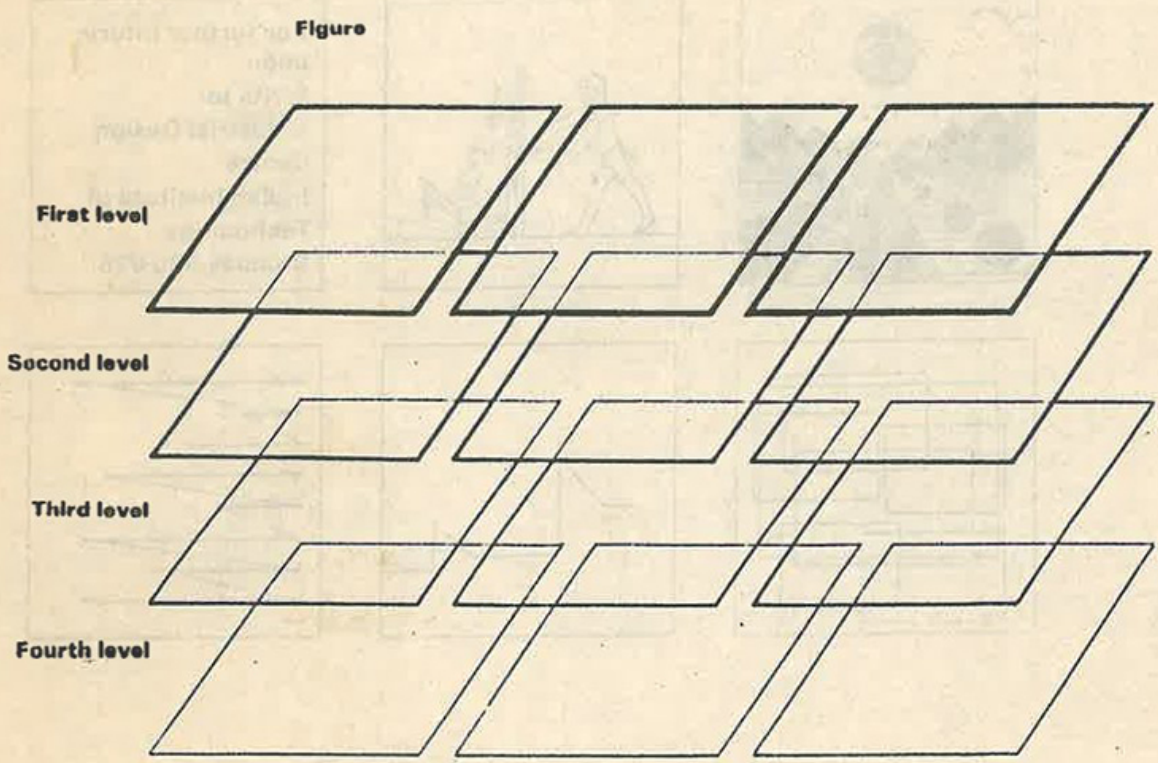


Chart 8 : A fundamental way of percieving a graphic representation is as marks on a two dimensional surface. These marks (which apparantly seem to contain no meaning) can be viewed as being
(a) iconic/similar (to the object that is being represented)
(b) indexical/indicative (of the object) and
(c) symbol/signs (that follow certain conventions).
Through an extention of the interpretativeness of the meanings inherent in the representations, one can now begin to establish connections (between these representations) to generate additional information. If all these three modes are combined together in a graphic representation to a reveal a multitude of information, such a representation would be termed as a super representation.

Types of Information

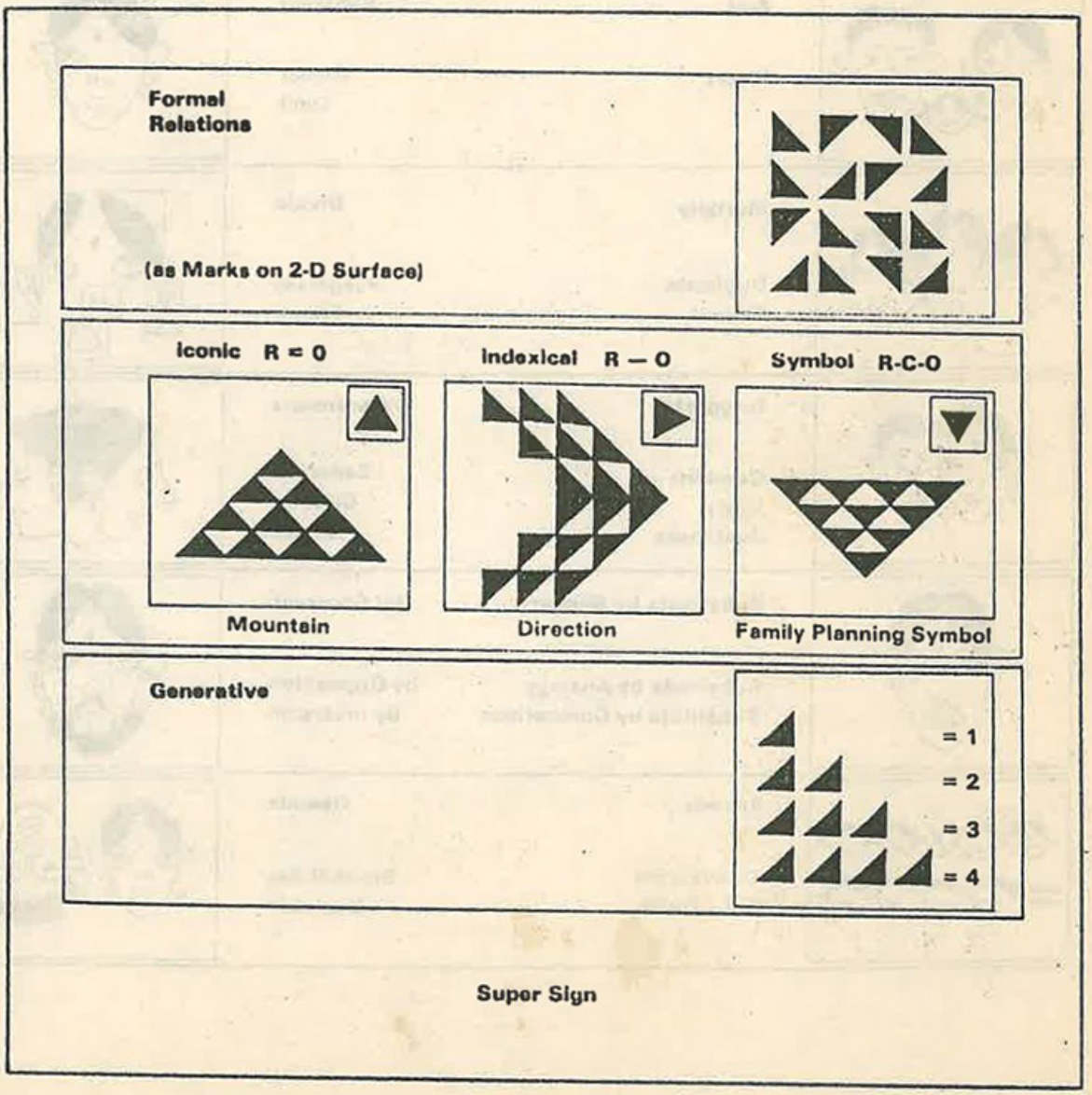
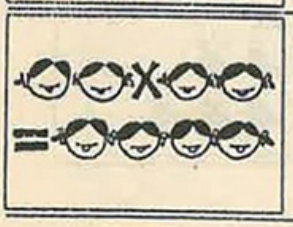


Chart 9 : Some of the operations that generate and manipulate meanings have been identified. The operations are fairly simple though they can lead to complex structures. These operators acting in a spatial field of representations from the realistic to the abstract and from complexity to simplicity, form the principle domain of graphic representations.

Operations in representations

	**Increase** **Enlarge** **Emphasize** **Exaggerate**	**Reduce** **Subjugate** **Decrease** **Suppress**	
	**Add** **Insert**	**Subtract** **Reject** **Omit**	
	**Multiply** **Duplicate** **Repeat**	**Divide** **Fragment** **Frame**	
	**Integrate** **Combine** **Unify** **Juxtapose**	**Differentiate** **Seperate** **Classify** **Isolate**	
	**Substitute by Similarity** **Substitute by Analogy** **Substitute by Comparison**	**by Contrast** **by Opposition** **by Inversion**	
	**Encode** **Convention** **Set Rules**	**Decode** **Break Rules** **Decipher**	

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Verbal and Visual :

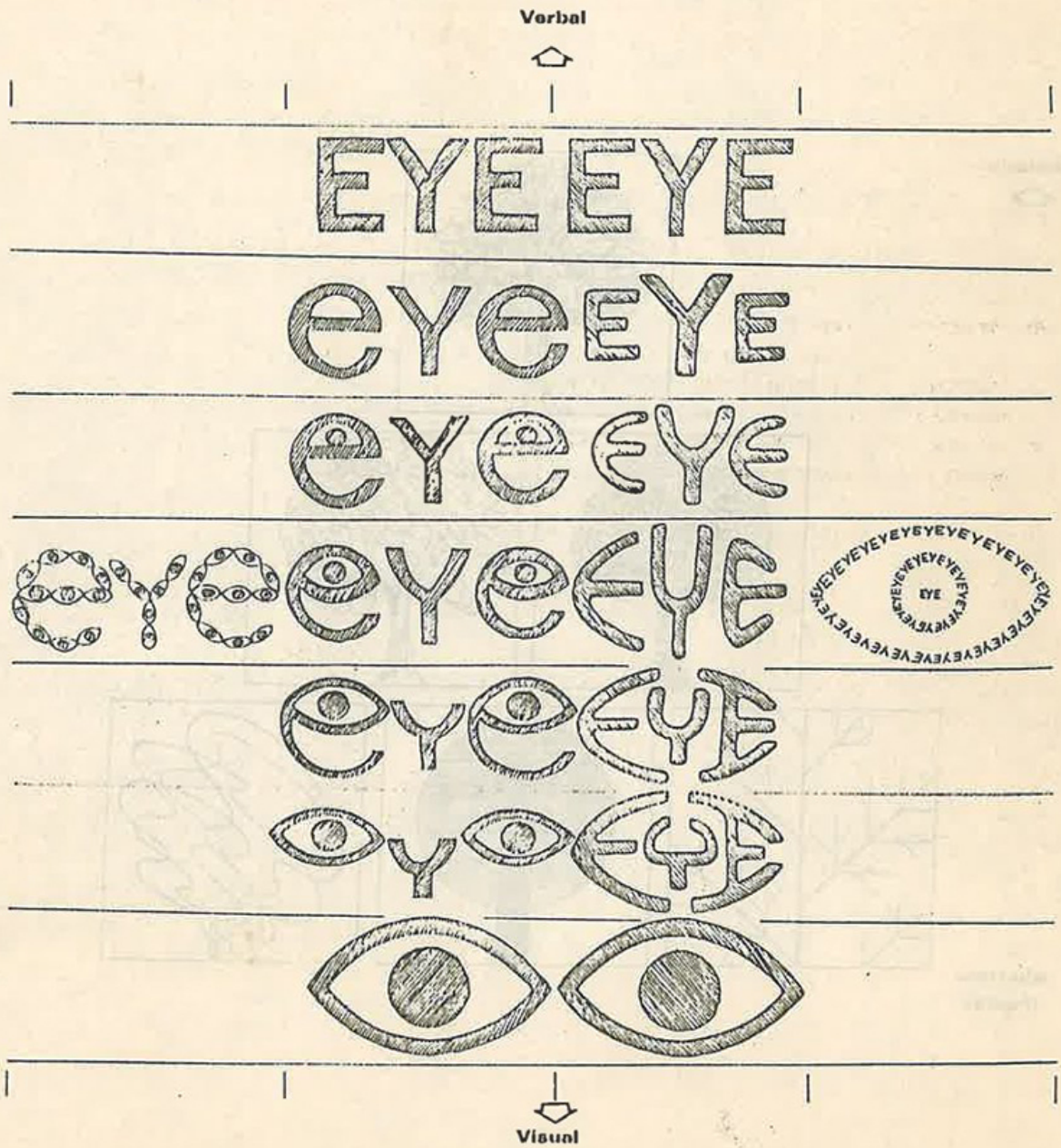


Chart 5 : Our conception of a realistic representation is fairly clear and concrete. On the other hand as we approach an abstract representation we find that we have many ways and possibilities of what goes on to make a representation abstract. The perception of a representation that is abstract can be fuzzy and may lead to several possibilities of interpreting its apparent meaning. As an example an illustration of a tree is shown from being realistic to various possibilities of it being abstract.

Fuzziness in abstraction

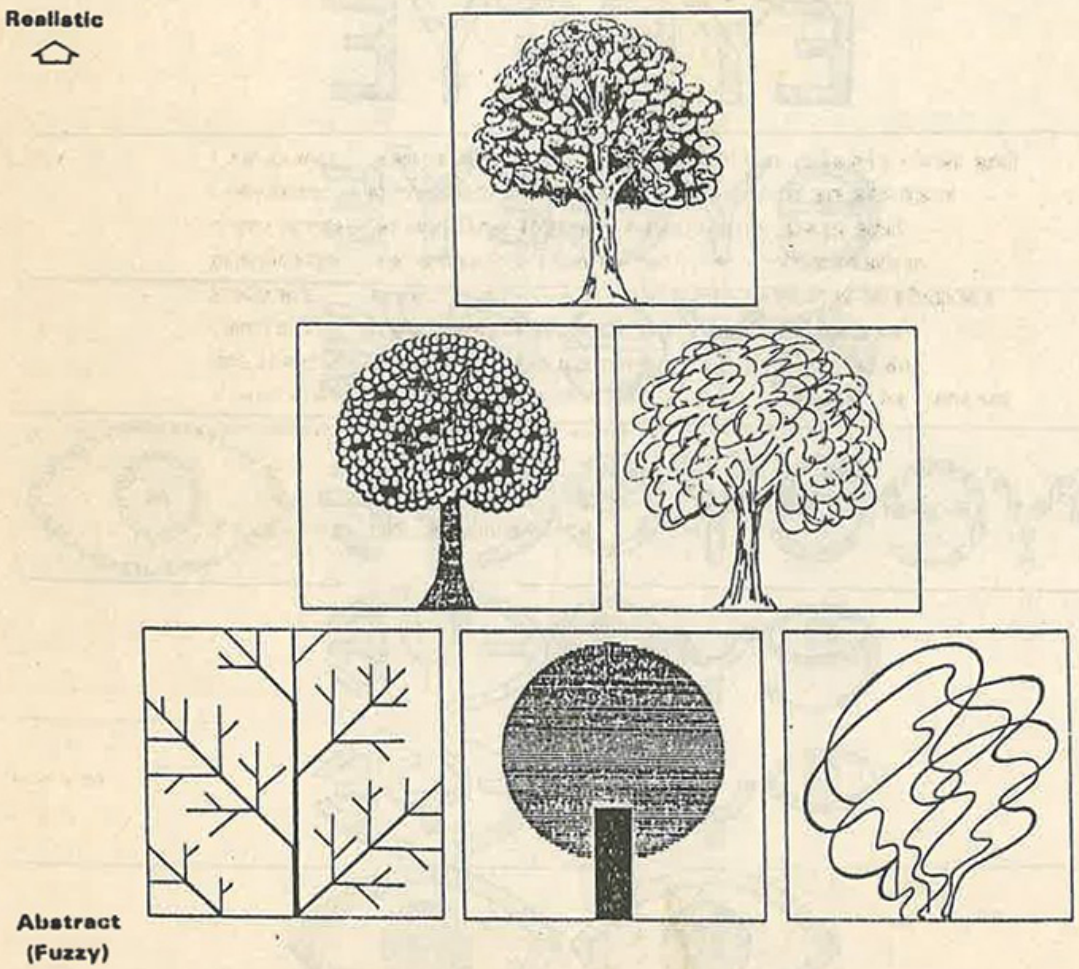


Chart 6 : The perception of information in a visual representation is both holistic and sequential, whereas that of the verbal medium is by and large, linearly sequential. An interchange in the use of the above conventions can lead to interesting possibilities in representations.

Path of information

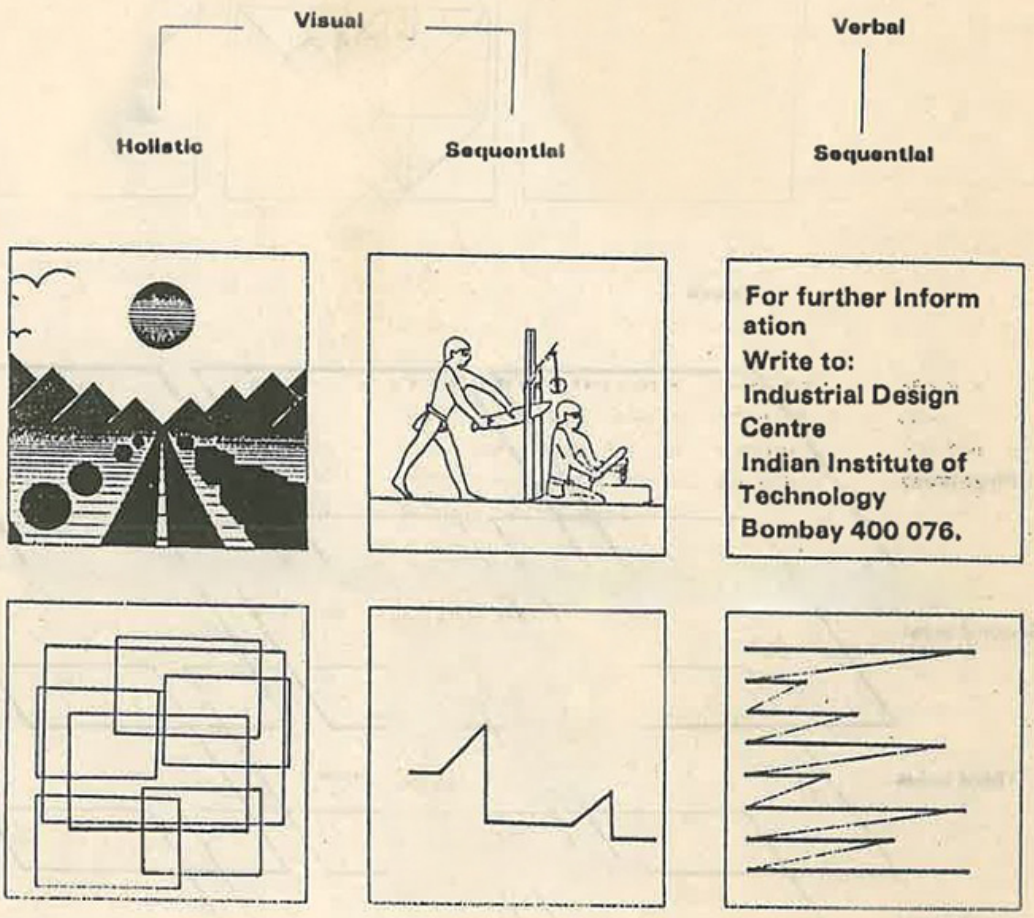
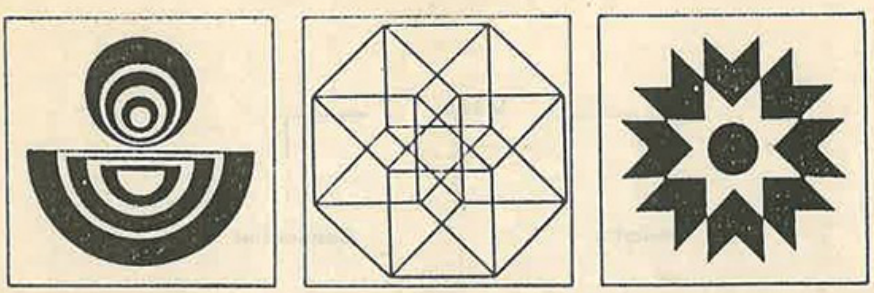


Chart 7 : Information can be conveyed at various levels of perception in a graphic representation, as in the case of a figure inside a figure inside a figure and so on.

Levels of representation



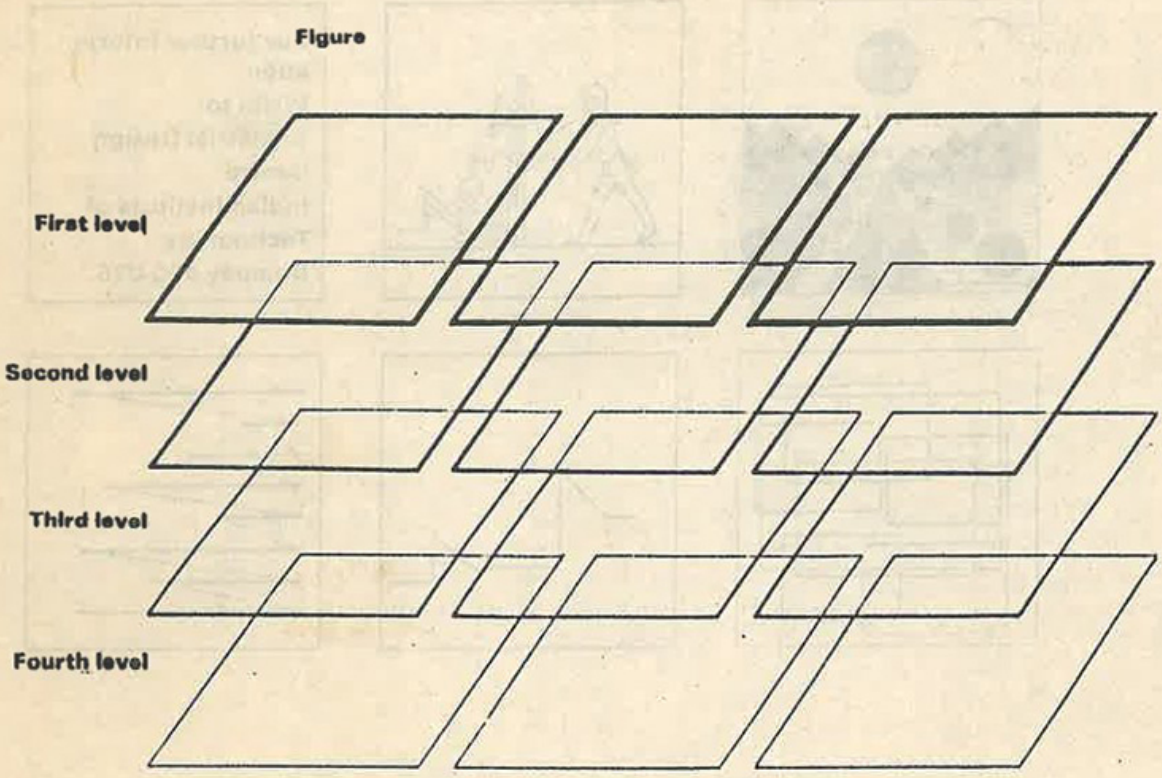


Chart 8 : A fundamental way of percieving a graphic representation is as marks on a two dimensional surface. These marks (which apparantly seem to contain no meaning) can be viewed as being
(a) iconic/similar (to the object that is being represented)
(b) indexical/indicative (of the object) and
(c) symbol/signs (that follow certain conventions).
Through an extention of the interpretativeness of the meanings inherent in the representations, one can now begin to establish connections (between these representations) to generate additional information. If all these three modes are combined together in a graphic representation to a reveal a multitude of information, such a representation would be termed as a super representation.

Types of Information

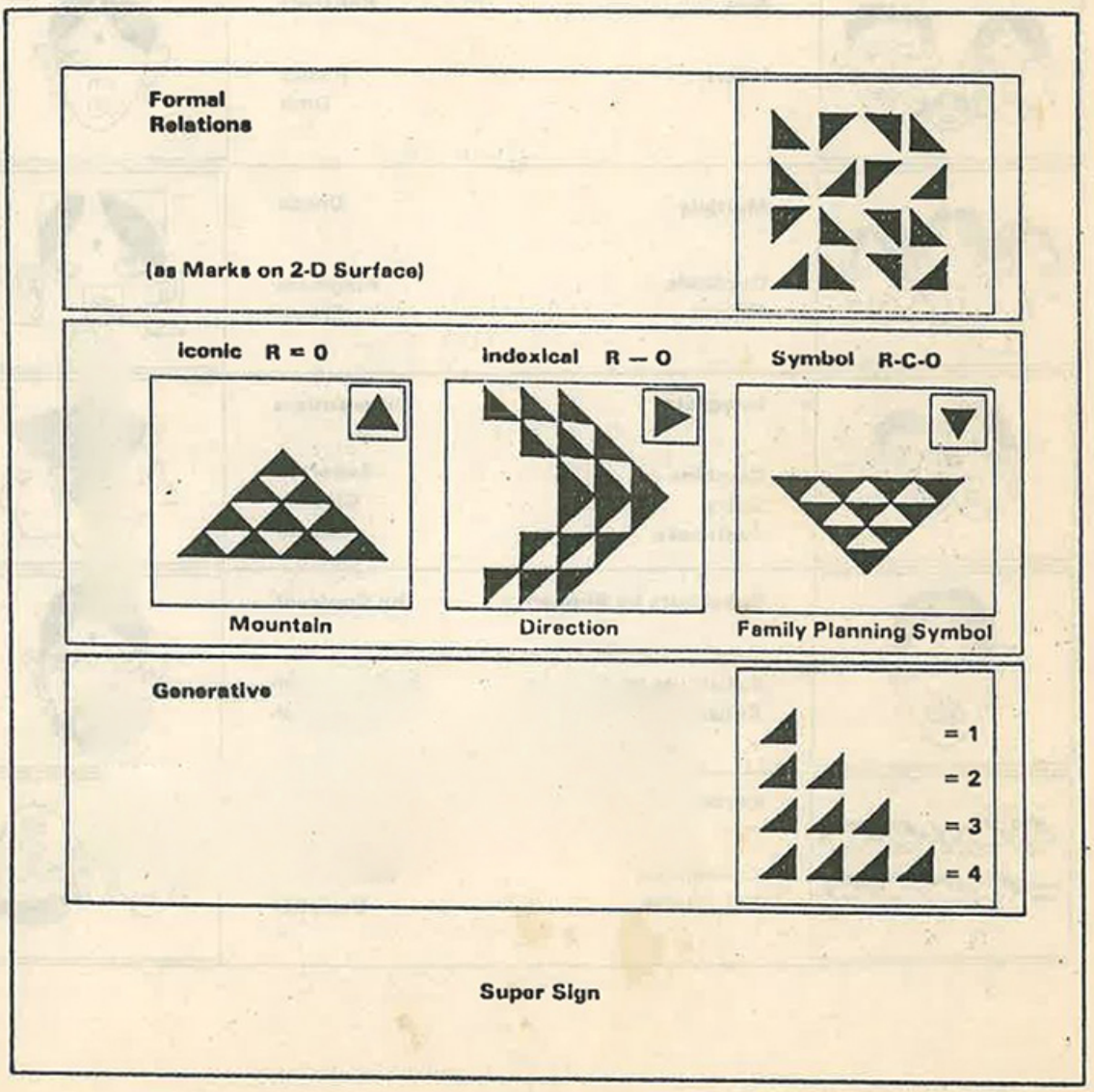
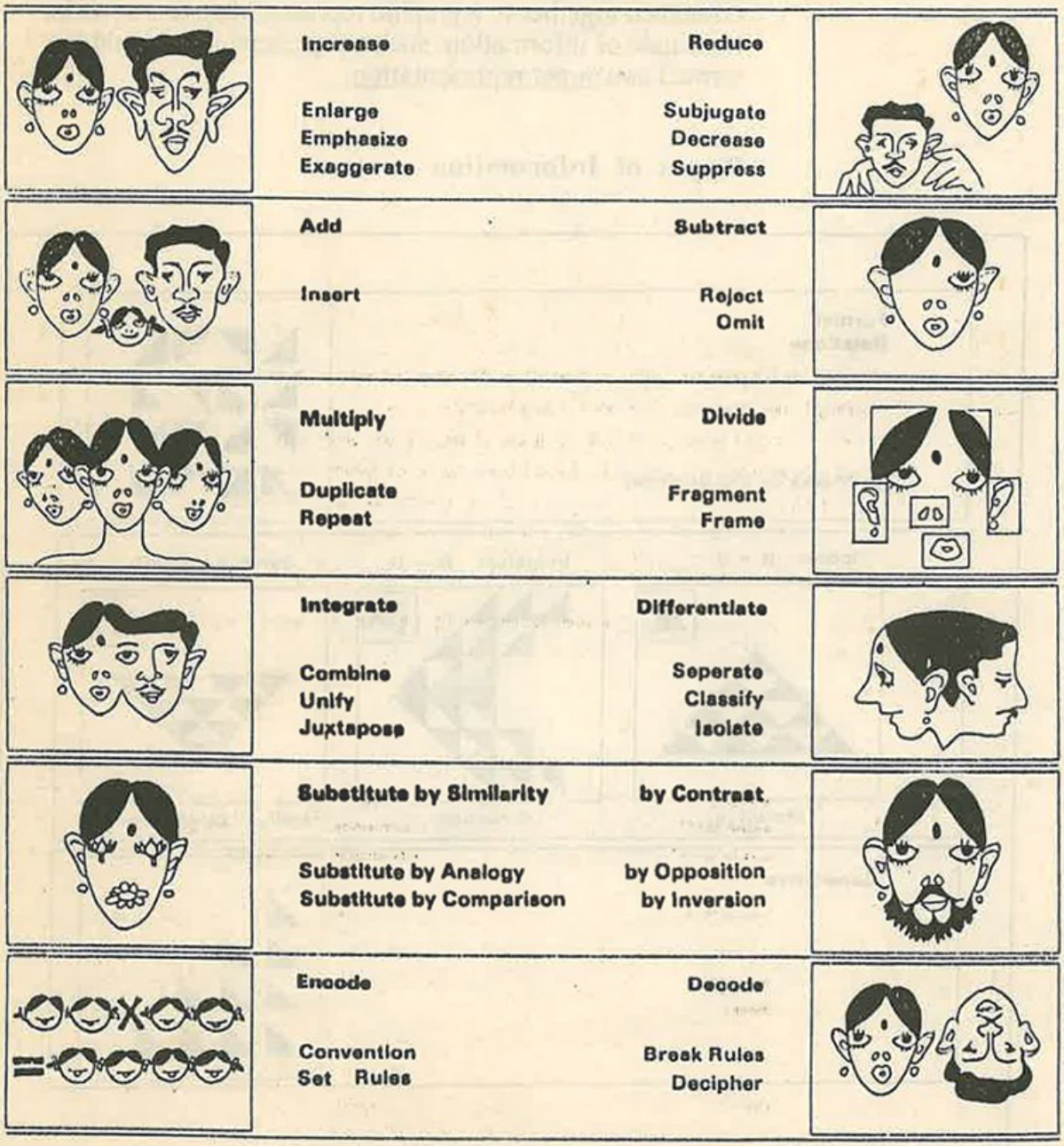


Chart 9 : Some of the operations that generate and manipulate meanings have been identified. The operations are fairly simple though they can lead to complex structures. These operators acting in a spatial field of representations from the realistic to the abstract and from complexity to simplicity, form the principle domain of graphic representations.

Operations in representations



TECHNICAL TERMS IN SCIENCE; A STUDY IN SEMANTICS

S.J. Singh

The phenomenon with which I am concerned in this paper is familiar but perhaps has not been seen from the point of view which I am projecting here. I am going to deal with some of the processes of word formation in science using insights provided by etymology "the diachronic ingredient par excellence of linguistics" (Malkiel, 1983: 511) to show that under the surface exactitude and neutrality of technical terms there is a rhetorical and affectative significance the semantics of which can be appreciated only by an etymological analysis of the technical terms. As Austin (1961: 49) said "A word never - well, hardly ever - shakes off its etymology and its formation. In spite of all changes in and extensions of and addition to its meanings, and indeed pervading and governing these, there will persist the old idea".

It is well known and generally accepted now that language is not a homogeneous monolithic entity. It is made up of a number of varieties like dialects and professional varieties (registers). Technical terms are perhaps the most important markers, the most obvious features, of many of these specialised varieties of language, e.g. the language of science, language of commerce, and language of legal practice. "It is at the level of terms and not of words that the decisive cleavage between scientific language and ordinary language, scientific language and poetic language, etc. takes place" (Sebeok, 1974: 537)

Every important advance in science brings with it the need to expand the specialised vocabulary of that discipline by creating new terms to solve the crisis of communication. These days one hears of information explosion; knowledge is increasing at an unprecedented speed and with it is increasing the demand for means of communicating the flood of ideas. As Kelly (1984: 98-103) would say "things don't stay put for more than two minutes in science. There are revolutions brewing in the hallways." It thus becomes interesting to see the way scientists create technical terms to enrich their language and to cope with these revolutions of knowledge. The major part of the language of science is the over abundance of a linguistic form that is available to all speakers of the language. The language of science might show special characteristics in syntax and structure also but the present paper is concerned with the pragmatic formative processes of the specialised vocabulary of science.

Technical terms are unique to the scientific discipline in which they occur and have become so much a part of the scientific vocabulary that scientists don't realise, or perhaps don't care to, the immensely interesting connotations that these terms hide behind their familiar mundane exterior. As Asimov would put it "Scientific words are more interesting, more dramatic, more fascinating than any one would suspect from the mere dictionary definition." As seen in this paper, word formation in science is an extremely interesting process that involves both scholarly ingenuity and imaginative creativity on the part of the scientist who creates a word or a phrase to describe the phenomenon he has just noticed or discovered. Naming comes naturally to man. It is his natural tendency to transform all

his experience into words, or coloured patches, melodies, bronze statues or other patterns or symbols. As Roger Fowler says "the world we see has no shape without language" (1971: 27); words are "symbols or signs of affections or impressions of the soul" (Aristotle, De Interpretations).

The process of word formation can be classified into a number of discernible categories. Coining new words to suit the phenomenon being described, borrowing words from other languages, and combing elements or words to form new words are the well-known categories. Out of these, coinage is perhaps the most interesting process of adding items to existing scientific vocabulary and the present paper concerns itself with this process. Technical terms in this sense have a pragmatic aspect and convey the 'homo sapiens' quality of the scientist concerned with communication: his way of dividing the world into small bits to explicate more fully the microstructure of the natural phenomena. Although the scientist's one concern is objective representation of nature in creating words, "the axiomatic zone is often overloaded with emotional values" (Korzybski: 505). As early as 1882 Porter (page 22) wrote "Science is the offspring of sentiment." The sentimental trend is evident in the coinage of many scientific terms. Nevertheless, technical terms are not the 'epitheta ornantia' of classical rhetoric even though they do represent a creative use of language. The language act here correlates to the semiotic act comprising an interpretant, a sign, and an object. The process of word formation is that of 'semiotic mediation' in which two elements are brought into articulation by means of or through the intervention of some third element that serves as the vehicle or medium of communication. To see such a resemblance the mind has to make a generalization, or recognition of a kinship between two or more things. A high degree of intellectual power and sociocultural awareness is displayed by the scientist in this creative process. Polysemy, metaphor, metonymy, eponyms, and code switching are some of the ways in which technical terms come into existence or take on specialised meanings.

Polysemy is a well known and common phenomenon. We often hear of words like 'force', 'energy', 'work', which have meaning in science different from their meaning in ordinary language. Work of the intellectual kind is not work in scientific sense: Work here is one manifestation of energy, usually applied when a mechanical effort is involved. "Light is a form of radiant energy to which our eyes happen to be sensitive." "Sound is a form of vibration." Ordinary words acquire new meanings when they are used in specialised contexts. For example: the word 'screen' has different uses in photography, radio, textiles and psychology, and the word 'gate' in metallurgy, electronics, mechanical engineering, photography. These words are not merely extensions because even though they retain some trace of the original use they cannot be used as such in the new context. Physicists talk of a 'field of force', the 'flow of heat'. There is thus a reorientation suited to the new context. These words have one meaning for the ordinary man and another for the scientist. They do not, of course, alter their phonetic shape. To avoid this lexical ambiguity scientists prefer to have occult kind of words which would not have anything in common with ordinary language.

A kind of code switching takes place when situations are interchanged while the word remains the same. Many words have been borrowed from science to transfer either the exactitude of science to ordinary use or to explicate the use of a product of science: the words like streamline, aerodynamic,

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peroxide blonde, programming, a culture matrix and some examples of words which have entered ordinary usage. A nuclear holocaust has sociological reflexes built into it. Because technical terms are culture specific, code switching can sometimes create a sense of shock. Acid, for example, would not provoke a comment when used by a scientist, but will raise a few brows if mentioned in a group of young people where it could signal drugs. The words butter, oil, flower signal dangerous poisons when we speak of the oil of tartar, oil of vitriol, butter of arsenic and antimony, the flower of zinc etc.

Modelling is an important ingredient of the process of word formation. Analogue signs make abstract ideas more comprehensible. Modelling can be based on a
'sensible' analogy or a 'logical' analogy. The scientist takes recourse to both when charged with eloquence of the 'Eureka' state of the mind. As Meredith (1966: 48) says "the meanings of scientific words are to be found not by searching dictionaries but by probing the thoughts of these who originated them". In a discussion of semantics, especially when it is related to scientific vocabulary, a mention of the American philosopher Charles Peirce (1839-1914) is inevitable. His fundamental insight is that there is a world in itself and a world as represented by human cognition, and these two realms are brought into articulation by the mediating role of signs. Peirce equated language with man, man with the sign, the sign with the thought, and thus thought with the man. It would perhaps be in order to present at this point Peirce's thoughts on how the external world is represented in mental acts through semiotic mediation. Defining the sign, Pierce wrote in 1910.

> "By a Sign I mean anything whatever, real or fictible, which is capable of a sensible form, is applicable to something other than itself, that is already known, and that is capable of being so interpreted in another sign which I call its interpretant as to communicate something that may not have been previously known about its object. There is thus a triadic relation between a Sign, and Object, and an Interpretant." (MS 654.7).

> "A Sign, or Representation, is a First which stands in such a genuine triadic relation to a Second, called its Object, as to be capable of determining a Third, called its Interpretant, to assume the same triadic relation to its object in which it stands itself to the same object" (CP 2.274).

The Interpretant is the cognition of the mind or the mental representation created by the sign vehicle in its standing for an object. Peirce mentions three essential criteria for distinguishing types of signs.
1. There are features inherent in the sign or representamen: (a) "a mere quality" leading to a qualisign: (b) "an actual existing thing or event" which would make a sign; (c) "a general law" embodied in a legisign. For example, Saussure's famous 'language' and 'parole' would be manifested as legisign and sinsign respectively - tokens of the types.

2. Signs are distinguished by the way they are represented by their interpretants. (a) A rheme is"a sign of possibility", (b) a decent sign is "a sign of fact", (c) and argument is "a sign of reason."

3. Pierce mentions icon, index and symbol as signs in terms of their different relations with objects. (a) An icon represents an inherent similarity between the sign and the object, e.g. a shape similar to that of the object, whether or not it actually stands for the object. A drawing thus is not a diagram (icon) unless it is a diagram of something. (b) An Index represents an existential contextual connections between sign and object. It is constituted by a sign-object contiguity relation. Context is crucial for the index. It is interpreted through an actual spatiotemporal contiguity with its object. For example, anaphora (Pronoun reference) in a text is an index. (c) A symbol represents a general law that permits sign and object to be connected; "a genuine symbol is a symbol that has general meaning", that is, meaning apart from particular context. Symbols are not the things they are supposed to represent. The Kangaroo although it represents the idea of Australia is not Australia. 'Au' is chemical symbol for gold. In scientific reports and notes it represents gold but it cannot be used to fill a cavity or buy things.

Technical terms, as linguistic signs, exemplify the icon/index/symbol system. A particular term is a personal creation objectivizing the self consciousness of the individual who coins it; it is an individual, and perhaps a unique way of referring to and describing and interpreting the phenomena around us. Signs are all the objects that have the power to evoke in the readers or listener an idea. The smell of smoke is the sign of the ideas of fire and burning. Similarly, the scent of a rose is the sign of the ideas of colour and form that it excites. Since every word or sign is a personal creation, it necessarily signals the author's purpose and focus. The observant scientist uses models from the world around him to describe the objects or events discovered by him when the available store of words fail to match the sign power that the object has. He then resorts to the pragmatic process of metaphorical constructions, looking for likeness and trying to recognise kinship between two or more things. Terence Hawkes (1972: 9) commenting on the use of the metaphor writes, "the effect of metaphor 'properly' used is that by combining the familiar with the unfamiliar, it adds charm, and distinction, to clarity. Clarity comes from familiar everyday words, the proper or regular class of terms .... Charm comes from the intellectual pleasure afforded by the new resemblances noted in the metaphor, distinction from the surprising nature of some of the resemblance discerned." The metaphor in this case does not try to imitate the original but vividly points to its essential features to illustrate the object or the event the scientist wants to describe. Words like 'abort', 'umbilical' and 'pad', used in space science show the similarity of objects and events in two fields of discourse. 'Milk Stool' is used to describe the three rocket-engines on the lunar space craft; 'Christmas tree' is a device consisting of an assembly of fittings placed at the top of a well to control the flow of oil while drilling; 'acetabulum' (vinegar cup) is the cup-shaped socket in the hipbone into which the head of the thighbone fits; and, there are many more like these used in all branches of science. Of course, the use of metaphor in science is aimed at clarity of description; its purpose is not to produce what is known as 'charged writing.' A metaphor in literature is like "a joyous outburst of hymns of praise" (Herbert Read), it has connotations of emotive force, is often many-sided suggesting not one but a number of resemblances between tenor and vehicle and encourages imaginative exploration of a whole web of connections. The difference between a metaphor like 'milk stool' mentioned earlier and 'music-wheels' (gramaphone records) is the difference between formal (pad, crane, blade, bolt, neck), functional (acids eat into metals) and evaluative (music-wheels, jewel, bitch, peach) metaphors. In science one is not likely to meet metaphors as seen in the following passage: "That little

Andronica you put me onto. Oh, so sweet and juicy. You spend a night with her, all you need is a spoon and a straw. She's a double-dip strawberry sundae with a big whoosh of white whipped cream on top and then a big cherry sticking up in the air... I or as in "How 's it the days crawl by and yet the years fly? Life for me has been a bone caught in my throat." (Ibid: 101).

The purpose of figurative language in these passages is to create an effect which can be interpreted in more than one way. The scientist looks for terms which have monosignificance, as fidelity in the expression of signs and their interpretation is an important component of communication.

Metonymy is a figure of speech in which the name of an attribute of a thing or event is used instead of the thing or event itself e.g. lands belonging to the Crown, White House agrees to participate. In space science, 'eyeballs in' is a term used to denote extreme acceleration and 'eyeballs out' to denote 'extreme deceleration. These conditions typically accompany the referent of the scientific term. The experience of listening or reading thus becomes, through imagery, a different sort of experience from that of simply decoding; "it is an experience in which universe or a portion of it, is not analysed but integrated," (Darbyshire, 1971: 165).

It has been estimated that "of all the terms in pure physics - including the special names given to generalizations, effects and processes, but not the names of units and measurements - at least 15 per cent incorporate proper names" (Roller, 1947: 178-186). This percentage would naturally increase if the names of units and measurement, e.g. henry, joule, newton, watt, maxwell were to be included in the list of eponyms. Scientists, like most people, would like to be written about and remembered, especially if they have done work worthy of recognition looking for a special satisfaction of seeming to create a portion or the whole of the universe by reconstruction of a theory. People like Bauer (1953: 40-41) feel that at least in medicine "the use of eponyms is unquestionably overdone," but there are others who feel with Porter (1882: 29) that "science finds in man the desire for immortality and finds it to be a persistant and irrepressible force." One of the ways science has for gratifying the feeling of victory and achievement is the creation of eponyms. It does not follow, of course, that scientists do science only because they are after fame. Bunsen, for example, felt that "Work is noble; gain degrades." Explosions during his experiments with dangerous substances caused Bunsen burns, and virtually the loss of the sight of one eye, but the work with test-tube and retort went on. "Often", writes Bunsen's friend Henry Roscoe, "I have smelt roast Bunsen and seen his fingers smoking." The "father of gas analysis", as Bunsen is called, received 34 scientific awards and 16 orders. His name is immortalised by the Bunsen burner found in almost every laboratory. (Annie Oswald in SCALA, October 1986). Parkinson's Disease, Erlich's theory of Immunity, Fourier Analysis, Celsius, Gaussian curve, Halley's Comet, Raman Effect, are some of the innumerable eponyms found in the terminology of science.

Technical terms have also immortalised many places, where discoveries of significance were first made. Americium, Indium, Camembert, and a host of others bear testimony to the sentiments that momentarily overcame the objective and neutral side of science and it is difficult to accept Savory's (1967: 116) comment that "surely the scientist, besides being tone-deaf, lacks something that would testify to common humanity."

Another very interesting aspect of word formation in science is the creation of trade names to promote medicines. These terms are aimed at social impact and it is the social embedding which generates these terms. One of the major propositions of semantics is that what we call an object or person or situation influences the way it seen and evaluated, and as a result affects the way people respond to it. This psychological and societal bias is seen in the trade names like 'celestamine', 'myogard', 'calmpose' etc.

Scientists have also drawn upon their knowledge of classical literature and Greek mythology to create technical terms, especially in medicine. The names of greek heroes and deities are used to name some of the parts of the body. Each of these terms has an interesting story to tell. We all know the word 'atlas'. Atlas was a Greek hero who was supposed to carry the world on his shoulders. Atlas is also the name for the first vertebra of the neck that supports the skull. Pylorus is the muscle that closes the stomach, the point at which the stomach passes into the intestine. In Greek mythology, Pylorus was a gatekeeper. Achilles heel, venereal, and morphine (from Morpheus the Greek God of dreams) are some examples of terms that trace their origins to Greek mythology.

Concluding remarks

There is general agreement among scholars that the use of English in science is remarkable for its objectivity, impersonality, and emotional neutrality. Scientists are supposed to describe an object as it is, unlike poets who present an object as they perceive it within the framework of their feelings, emotions and imaginative experience. As a corollary of this the use of language in literature is supposed to be subjective, evocative, and metaphorical, and the use of language in scientific writing is considered to be prosaic, factual and impersonal. Bolinger (1968: 271), for example, says that every science has developed "a denatured language" which would be used by its speakers "without the infusion of their own personalities and prejudices." Flood (1960: VIII) says that a scientist "is mainly concerned with the exact and logical expression of that which he wishes to pass on to others. His purpose is to inform, not to excite emotion." Hayakawa (1959:117) thinks that the crucial fact about science is that "we can communicate scientific facts to each other without knowing or scaring about each other's feeling." In Savory's view (Savory 1967: 112) words used in science are characterised not only by the constancy of their meanings but also by "their ugliness and their emotional neutrality." In his opinion the use of English in Science "expounds and explains without emotion so that one can read, as one has read, many pages of scientific books with never a quickening of the pulse." He also adds (Savory 1967: 116) that one of the characteristic features of the language of science is that it "makes no provision for the slightest gleam of humor." A pilot analysis of one thousand technical terms, taken from five dictionaries suggested the following three hypothesis:

> (a) The mythical world of Greek and Roman deities has been, for a long time, a source of attraction for poets. It is a well-known fact that poets, such as, Keats and Shelley, sometimes escaped from the world of ugly reality into the beautiful world of Greek methology, which was for them a perennial source of inspiration and emotional nourishment. The number of scientific concepts named after Greek and Roman deities is so large that it can be justifiably said that the

scientist shares to a certain extent the poet's characteristic fascination for the romantic world of Greek and Roman mythology.

(b) 1. Like other human beings scientists tend to glorify themselves, the people of their profession, and the places of their work. But as they cannot do it on account of the demands made on them by the nature of scientific inquiry, they fulfil this desire, inlike the poets who can achieve a similar satisfaction by writing odes, sonnets, and the like, by naming a large number of their concepts and discoveries after themselves or their places of work.

2. As medical scientists are by the very nature of their profession, intimately concerned with death and disease, there would be, in the terms coined by them, a much stronger tendency to immortalise themselves, their colleagues and their places of work.

(c) As in view of the rigour characteristic of scientific investigations, they have to be definitive and exact in their expression, and as human beings they would enjoy making use of metaphorical expressions, scientists resolve this conflict by coining a large number of terms of a metaphorical nature, terms which on the surface look emotionally neutral but which in their etymology conceal what would sometimes be known as fossilized poetry emnating from a perception of similarity between two apparently dissimilar entities.

These three hypothesis were based partly on the etymological analysis of a few hundred technical terms and partly on the data provided by introspection. I would now like to present in a tabular form information regarding the etymology of about 21,102 words taken from literature, physics, mathematics, chemistry and medicines. The present paper was prepared on the basis of some of the results of this analysis.

Content words of metaphorical origins, and those named after persons, places and Greek, Roman, and other deities

	Literature	Physics	Chemistry	Mathematics	Medicine
Content words of metaphorical origins and those named after deities	100 (4.06)	81 (1.58)	98 (3.01)	61 (2.35)	795 (10.40)
Content words named after persons	86 (3.49)	534 (10.38)	194 (5.96)	60 (2.31)	335 (4.38)
Content words named after places	25 (1.01)	61 (1.19)	82 (2.52)	6 (0.23)	34 (0.44)
Content words of other origins	2255 (91.44)	4469 (86.85)	2880 (88.51)	2472 (95.11)	6484 (84.78)
Total :	2466 (100)	5145 (100)	3244 (100)	2599 (100)	7648 (100)

(a) Degree of freedom = 12, (b) Error code = 0, (c) 2 = 1022.2019, (d) 2 = value required for significance at the 0.1% level = 32.91 and (e) magnitude = 31.0605

Literature and Science Compared

	Literature	Basic Sciences
Content words of metaphorical origins origins and those named after deities	100 (4.06)	240 (2.19)
Content words named after persons	86 (3.49)	788 (7.16)
Place names	25 (1.01)	149 (1.35)
Content words of other origins	2255 (91.44)	9821 (89.30)
Total	2466 (100)	10988 (100)

(a) Degrees of freedo = 3, (b) Error code = 0, (c) 2 = 72.7944, (d) 2 value required for for significance at the 0.1 % level of confidence = 16.27 and (e) Magnitude = 4.4741

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SEMIOTICS AND COGNITIVE ERGONOMICS: A COLLECTION

Vinal Kumar

Abstract:

Recent developments in the field of micro-electronics and micro-computers have enabled designers to build economic information processing and handling systems. Such systems are now being employed in various public services. However, the end-users are little understood as far as their mental processes are concerned. There is a need to develop a suitable research strategy in order to develop more usable user-interfaces. Both, semiotics and cognitive ergonomics, deal with human thought processes. It is useful to draw parallels between the concepts of the two. However, there methodologies differ. Through a collaborative relationship between the two it is possible to enrich the process of designing for usability.

1.0 Introduction

Information technology (IT) is a technology that employs computers and telecommunications for the acquisition, processing, storage and dissemination of vocal, pictorial, textural and numerical information. It will be useful to begin with some discussion on the human factors problem of IT-systems.

1.1 The problems of the design of user-interfaces of IT-systems

In Europe and USA a lot of discussion has been taking place on the problem of designing the user-interfaces of computer-based systems for general use. The 'general use' here can be characterized by the type of users who are going to use these systems. Hugh Smith (1980) categorizes the users of computers into three major groups. These are systems-support-mid-and end-users. End-users may include people such as clerks in banking and reservation systems, managers, accountants, doctors, librarians, and common men writing cheques or using credit cards. "General use' in this discussion relates to the end-users. These users require consistent communication interfaces, good documentation and access to advisors, as indicated by Smith.

As computer-based systems become more prevalent in their use by the end-users, the problem of the design of user-interfaces becomes increasingly significant. Such users are large in number (and this number is fast increasing), and have diverse knowledge and experience bases.

1.1.1 An example

In order to illustrate the kind of problems encountered in the interaction of the end-users with computers, a part of the investigations carried out by Gilligan and Long (1984) can be discussed. In this study the researchers

were looking into the usability of British interactive video text system known as Prestel (The term 'Videotext' refers to any electronic system that makes computer-based information available via VDUs, or appropriately adapted television sets, to dispersed and reasonably numerous audience. In the interactive videotext the information is carried from the computer to the reciever by cable, usually telephone lines. The television screen displays textual and graphic information. Interactive services such as transaction processing may include banking,shopping, ticket booking and utility bill payments). It was claimed by the system implementers that the videotext was both interactive and easy to use, particularly when compared with other computerized information retrieval systems. However, the researchers found the mental models of users were not sufficiently represented at the VDU level interface:

"It seems to be the case at present that, in the transaction processing domain, videotext is most suitable for the users who know exactly what they wish to purchase or order. ..... In the real world people engaged in the transaction of shopping are usually in the physical presence of the object of the transaction and are able to use their full range of senses to develop a rich representation of the object. ..... In the absence of the object of a transaction we can assert that the poorer the internal representation of the object that a person has the greater the need for the available representation to be as rich as possible. For many transactions it would appear that videotext will prove unsuitable due to its relative lack of representational resolution."

This observation is an indication of the diffiuclt task IT-system researchers and designers have in providing usable (or user-friendly!) interfaces.

1.1.2 Need for cognitive research

A people-computer system can be represented as shown in fig. 1. This figure shows broad categories of the system components that constitute the concerns for research. Shackel (1984) in his report on the state of IT ergonomics in Europe has mentioned the design of 'cognitive and software interface' as one of the eight domains of IT ergonomics. In such an interface he includes the study of languages and language systems, information organization, display format and layout, dialogue structure and design, and advanced interfaces (e.g. intelligent systems, adaptive to user, etc.)

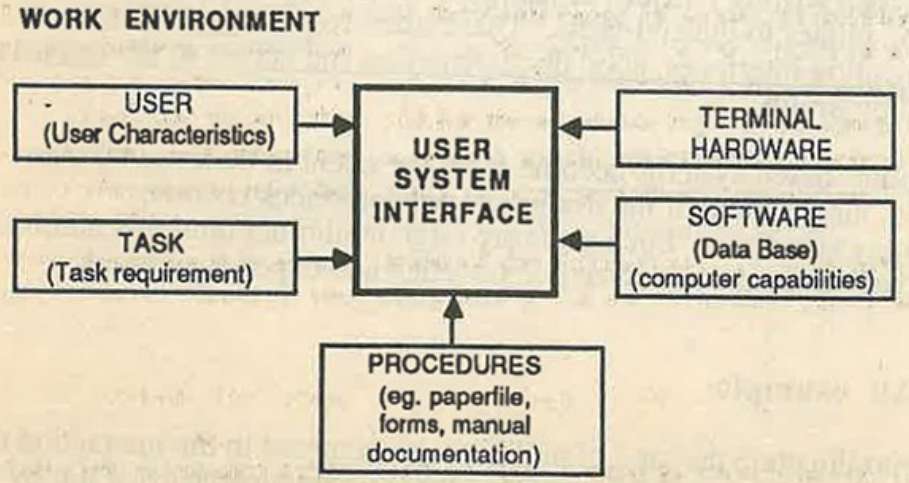


Fig 1. People - Computer System. Adopted from Shackel (1984)

The area of cognitive interfaces has been identified as one of the major gaps in IT ergonomics research in Europe. The corresponding gaps in India are obviously much greater. However, with a strategic plan of research it is possible to address the issues in IT ergonomics relevant to our context in a fruitful manner.

2.0 The Research Strategy in Cognitive Ergonomics for IT-

2.1 Extension of Ergonomics

Barnad et al (1981) have dealt with the issues of stategic research in human computer dialogue design. They suggest that ergonomics needs to be extended to analyse both the nature of the user dialogue with a system and his understanding of the information which it can manipulate and make available to him. For them: "To be truly 'usable', a system must be compatible not only with the characteristics of human perception and action but, and more critically, also with user's cognitive skills in communication, understanding, memory and problem solving."

The research issues in developing usable interactive systems for the end-users involve both methodological and conceptual problems. It is suggested that the extension of ergonomics requires an integration of the conceptual and empirical tools of human factors with those of cognitive psychology. The idea is to evolve research strategies that are capable of dealing with user's skills without overlooking the aim of providing a pragmatic basis for ergonomics inputs in the design process.

2.2 Heuristic tools for the designer

One useful strategy is provided by Morton et al (1979), mentioned by Barnard et al (1981), presented in fig. 2. The strategy emphasises the development and integration of both the conceptual and the empirical tools of behavioural research. The underlaying concept of this strategy is given by Barnard et al (1981):

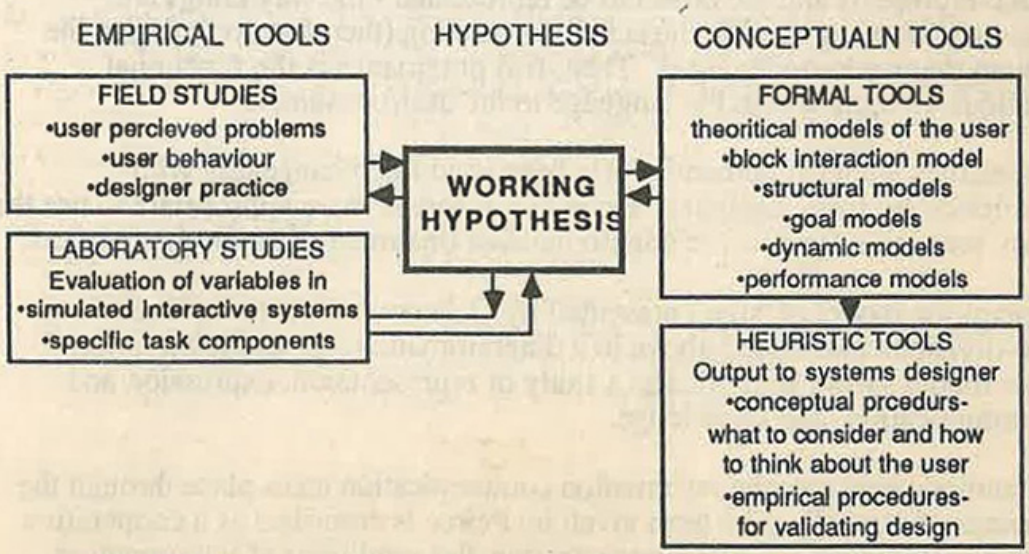


fig 2. Research Stratergy: the relationship between empirical and conceptual tools - adopted from Morton et al, 1979, in Barnard et al (1981)

"Just as a range of empirical tools is invoked, no single cognitive theory is viewed as being sufficiently rich to capture all the salient features of user's understanding, memory, knowledge and task performance. Accordingly, a range of conceptual models are brought to bear on the interpretation of different aspects of user behaviour. The pragmatic aim of this interpretative process is to provide heuristic tools for the designer. Heuristic tools of an analytic nature should enable the designer to conceptualize user's cognitive behaviour, with a view to identifying and appropriate and narrow range of solution paths for a particular application. Once determined, a narrow range of design options can be tested empirically and evaluated at relatively low cost in the process of system design and development."

With this uderstanding of research strategy, we can investigate the usefulness of semiotics as a conceptual tool in the design of IT systems.

3.0 Semiotics as a Conceptual Tool in Cognitive Research for IT Systems -

Semiotics is an inter-disciplinary subject that draws its concepts and contents from linguistics, philosophy, cultural studies, communication theory, psychology etc. Of late semiotics as a discipline has found acceptance by some industrial and communication designers. The impetus for this acceptance can be attributed to the designers' search for a rational basis for selection of forms and colours in their work. However, it is just a beginning in the investigation of meanings in the visual and other sensory elements that are employed in a design process.

3.1 Semiotics, the 'Sign' model, and semiosis -

Peirce has defined semiotics as a science of signs. A sign, according to Nadin, is a mediating entity in intellectual and material praxis; a memory device (we don't remember things but their signs). Semiotics has three major subdivisions. Following Ockerse (1984), (i) syntactics deals with the formal/structural relations between signs - it may be called the grammar of form, or how things are constituted. (ii) semantics is the relation between that which represents and the object to be represented - the way things are conveyed or recognized in the act of interpreting (therefore, pointing to the system that we know as sign). Then, (iii) pragmatics is the functional relations of signs within the language to the user/consumer.

Sometimes the term 'semantics' has been used interchangeably with 'semiotics' by some designer. However, it seems more appropriate to use the term 'semiotics' for a more comprehensive treatment of the design process.

A semiotic model of 'sign', presented by Ockerse, connects the three sub-divisions mentioned above in a diagrammatic form as shown in fig. 3. This model shows semiotics as a study of representaion, expression and communication, and knowledge.

In semiotic concepts the information communication takes place through the process of semiosis. The term given by Peirce is described as a cooperative interaction among three components: one, the conditions of interpretation (Interpretant), two, that which represents (Representamen), and three, that which is represented (Object). Thus, while everything can be a sign, the

process of semiosis decides what is a sign. To constitute an information, the interaction of the above three components is essential. Signs are the mediating entities for all we do - to act, react, identify, represent, associate, assimilate, express, evaluate, produce etc., as Ockerse puts it. According to Peirce there is no thought without signs.

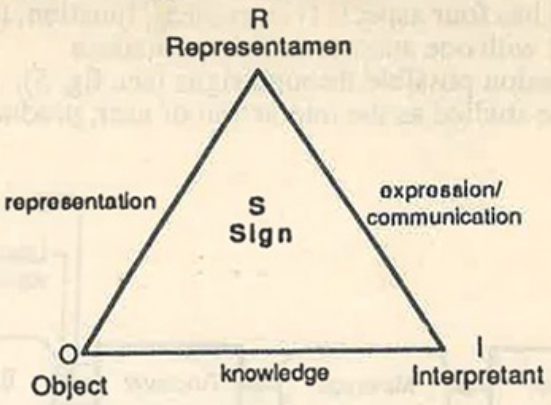


Fig 3. Semiotic model of Sign - adopted from Ockerse (1984)

3.2 Conceptual parallels between semiotics and cognitive ergonomics

It is possible and useful to draw parallels between the concepts and terminologies of the two disciplines for cognitive research. 'Sign' can be considered as a close parallel of 'stimulus' in experimental psychology. Based on the interpretation of a stimulus a person may choose to make a response. What response is made can be studied through the S-O-R model of cognitive psychology. The 'O' here refers to the organism -- the man. Man is probabilistic information processor, as opposed to the mechanistic information processor of experimental psychology and classical ergonomics . The probabilistic behaviourn of the human information processor is an outcome of the many experiences a person goes through in his or her life. These may include such things as education, culture, social and environmental conditions, and motivation. The Representation in the sign model is a sign at it physical level. This sign (or stimulus) represents the Object. From Ockerse, "The Object is anything intended to be represented, such as a corporation, an object, an idea, a system, a function etc. The Object is the ultimate objective of the sign, that which is pointed at or being conveyed. As such, the so-called Object cannot actually be seen and is never present except in our mind."

In cognitive psychology, schemas and prototypes refer to the concepts similar to that of the Object. Anderson (1980) describes schemas as large, complex units of knowledge that organise much of what we know about general categories of objects, classes of events, and types of people. In cognitive ergonomics, this phenomena is generally labelled as 'the internal representation of object object', as can be seen in section 1.1.1 on the usability of videotext. As shown in fig. 3, the internal representation of an object (the Object, schema) is a direct outcome of the knowledge of the user, and the efficiency and effectiveness of an intended communication through a sign (stimulus) will depend on some degree of compatibility between the knowledge of the sender and that of the receiver of information.

However, in case of the receiver, motication and environmental conditions also become important factors in receiving the information. This aspect of the communication process can be appreciated through fig. 4, where attention (needs) and conditions of information are among the influencing factors. The Interpretant component in the sign model deals with these factors. The Interpretant has four aspects (viz. context, function, interpreter and value) which interact with one another in order to make a communication or expression possible through signs (see fig. 5). In ergonomics this would be studied as the interaction of user, product and environment.

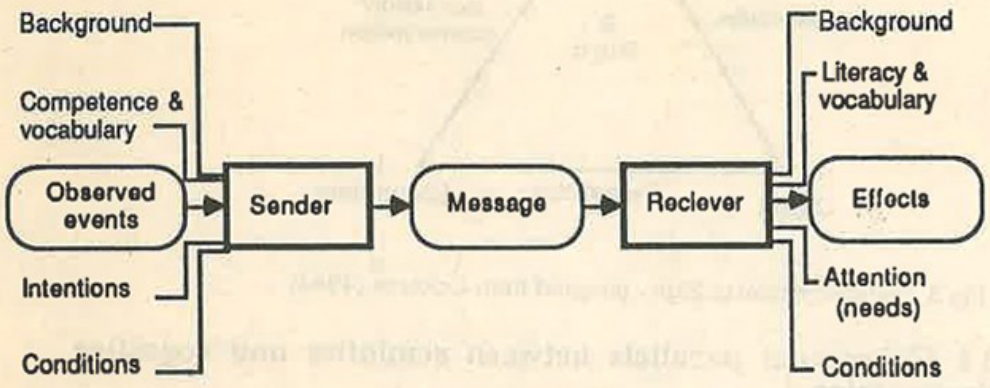


Fig 4 Communication process (adopted from Krippendorff and Butter, 1984)

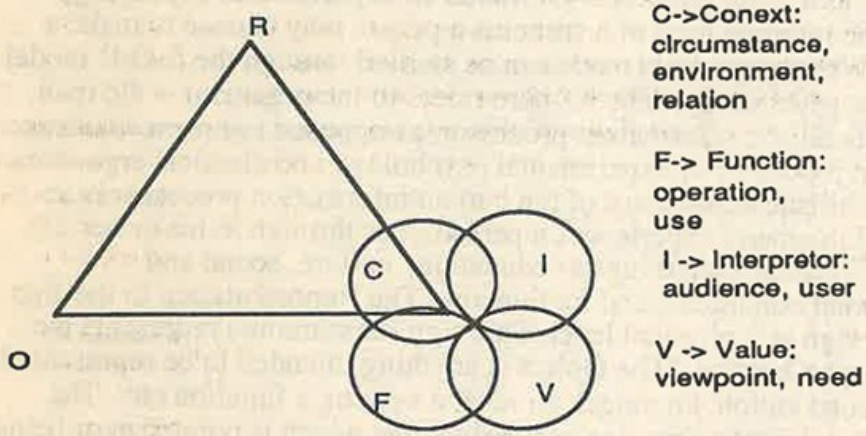


FIG. 5 Interpretant: defining the conditions for interpretation. adopted from Ockerse(1984)

4.0 Visual Communication Interface Design in IT

In the context of information technology, a model to understand and establish design guidelines for the representation of IT-systems to the end-users is developed by Jagodzinski (1983). See fig. 6. One important feature to be noticed in this model is the realization of the need of visual representation to assist mapping between the computer system and the user's internal representation of the computer system.

For us this is an area where the design of visual communication has to be investigated in a more scientific and systematic manner. The above mentioned model appears to be a good basis for systematically analysing the various aspects that constitute the sign model of semiotics.

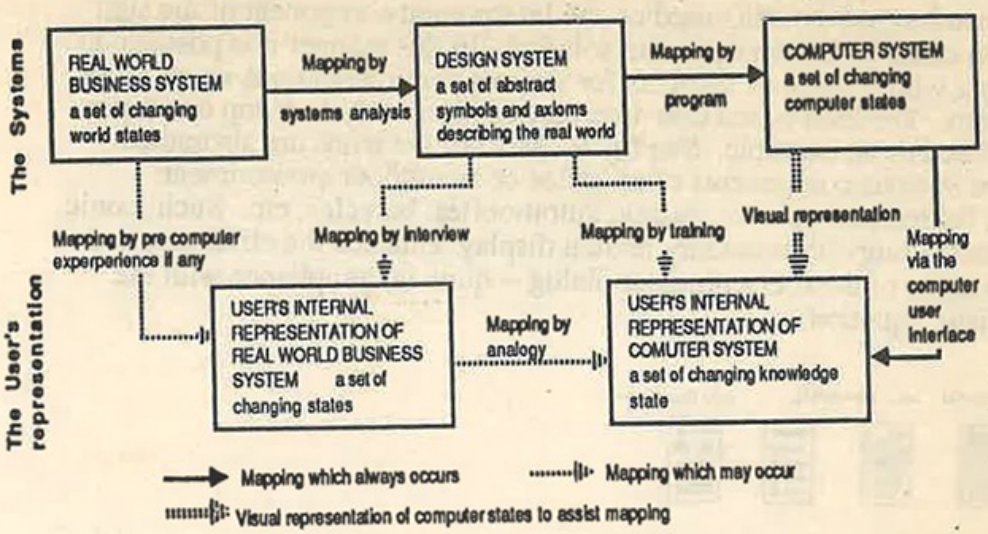


FIG. 6 The relationship between the real world, the computer system, the designer and the user in IT system design. Adapted from Jagodzinski, '83

4.1 Semiotics as a conceptual and generative tool for the designers of visual communication -

Recently there is a lot of interest shown by industrial designers in semiotics as a framework for analysising and visualizing communication design problems. Semiotics comes naturally to the minds of designers as it is a discipline rooted in arts and philosophy. The idea base is large and rich. Some industrial/visual designers are already using semiotic principles at varying levels in their design process.

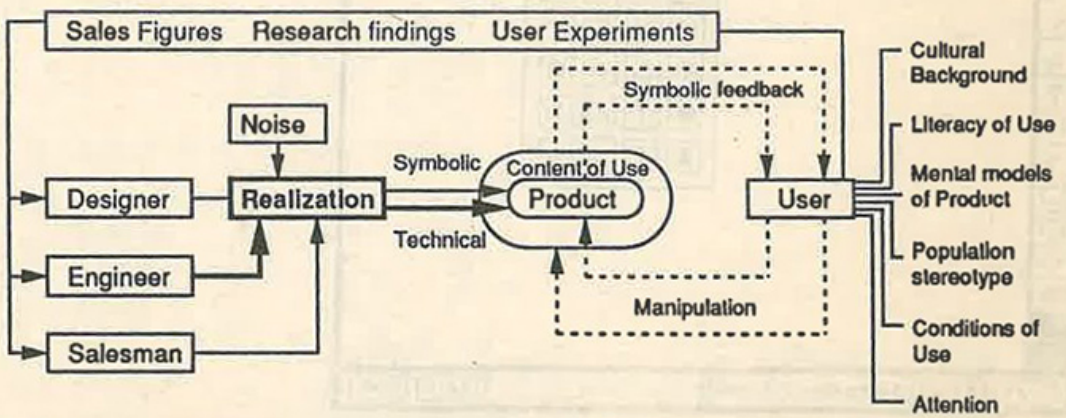


Fig 7. Product Semantics in the design and use of artifacts
(from Krippendorff and Butter, 1984)

The 'model of product semantics in the design and use of artifacts' (fig. 7), developed by Krippendorff and Butter (1984), is an indication of this new awareness in the field of design forcommunication. To appreciate the usefulness of the application of semiotics as a conceptual tool in a design process, we can consider the development of symbols (Representamens) for a calculator by Ockerse. Refer to fig. 8. Here forms are developed from

three pictorial representations through various stages of abstraction. A judgement has to be made based on the Interpretant component of the sign model in order to find an optimum solution. In this manner it is possible to develop a whole range of symbols for various communications needs in an IT-system. The icon-based user-interface of Micintosh desk-top computer can be cited as an example. See fig. 9. Most of the icons are abstracted from the various components of an office or an outdoor environment: papers, folders, aeroplanes, skiing, automobiles, bicycles, etc. Such iconic interfaces, alongwith necessary textual display, enhance the efficiency and effectiveness of the user-computer dialog -- quite in compliance with the synergistic equation.

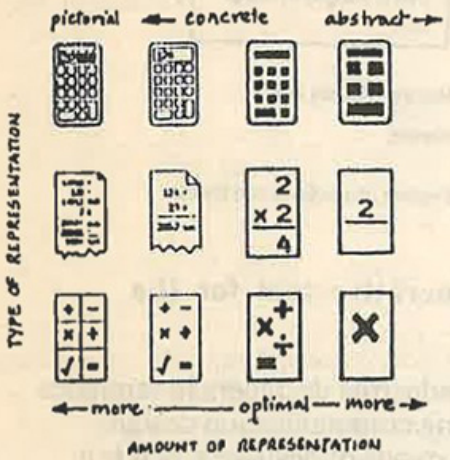


Fig. 8 Development of calculator symbols in a semiotic framework. Ockerse, 1984

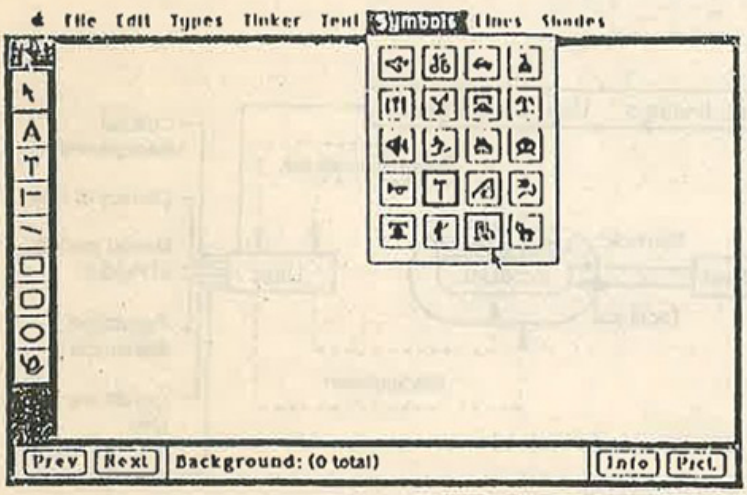


Fig 9. An example from the iconic interface of Mackintosh desk-top computer

In the Spring 1984 issue of the IDSA journal devoted to the theme 'Product Semantics', the articles deal with various ideas and concepts on the application of semiotics in the design process. On the state of the art, Krippendorff and Butter have thought of the three stages which are necessary for practical use of the discipline of semiotics in design. The first two stages are those of enhanced awareness, and the development of concepts and structure of symbolic language for products. The third stage deals with the evaluation aspects:

"In a third stage, empirical investigations are particularly essential to validate the propositions in this language. Those few research efforts that have demonstrably yielded fruits are rarely unquestionably valid and generalzable to support teaching and communication among designers at this time. What we need is a collection of generally applicable research methods that will not restric us by saying what is right and what is wrong, but that will show us where the range of practical option is."

It is in the light of the third stage of the development of 'product semantics' mentioned above that we can consider the usefulness of cognitive ergonomics as an evaluative tool.

4.2 Cognitive ergonomics as an evaluative tool for the designers of visual communication

The evaluation of various decision steps is imperative in a systematic and scientific design process. The experimental methods of psychological research can be used by researchers and designers in order to establish/confirm their hypothesis. Jagodzinski (1983) has reflected on this matter in his paper dealing with IT interfaces for naive users:

"First, the experimental methods of psychology can be used to test the truth of institutions. Green suggests that for problems which have two or more contradictory solutions, each one seemingly intuitively satisfactory, theories and experiments of psychologists can help in the choice of the best solution. Secondly, they can be used to indicate by how much and under what conditions method A is better than method B. Thirdly, psychology can suggest ways of doing things which are not intuitively obvious, even to the experts in the field."

In addition, the methods and approaches of ergonomics (and particularly systems ergonomics) can provide more comprehensive frameworks to develop guidelines for the usability of IT systems. For example, in case of inherent and inevitable limitations of the 'designed' visual symbols (or a system of symbols) ergonomics can suggest alternative ways of effectively dealing with these limitations. Thus, ergonomics can suggest suitable operational procedures, technology or training, or a comprehensive strategy.

One method of cognitive ergonomics which deserves a special mention is that of eliciting verbal reports from experimental subjects in order to understand the mechanisms and internal structure of their cognitive processes. The verbal report may be elicited in many ways. These may include concurrent verbal protocol (i.e. verbalizing by the subject his own mental processes during a task), or a retrospective report (i.e. reflecting on one's own performance while, for example, looking at the reply of a video recording of one's own task). Other methods can also be thought of -- depending on their relevance to the context of investigation. Though the method of verbal reports does have its own flaws, it neverthless is a useful tool in cognitive research, if used judiciously. The verbal reports are sometimes known as 'soft data', in contrast to the 'hard' measurement of 'response times' and 'errors'.

For illustrating the evaluation of the communicability of visual messages, some examples may be considered here. Figure 10, 11 and 12 are from a

report title 'Communicating with Pictures in Nepal'. The study was done on the unschooled rural population of Nepal. Some parameters that have been chosen for evaluation of communication are the effects of stylization of pictures, the diversity of interpretation of visual images, and the effectiveness of the graphic representation of a concept. Based on these investigations the researchers have developed certain conclusions and recommendations as to how pictures should be designed and presented to the unschooled villagers of Nepal. This report provides communication researchers and designers with a systematic framework for their design work and further relevant research.

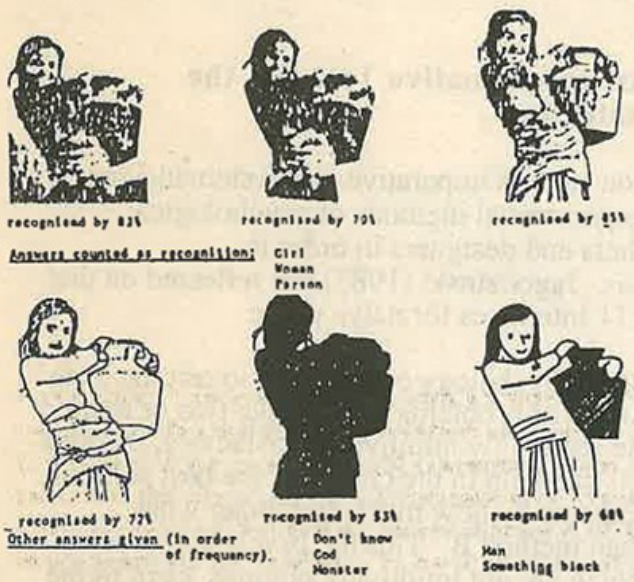


Fig 10. Effects of stylization of pictures (adopted from 'communicating with pictures in Nepal',1976)

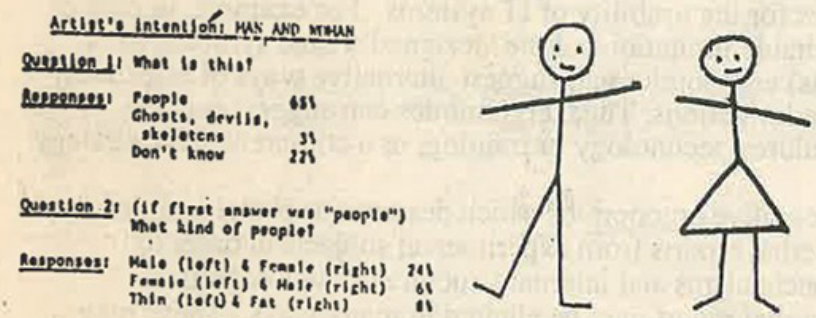


Fig. 11 Diversity of Interpretation

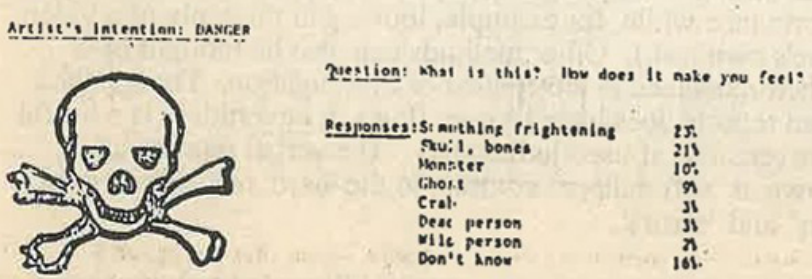
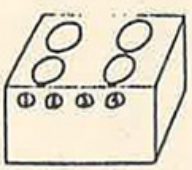


Fig. 12 Graphic representation of a concept

Significant differences in interpretation of visual images can be found in educated societies as well. Smith (1981) investigated the issue of compatibility with words and pictures. The concept of compatibility in his terms includes spatial relations, habit and meaning. This in turn has led to the concept of mediation process. "At its simplest level, compatibility can be judged by comparing different features of the observable environment, comparing an array of displays with a corresponding array of controls. As a mediation process, however, the compatibility of an external stimulus with an indivudual's internal 'model', which cannot be directly observed, may have to be inferred. Thus, there is a need for empirical verification of inferred compatibility relations, ...", quoting from Smith.

The interest of Smith lies in evaluating word use by employing some experimental visual images for verbal interpretation. However, we can also perceive the issue conversely by considering the evaluation of visual images. Some interesting examples which can be cited here to illustrate this point are those of 'stove burners', 'cross faucets', and 'lever faucets'. See figures 13, 14, 15. For the stove burners example, dispersion of the respondents over four different configurations of burner-control relationships is to be noted (see the table). Similar features can be seen in the other two examples.

Stove Burners

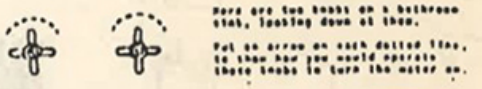


Four orderly relations between burners and controls accounted for almost all of the responses, with no significant difference in relative frequency among the three groups:

Burner Control Matching	Engineers (%)	Women (%)	HFS (%)
1 4 / 2 3 (II)	13	5	7
1 3 / 2 4 (III)	20	23	33
2 3 / 1 4 (IV)	41	53	42
2 3 / 1 4 (A)	26	16	16
Other		4	2

Fig. 13

Cross Faucets

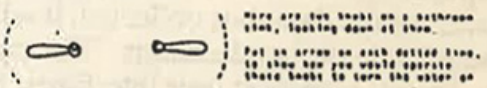


Of the four possible combinations of faucet controls, there was a significant difference among the groups in relative frequency of choice ($\chi^2 = 21.4, p < 0.01$). Women tended to specify paired clockwise (C) turning, whereas the other two groups preferred paired counter-clockwise (CC) turning:

Left Faucet	Right Faucet	Engineers (%)	Women (%)	HFS (%)
C	C	17	34	22
C	CC	23	20	13
CC	C	13	26	16
CC	CC	47	20	49

Fig. 14

Lever Faucets



Left faucet	Right faucet	Engineers (%)	Women (%)	HFS (%)
Back	Back	25	33	16
Back	Forward	3	3	5
Forward	Back	10	4	7
Forward	Forward	62	60	71

Fig. 15

As we can see from the preceding discussion, the underlying issue for investigation is that of user's internal representations/models (the Object in the sign model, fig. 3). It is a very complex matter at the present level of development to precisely determine which features in a visual image convey the intended or 'designed' meaning. Anderson (1980) in the section dealing with the representation of knowledge in his book on cognitive psychology

cities many experimental studies conducted to establish the nature of 'internal models'. An interesting study is the one done oby Labov (1973). He studies the classification behaviour of subjects through pictures of cups and bowls of varying dimensions (fig. 16). Based on the graph (fig. 17) drawn from the experimental data of Labov's study, the conclusion is that the human classification behaviour is very likely to vary continuously, besides the properties of an object with the context in which the object is imagined or presented.

Fig. 16

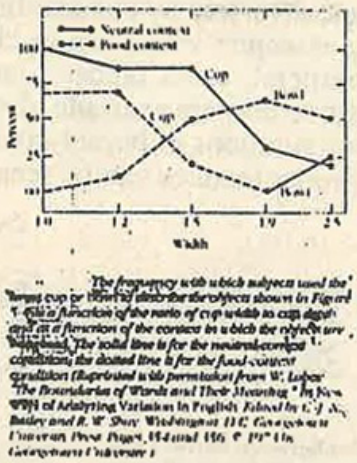


Fig. 17

Therefore, considering the development of symbols for a calculator in the semiotic framework as shown previously in fig. 8, it is clear that we need to udnerstand the internal model of the intended user (user group), evaluate the selected syblols for their effectiveness of communication is a given context. Here we can use verbal reports, for example, for understanding users' internal models of a calculator, and its use, and then for developing guidelines and criteria for the measurement of their performance in terms of response times, errors, and further evaluative verbal reports. Based on the results of the data thus collected, it will be possible to make more precise and reliable design decisions. The ergonomic investigation and design of the Prestel videotext user interfaces, referred to in section 1.1.1, follow similar approaches.

5.0 Conclusion

Design, to say it again, is a multi-and inter-disciplinary activity. The better knowledge- and experience-bases we have, individually and collectively, the more we are likely to build better models of design situations. Such models help us predict more realistically, and evaluate system performance in a more cost- and time-effective manner.

The discussion above is an effort to investigate the possibility of enhancing the thought and decission-making processes of the designers of the IT

user-interfaces. However, the ideas are also applicable to any complex socio-technical systems, owing to the similarities of the procedural and communication problems.

The concepts of semiotics and the methods of cognitive ergonomics are even more important for understanding our context. One can easily imagine the kind (and volume) of complexities of the cognitive processes we have, owing to the diversity of social, cultural, economic and lingual aspects. It is important to develop research and design methodologies which will help us in solving our problems in a more educated manner.

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THE INCLUSION OF VISUAL SEMANTICS INTO INTERDISCIPLINARY GOAL-ORIENTED DESIGN METHODS

Gerhard Eichweber:

Introduction

With the following presentation we wish to offer an insight into the semiotics-orientated design process we are experimenting at Value Design.

The special attention of this presentation, in accordance with the focus of some of our research, will be paid to the question of how to include semiotic concepts realistically into a methodic interdisciplinary design process, in which, by definition, more non-designers than designers are involved as full-time team members.

Design is Teamwork

Design, according to many people, should always be orientated primarily to human needs, and the best way to achieve this goal is by using the multi-discipline teamwork approach. At least this is what many people have always been saying, and at Value Design we try to live and work accordingly. We define Design as the interdisciplinary process of product development applied to the needs of people and society. This definition makes clear that design and designers are not mere synonyms.

The designer only takes part in this interdisciplinary process; and there can also be design without designers, only if the human needs criterion is met, which normally defines the designer's role in the team. As a matter of fact, Value Design is a team of Industrial and Graphic Designers, Engineers, Ergonomists and Architects, but project teams often have more client specialists than our own people as team members.

The difficulties of such interdisciplinary collaboration are well known. They arise from the professional intercompany and mental barriers of the people involved, and may result in limitations on communication and creativity as well as on the acceptance of the ideas of others.

In order to overcome such possible problems, or better still, in order to prevent their appearing, "the rules of the game" have to be established in the form of teamwork methods which take into account the psychological aspects of the what is called "group dynamics".

Goal-Orientated Methods

On the other hand, such teamwork methods and the techniques applied as part of them have, in order to be acceptable, to be orientated to the goals of the projects, and also have to include the means of planning and control of the proejct itself; i.e. time and cost.

The primary goals of a project, in order to make sense, are imposed, or, I

would rather say self-imposed on the team as:
P"Functional Requirements"
and
"Cost Requirements"
which the product, as result of the project, has to meet. Such requirements, in a way, express human needs, because products not only serve man and society as long as they offer well-defined functional qualities at an affordable price.

They are, therefore, important design criteria; but they can also be looked upon as engineering criteria as they are part of most engineering methods.

In order to be called design really a project has to satisfy further, more explicit, man-orientated criteria such as: Anthropometric Requirements,Physiological Requirements and Psychological Requirements, which as a whole we normally label in terms of ergonomics, human factors or human engineering.

It will easily be agreed upon by everybody that all the criteria so far mentioned can be explicitly named and, even more important, quantified and commonly understood by all members of a project team, whatever their profession.

Such joint definition and common understanding of the design goals by all team-members is a necessity for any efficient, goal-orientated design and development process.

However, there are still some other goals involved which are possibly the most decisive as far as design quality is concerned - if all other criteria have been met.

These have to do with the constant values of the psychology of perception, the variables of human cultures, the trends of time as well as of individual moods and tastes. We could possibly call them:

Values
Meanings
Character
Styles
etc.

And we would, on the presupposition of our method concept for a goal-orientated design process have to define and also quantify them within a broader interpretation of the term "functionality", as "perceptive functions".

The resulting perceptive goals, obviously, for their elaboration during the deisgn process, requires a good deal of semiotic know-how.

Value Design Method

All this has been, since the beginning of Value Design in 1976, mostly achieved and gradually converted into useful tools for application to complex design projects, which, in our case, mostly deal with high-tech

electronics systems.

In search of methods which would also be specially developed for the interdisciplinary team collaboration of specialists not necessarily acquainted with each other and dedicated to the overall goal of the optimization of functional and cost requirements, we discovered Value Analysis, or Value Engineering, which is Value Analysis applied to new, formerly unknown projects, while Value Analysis itself, as the name says is a method for the re-design of a product based on the existing one.

These methods are widely known in international industry, mostly with cost reduction in mind, and have been proven as a practical set of rules for interdisciplinary teamwork.

The only necessary step in order to convert Value Engineering into Value Design was the inclusion of many-related functions which, so far, in the current practice of Value Analysis, had been dealt with, a little helplessly, as "Prestige Functions".

Basically, the Value Design Method is characterized by the following sequence:

Phase 0. Initial Phase
Explanation of the project background, goals and approx. planning.

Phase 1. Information Phase
Data collection, definition and quantification of goals, project planning.

Phase 2. Creativity Phase
Search for solutions to the individual functions

Phase 3. Evaluation Phase
Evaluation of solutions found, elaboration of overall alternatives.

Phase 4. Realisation Phase
Elaboration of the best overall solution(s), planning of parallel action.

Phase 5. Introduction Phase
Introduction to production and market as planned in phase 4.

Phase 6. Value Control
Evaluation of the results achieved in product and market in comparison with the pre-established goals in phase 1.

Presentations to the management responsible take place after phases 0, 1, 3, 4, 5 and 6 and include the updating of project planning and a forecast regarding the achievement of goals.

Semantic Differential

While, for most projects, the Value Design Approach proved to be practical, in certain complex cases, for marketing purposes, the results and sometimes the existing previous products, as well as the environmental situations into which a projected product had to be integrated, and therefore had to be

compatible with, have been reviewed applying what is called the Semantic Differential.

The Semantic Differential, as is generally known, consists of pairs of adjectives opposed to each other with represent extreme semantic values, and a scale of intermediate values in which one can specify the individual impression one has of a product, or of an environmental situation.

Especially in a teamwork process, although not in a strict sense statistically representative, one can take the average values of the assessments of team members, thus creating "team assessment".

Semantic Differential:

Please mark one particular scale between each of the polar pairs:

calm	•	•	•	•	•	vivid
dark	•	•	•	•	•	light
weak	•	•	•	•	•	strong
smooth	•	•	•	•	•	rough
frugal	•	•	•	•	•	overdone
dull	•	•	•	•	•	bright
heavy	•	•	•	•	•	light
calming	•	•	•	•	•	exciting
repulsive	•	•	•	•	•	attractive
restrained	•	•	•	•	•	intrusive
stingy	•	•	•	•	•	generous
orderly	•	•	•	•	•	irregular
personal	•	•	•	•	•	impresonal
empty	•	•	•	•	•	full
cold	•	•	•	•	•	warm
common	•	•	•	•	•	strange
considerate	•	•	•	•	•	lively
inharmonious	•	•	•	•	•	harmonious
good style	•	•	•	•	•	bad style
soft	•	•	•	•	•	hard
submissive	•	•	•	•	•	powerful

Tool for Goal Definitions

In order to further the team's creativity in the case of complex projects, for example, in the definition of formal languages for client-specific Corporate Design guide-lines, the desire emerged to use Semantic Differential not only for evaluation after the fact, but, instead, before the fact, for the definition of the semantic objectives of the design process, and, therefore, specifically for phases 1, 2 and 3 of the Value Design Method.

While the goal definition, just like the critical evaluation of existing goals, was achieved similarly by calculating an average of the assessments of team members, the answer to the question as to how to design in a goal-orientated manner, was much more difficult, therefore, how to express intermediate values of opposed adjectives by shape or, in other words, by creating "Gestalt Solutions".

Achievement of Semantic Goals by Design

We experimented with the goals specified in semantic differential during the creativity phase, first applying brainstorming, later brain writing and brain drawing, as we term the same creativity technique, where every team member writes or draws his or her ideas on individual note paper for later presentation and reorganization on a pinboard. While the first results were merely verbal, with repeated application we achieved visual presentations, first of the general world, and thus still quite metaphorical, but increasingly orientated in the concrete cases we had to deal with.

In a concrete contract, we had to elaborate proposals for a corporate design guideline, or, in other words, for "Gestalt Continuum" to be applied in the control centres which this client builds around the world for all kinds of complex systems such as traffic control, power or water distribution, power plants, steel and cement factories etc.

Such control centres have a multiple semantic functionality, as they not only have to cope with very complex and stress-endangered working conditions for their operators, but also have to tell visitors what they are for, demonstrate their technological superiority and safety, and contribute to the corporate identities of both the owner and the builder.

Apart from this, and in order to be eligible, the formal language has to be compatible with the strongest cultural languages of shape and architecture.

In this project, therefore, with everybody knowing precisely (as a result of the Information Phase and its joint elaboration of the project specification) the task and its boundary condition in the creativity phase, we generated shapes by using braindrawing as responses to the pre-established values between every two opposite adjectives, which in the end, on evaluation, and due to formal compatibilities, resulted in three main streams or formal languages.

In order to choose between these three "alternatives" and to decide which one to elaborate further, we confronted them with pictures which we estimated to be significant for the most extreme cultural environments in which such control centres would be built: The West and The Near and Far East countries.

While one may well discuss the depth of such a very quick and practical "hands on" approach, and the possibilities of refinement without the loss of its advantages in practicality and efficiency, the approach has provided us with useful bases for further developments, and this in less time than any other earlier approach.

Perhaps even more important is the psychological influence which any method, once it has been proven, has on the team: The feeling of security that, not knowing yet what the result will be, one will achieve a given, complex goal in a given time at a given cost.

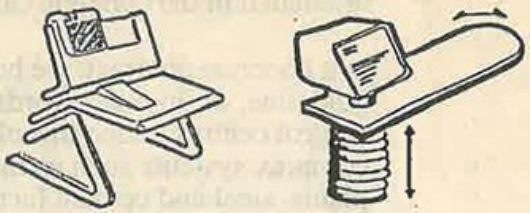
We have, therefore, exposed our experiences to you particularly in order to invite you to try similar approaches and to enter into an exchange of experiences which could in the end refine this very rudimentary approach to

a proven and recognized method.

The following sketches show some of the results: Two dimensional sketches - extreme values; three dimensional sketches - values inbetween the extreme positions

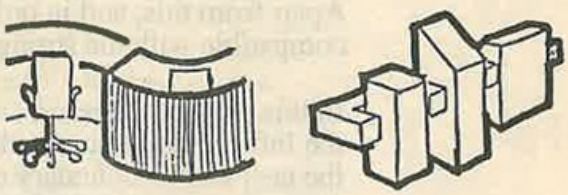
harmonious - inharmonious

harmonious/inharmonious



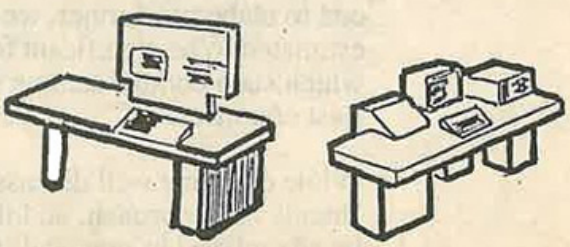
calm - vivid

calm/vivid

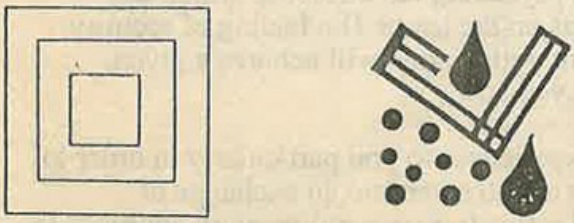


frugal - overdone

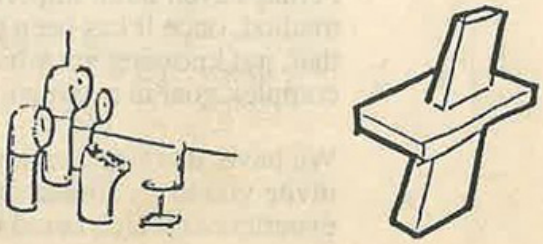
frugal/overdone



common - strange



common/strange



EXPLORING MEANING OF HUMAN ARTIFACTS: A PSYCHOLOGICAL APPROACH

P K Barthakur and Jyoti Mokashi

Assessment of meaning of the different facets of man's experience has been a challenging field. In recent times psychologists have been devising a number of techniques and methods for the purpose of measuring meaning. Some of the content analysis procedures like Thematic Apperception Test or Rorscharch Ink-Blot Test have become well known in the context of mental health testing. Better known in the area of measurement of meaning is the Osgood et al's[1] Semantic Differential method.

These techniques, however, have built in characteristics which distort the measurement of meaning. The projective techniques or other content analysis methods distort meaning through the category system employed for the analysis. After all, the content categories do not belong to the respondents whose responses are analyzed, but rather are provided by the analysts on the basis of some conceptual framework. Similarly, the semantic differential method distorts the meanings to the extent the dimensions to be applied are constructed and provided by the researchers. Because of these limitations undistorted measurement of meaning in any domain of human experience has remained problematic.

REPERTORY GRID TECHNIQUE

A simple but powerful technique for measuring meaning was designed in the mid-fifties by the American psychologist, George Kelly. In order to measure the system of meaning, an individual applies to the domain of interpersonal relationships Kelly[2] designed a test called Role Construct Repertory Test or Rep Test for short: The Rep Test permitted the individual taking the test to bring out his own ways of construing: the world of interpersonal relationships without being limited or distorted by the author's pre-defined or standardized categories. The Rep test is conceptually grounded in Kelly's 'Personal Construct Theory', which is a comprehensive theory of behaviour. The theory was developed in the context of Kelly's experience in the field of psychiatric work. Psychotherapy requires the understanding of the client's unique world view. The Rep test developed in the context of psychotherapy, therefore, is clinically oriented. That is, it aims at exploring the unique meaning system of the client in the domain of the interpersonal relationships in order to help him reorganize it in a more functional manner.

Subsequently wide applications of this technique have been made and many modifications have been designed to measure meaning in spheres other than interpersonal relationships. In the Centre for the Study of Human Learning (CSHL) at the Brunel University, U.K., the grid technique has been employed to explore personal meanings in such exotic areas as:

> "art objects, architectural drawings, the blending of whisky, staff

> comments on students essays, soldered joints, purposes for reading, mathematical examination questions, company research policy, events in a language class, man management events... and the 249 other topics mentioned in the technical publications of the Centre" [3] (p19)

Thus, gradually the grid technique has come to be used for exploring personal meaning on many topics. The versatility of the grid is restricted only by the ingenuity of the practitioners.

The present study is an attempt to employ the grid technique for purposes of exploring personal meanings attributed to such human artifacts as houses and living rooms by different individuals. But before we go on to a description of the present study a few basic concepts involved in the Personal Construct Theory need to be discussed.

BASIC CONCEPTS IN PERSONAL CONSTRUCT THEORY

Personal construct systems as being made up of hierarchically linked sets of bipolar constructs. A construct is not the same as its verbal constructs. A CONSTRUCT is A DISCRIMINATION, NOT A VERBAL LABEL. We should accept that in talking about his stance towards the world, we are talking about him as a person. Kelly describes a construct in the following terms:

> "A construct is like a reference axis, a basic dimension of appraisal, often unverbalised, frequently unsymbolized and occasionally unsignified in any manner except by the elemental processes it governs."

Kelly defined construct operationally as a way in which two or more things are alike and thereby different from a third or more things. That is, constructs are essentially bipolar. We never affirm anything without simultaneously denying something. When we say that a house is spacious, we are not saying that the house is three-legged, one-eyed, or moody. We are saying that the house is spacious, and is not crowded. We do not always, or even often, specify our construct pole, but make sense out of the world by noting likenesses and differences. The bipolarity subsists in the construct itself and not in the two sets of elements that are distinguished by the construct.

Some Basic Postulates

The Personal Construct Theory involves a number of basic postulates. A few of these postulates essential for the purposes of understanding the grid technique are briefly described here:

a) Individuality: A very fundamental assumption is that "persons differ from each other in their construction of events." Nobody has ever responded to a stimulus; they respond to what they perceive the stimulus to be. The aim of grids is to add to our capacity to explore the individual worlds of meaning in terms of which we live. Even the most "public" of constructs (such as those of natural sciences) are personal in that each of us individually give them a

meaning and make them part of our total system. "Public" constructs may have consensus support, repeatedly demonstrated predictive implications and often rehearsed meanings.

b) Organization: "Each person characteristically evolves for his convenience in anticipating events, a construction system embracing ordinal relationships between constructs." Construct systems are hierarchical with constructs standing to each other in subordinate and superordinate relationships. For instance, modes of transport subsume boats which subsume sailing boats which subsume dinghys which subsume Mirror dinghys and so forth.

c) Range of Convenience: A construct (or a subsystem of constructs) operates always within a context and there are a finite number of elements to which it can be applied by a given person at a given time. We categorize furniture as antique or modern or numbers as prime or non-prime. It will be absurd to consider antique or modern numbers and prime or non-prime furniture. Obviously, the range of convenience of our constructs can be, and sometimes is, extended, as in poetry, intoxication and inspiration. But for a given act of construing at a given time, the range of convenience of our constructs is always limited. From this fact Kelly derived a prime rule of grid construction. For given persons completing a grid, all elements must be within the range of convenience. Otherwise we are inviting him to commit a nonsense.

d) Commonality: "To the extent that one person employs a construction of experience which is similar to that employed by another, his processes are psychologically similar to those of the other person". Of course, it is true only in the context of the totality of the system or at least the subsystem of constructs. For example, in one study (Franselle and Bannister, 1967) it was found that the supporters of both the Labour Party and the Conservative Party saw a positive relationship between the constructs proud of being British and likely to vote conservative. If we follow the relationships through the network, we then find that for the Labour Party supporters proud of being relates positively to prejudiced while for the Tory Party supporters it relates negatively to prejudiced.

THE PRESENT STUDY

The present study is a small venture to examine the methodological possibilities of the grid technique for the purposes of exploring meanings of such human artifacts as houses and living rooms. This is a hurried pilot study for the limited purpose of methodological enquiry.

Two sets of elements were chosen. The first set consists of 12 photographs of houses photographed specially for the purpose in Pune city by an amateur photographer. The second set of elements consist of 12 photographs of living rooms similarly photographed in the middle-class homes in Pune city.

Data Collection Procedure

The elements in both the sets were grouped into 12 triads on the basis of intuitive judgements of the authors and the data collected from over 40 individuals with varying backgrounds from all over Pune.

The instructions and the data collection format for the set consisting of living rooms are reproduced below. (Similar procedure was followed for the set consisting of the houses).

"Please look at the twelve photographs of living rooms provided herewith. In the attached format you find the numbers 1 to 12 corresponding to the numbers on the photographs. In each row you find three circles below three numbers. Please indicate which two of the living rooms are alike in some important way that distinguishes them from the third living room. Please put an "X" in the two circle corresponding to the two living rooms which are alike. Kindly write (below the heading CONSTRUCT) a word or a short phrase which expresses your idea of the similarity between the two living rooms. Next, please write (below the heading CONTRASTS) a word or a short phrase indicating what makes the third living room different from the other two. Now, please put a "√" under the number corresponding to each living room which shares this characteristic (i.e. the characteristic of the third living room which is dis-similar from the other two).

Please repeat this process for all the rows."

DATA COLLECTION FORMAT

Response Format(Living Rooms)

Name: Sex: Age: Date:
Occupation: Qualification:
Hobbies: Place of residence:

	Living-room photograph number												constructs	contrasts
	1	2	3	4	5	6	7	8	9	10	11	12		
1														
2														
3														
4														
5														
6														
7														
8														
9														
10														
11														
12														

ANALYSIS AND INTERPRETATION

The analysis is done at an intuitive level for only two respondents in each of the two sets of elements. A Methodological exposition being the concern in the present context the analysis is merely illustrative. Besides, the choice of the elements are obviously a constricting factor. Secondly, the administration was not carried out in a strictly clinical manner required for meaningful elicitiation of the grid. Inspite of these limitations the analysis should be interesting from the methodological perspective.

The constructs elicited from each person are listed elementwise on the basis of which the analyses are based.

E -1

Maximum utilization of available space	Vs	Irritating show case
Clumsiness, may be due to lack of extra rooms	Vs	They do not know what they want

E-2

Rather spacious	Vs	Clumsy
Airy and spacious	Vs	Need a better arrangement
Better choice of furniture	Vs	Gaudy
Looks like the things are chosen	Vs	Middle class drawing rooms
More elegant	Vs	Would look better minus the show case
Spacious and Airy	Vs	Less furniture

E-3

Rather spacious	Vs	Clumsy
Middle class drawing rooms	Vs	Looks like the things are chosen
Middle class drawing rooms	Vs	Like to show off. Why a sitar in the living room?

E-4

Irritating show case	Vs	Maximum utilisation of available space
Need a better arrangement	Vs	Airy spacious
(Only buying capacity with) no taste	Vs	No idea of which to buy and where to keep the bought things
(Need some bright paint and) less furniture	Vs	Spacious and airy

E-5

Irritating show case	Vs	Maximum utilization of available space
Clumsy	Vs	Rather spacious
Gaudy	Vs	Better choice of furniture, its colour etc.
Need some bright paint and less furniture	Vs	Spacious and Airy

E-6

Clumsy	Vs	Rather spacious
Gaudy	Vs	Better choice of furniture, its colour etc.
Would look better minus the show cases	Vs	More elegant
Like to show off. (Why a sitar in the drawing room?)	Vs	Middle class drawing rooms
Bought and put things one by one	Vs	They really know what they want
Clumsy	Vs	More elegant

E-7

Maximum utilization of available space	Vs	Irritating show case
Only buying capacity with no taste	Vs	No idea of what to buy and where to keep the bought things
Clumsiness; may be due to lack of extra room	Vs	They do not know what they want or don't care

E-8

Better choice of furniture its colour etc.	Vs	Gaudy
Looks like the things are chosen	Vs	Middle class drawing room
More elegant	Vs	Would look better minus the show cases
They really know what they want	Vs	Bought and put things together one by one
More elegant	Vs	Clumsy

E-9

Middle class drawing rooms	Vs	Looks like the things are chosen
No idea of what to buy and where to keep the bought things	Vs	Only buying capacity with no taste
They don't know what they want or don't care	Vs	Clumsiness, may be due to lack of extra rooms
Middle class drawing room	Vs	Like to show off. (Why a sitar in the living rooms)

E-10

Better choice of furniture; its colour etc.	Vs	Gaudy
Looks like the things are chosen	Vs	Middle class drawing room
More elegant	Vs	Would look better minus the show cases
They really know what they want	Vs	Bought and put things together one by one
More elegant	Vs	Clumsy

E-11

Airy, spacious	Vs	Need a better arrangement
They really know what they want	Vs	Bought and put things together one by one
Spacious and airy	Vs	Need some bright paint and less furniture

E-12

Would look better minus the show cases	Vs	More elegant
Like to show off (Why a sitar in the living room?)	Vs	Middle class drawing rooms
Bought and put things together one by one	Vs	They really know what they want
Clumsy	Vs	More elegant

The aesthetic dimension, consists of quite a few subordinate categories. For instance, 'spacious and airy' means 'less furniture', as well as 'a better arrangement'. It also refers to being 'not clumsy'; 'clumsy' in turn is related

to 'more elegant', and 'more elegant' in turn to the absence of 'irritating show case'. The reference to the aesthetic dimension becomes absolutely clear when one looks at the constructs like 'they really know what they want Vs bought and put things together one by one', and 'looks like things are chosen Vs middle class drawing rooms'. Further, the aesthetic dimension gets revealed in the construct 'better choice of furniture, its colour etc. Vs gaudy'.

The pragmatic dimension comes when the respondent uses such constructs as "clumsiness, may be due to lack of extra rooms Vs they do not know what they want"; "maximum utilization of available space Vs irritating show case"; and "middle class drawing room Vs looks like things are chosen" (implying the middle class would have used aesthetic sense if they had the means).

Thus, Mrs B's grid reveals a degree of differentiation as well as integration. A closer look would reveal a number of clusters of elements to which the constructs are being applied by Mrs B in a similar way. That is to say she construes the set of elements as belonging to a few differentiated categories. For instance, E2, E8 and E11 are seen as very similar to one another but quite different from the rests.

In the second cluster she construes E4 and E5 and as similar; in the third cluster E3, E6, E9, E10 and E12 are seen as very similar, while E1 and E7 are construed similarly.

It would have been interesting to explore Mrs B's grid a little further and discover other superordinate constructs, A still higher order construct referring to feelings of pleasure, comfort etc. could very well have been discovered if followed up.

DISCUSSION

The grid is perhaps best looked on as a particular form of structured interview. Our usual way of exploring another person's construct system is by conversation. In talking to each other we come to understand the way the other person views his world, what goes for what for him, what implies what, what is important and unimportant and in what terms they seek to assess people and places and situations. The grid formalises this process and assigns mathematical values to the relationships between a person's constructs. It enables us to focus on particular sub-systems of construing and to note what is individual and surprising about the structure and content of a person's outlook on the world. Yet the information it gives us is not novel or some peculiar product of our "scientific world". It is a formalised version of the kind of information we are always seeking about each other, the kind of understanding we are always in process of gaining about each other.

How to Transcend the Trivialities

It is possible, as seen in one of the grids presented, that the respondent brings out only the most trivial constructs. In such cases it is possible to use the technique called 'laddering'.

Laddering is a procedure for eliciting increasingly superordinate constructs; that is, constructs of a higher order of abstraction than those elicited from triads or dyads of elements. This procedure involves first eliciting constructs in the usual manner and then asking the person to say which pole of each contruct they would prefer. The answer given is another construct superordinate to the first and which also has a preferred side. The question "why" is again asked about the preferred side of this new construct. The question, "why" is asked of each new construct until the person is unable (or unwilling) to produce more.

For example, with different types of camera lens as elements, the laddering was carried out from the elicited construct "shows more than can be seen by the naked eye-shows what can be seen with the naked eye". The preference was for lenses showing more than can be seen by the naked eye and, when asked why, she replied that one might see something new whereas there was no chance of seeing something new with the other type of lens. Why was it important for her to have a chance of seeing something new? You might stumble across a mystery - something you could explain. Why was this important? It put you in your place whereas otherwise you could think you were master of everything. Why was it important to be put in your place from time to time? Because only God has the answer to everything and you need to be reminded of that.

A person can be encouraged to ladder "downwards by asking such questions as "What makes you feel such and such?" For example, if someone describes a house as providing privacy, he or she could be asked as to 'What gives you the feeling of privacy?' Honikman (1976) did this in his study of people's views on living-rooms. By asking why a particular room was considerred say, formal, he
found that the answers always ended up with physical characteristics, e.g., rough bricks.

Sometimes it is difficult to make out precisely what the person is trying to convey as they go "up" the ladder. In these cases, the following comments can be useful:

a) You might say: "I think I understand what you mean, but just to make sure, would you please say what you had in mind again'. Very often, in repeating the discrimination, the person will be able to lighten up his construing and rephrase the construct in half-a-dozen words.

b) If you are in doubt whether or not you understand the construct, the stated opposite pole of the construct will often clarify it for you.

c) If in doubt, or we feel the words are too vague, we can ask whether he is really saying X, when we are pretty sure that X is not the case. By being given an indication of what the construct is not, the person is often able to lighten sufficiently to tell you what it really is.

Cognitive Complexity

Individuals differ in construing the world and hence in behaving towards it. The construct systems are distinguished in terms of the complexity. A cognitive system will be considered relatively complex in structure when (a)

it contains a relatively large number of elements and (b) the elements are integrated hierarchically by relatively extensive bonds of relationship.

The implication of the second element of cognitive complexity refers to the extent to which the different constructs given by the person are applied differentially to different elements. If a person who applied nearly every construct to refer to the same sub-sets of elements is said to be low in cognitive complexity, and on the other hand, one whose constructs produced markedly different groupings among the other elements is said to be high in complexity.

The complexity of a given cognitive system is not judged in absolute terms, but by comparison with the degree of complexity of other cognitive systems.

Conclusion

The elements in a grid are not houses or living-rooms. The elements in the grid are the respondents' experience of houses or living rooms. The relevance of the grid to the purpose for which it is being used will depend entirely upon the type of elements which it contains. The choice of elements is crucially important, but, in the last analysis, pragmatic. The correct set of elements are those that enable the client to more fully explore their own pattern of personal meaning, to become more usefully aware of his or her pattern of thoughts and feelings, as they relate to his or her purposes.

As far as the aesthetic practitioners (designers and architects) are concerned the possibilities of the grid technique is enormous. Aesthetics is an area where even the most articulate person has difficulties in making clear his system of thoughts and feelings. In fact it is very difficult to verbalize most of our aesthetic responses; they are largely nonverbal. The grid technique, however, permits a conversation that enables the individual to explore his unstated aesthetic responses. A client who wants to build a 'nice' house may only be able to give broad ideas to the architect to start with; but when he receives the architect's model designed on that basis it may not appear to be 'nice' to him. Or else he begins to complain about the house being not what he wanted only after it is built. The same may happen to any other aesthetic consultant ranging from plastic surgeon to dressmaker. The grid technique has immense potentials in discovering the client's construct system with respect to any given domain and thereby help both the practitioner and the client himself.

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ROLE OF MEANING IN THE URBAM IMAGE- CALCUTTA, THE IMAGE IN TRANSITION

Sanghamitra Basu

SIGN AND SYMBOL

The basic distinctiveness of man lies in his faculty for abstraction, his capability to recognise similarities and relationships between different things, between natural and human properties, between processes and actions. These form the basis for communication via the language - both verbal as well as non-verbal (i.e. gestures, sounds, images). To cite an instance; in the locality I stay in Calcutta there exists a beautifully designed house built of exposed brick. In a surrounding of drab, box-like unassuming houses, this house appears to me as a breather standing in isolation with its own charm. Atleast that was my first impression as an architect. But later while talking to local residents I was stunned to find out their impression about the house. Some one expressed - "It seems that the owner did not have any money left after the construction and could not afford to bear the expenses of plastering." Another person when asked replied, "Does not the house look like a fort?" Another exclaimed - "Oh! that house! we call it 'camera house'." Does it not resemble a camera?" After recovering from the initial shock, I realised that for laymen, houses having exposed brick facades means an incomplete house; a masssive staircase block stands for a fort and circular punctures and slit windows in rectangular blocks brings into one's memory images of a camera. This example clearly brings out the 'theory of significance' - "How one thing, anything, 'stands for', 'reminds us' of another". This has been developed in the 'concept of sign' which is a two point entity, the 'signified' and the 'signifier'. The 'signifier' in this case consists of some material representaion - speech sounds, marks on paper, facial expressions, gestures; whilst the 'signified' consists of the concept to which the word refers to. This 'signifier' is what we call the 'symbol'.

SYMBOL - AS A FORM OF COMMUNICATION

The significance of 'sign' and 'symbol' is apparent throughout the growth of civilization of mankind. Symbol is distinct from sign which draws attention to object or situation it bespeaks, because it is in dynamical connection both with the individual object on the one hand, and on the other hand with the senses or the memory of the person for whom it acts as a sign; whereas symbol is a sign which refers to the object that it denotes by virtue of law, usually any association of general ideas and is to be interpreted as referring to that object. It is through this symbolisation that makes possible the transmission of experience from man to man, from one generation to another. 'Symbolisation' is not confined to spoken or written language alone; it also comprises gestures and other kinds of expressive behaviour. Thus it can be verbal as well as non-verbal. Whether we employ gestures, other kinds of actions, images or sounds, these have to be ordered and connected to form a system to allow for the necessary conservation and transmission of experienced meanings. Any individual is born into such a system of meanings manifested through symbols. Such

meanings are inherent in his daily life. Taken together, the symbol systems consititute the common order which in a way we would call ' culture'. Participation in a culture means that one knows how to use its symbols through perception (experience) and representation (expression), the purpose of symbols being to conserve and communicate.

BUILT-IN ENVIRONMENT - a non-verbal communication

The environment around us - the buildings, trees, nature, water, traffic, advertisements, - has its own way of communicating with us, no doubt through non-verbal communication.

The architects, city planners and urban designers conceive forms for the built-in environment to give an expression to this communication. "It is one thing to delimit spaces by structural devices such as walls, it is quite another to infuse into this space a spirit which relates to the activities that take place in it and which stirs the senses and emotions of the people who use it. "Architecture encompasses both." The basic purpose of architecture is not only to provide a shelter modifying the microclimate but also to heighten the drama of living. There are times when we step into some place and feel elated, whereas, when we step into another it looks depressing. Thus, architecture must provide differentiated spaces for different activities and it must articulate them in such a way that the emotional content of the particular act of living which takes place in it is reinforced, not only in terms of 'firmness' (structural stability) and 'commodity' (functional convenience) but also by way of creating 'delight' (aesthetics).

Thus the task of an architect is not only to organise spaces to carry out human activities but also to create meaningful places by organising the environment. But environment is not only a random assemblage of things but an orderly relationship between objects and people, people and people, objects and objects, all having a definite pattern. The basic aspect of the buil-in environment is its organisation of space, meaning, time and communication. Although the physical components (houses, streets, gathering places, markets) of all cities are the same, it is the nature of the meaning and underlying principles of their organisation which differ and distinguishe one environment from another. This concerns the structuring of communication among people - facilitating, blocking, separating and linking varying individuals and groups, as well as, the organisation of the communication from the envrionment itself, i.e. the meaning it has for people. The first instance is very clear in most of the colonial cities; as for Calcutta, the pattern was one of separation, stressing the physical and social distance among the various groups involved e.g. separate living quarters for Europeans (Park Street, Chowringhee area) and local people (North Calcutta, Bhowanipore). Another instance may be cited in 'Connaught Circus' and 'Gol Market' of New Delhi where separate shopping areas had been created for Europeans and local people. In such places, environmental differences were used quite clearly to stress and ensure social and ethnic segregation and, in some cases, specific cultures in urban forms were used in different areas. Another aspect of this communicative role of the built-in environment concerns the organisation of the communication from the environment itself, i.e. the meaning it has for people. For example a traditional Indian city like 'Jaisalmer' may appear to a person from Chandigarh or New Delhi to be very confusing without having an order,

whereas, Chandigarh may be misread by a person from Jaisalmer as monotonous having no hierarchy. But the fact is, both the cities have their own structure and pattern but these are very different from one another. What is significant however is that a person from Jaisalmer feels that way and is unable to read the cues and rules encoded in the Urban environment of Chandigarh or New Delhi and ultimately feels lost and disoriented. The environment, in effect fails to communicate. Another example can be the varied nature and functions of street systems under different environments - e.g. Street as a space to be traversed in western urban context versus street as a space in which to live in the context of traditional Indian settlements. In Jaisalmer the narrow, shady streets become full of life as they serve different social and economic functions. In such traditional settlements there are no major public places for public entertainment and meetings and such activities generally take place in shoping areas and religious buildings, whereas, most western cities have defined areas like parks, squares and plazas for such activities. This means that the settings corresponding to these activities elicit different behaviours and appropriately so, although this could be misleading and disorienting to those who do not know and who cannot understand the cues. Clearly speaking since people behave differently in different behaviour settings, these settings are able to elicit the appropriate behaviours. This implies that the settings contain cues for behaviour which the users are able to read and understand. Thus the built-in environment can be conceptualised as a form of communication, and if that is so, this communication can be organised and structured. This suggests how the built-in environment through its communication of appropriate behaviour through non verbal cues plays an important role in the designing of cities.

IMAGEABILITY - SIGNIFICANCE IN URBAN ENVIRONMENT

It is clearly evident that this communicative role of the built-in environment depends on the proper understanding and legibility of its cues by its people. If that is so, then how man perceives his surrounding is as important in understanding the environment as the environments itself. Blessing (1960) holds that city design is not made on the drawing boards of the architect-planner but in the minds and spirits of the people. For the city planners who aspire to model an environment that will be used by many people, an understanding of the mental image of the city held by its citizens is important. They must consider not just the city as a thing in itself, but the city being perceived by its inhabitants. Much work has been done in this respect following the techniques of Kevin Lynch (1960) and Gould (1966), but mainly in the context of western countries. Lynch and others have attempted to determine what physical features are selected, that are remembered, by a resident from his local urban milieu. Lynch defined five elements: Paths, Edges, Nodes, Districts and Landmarks. Subsequent studies have been conducted around the concept of 'Imageability' and as defined by Lynch it is - "that quality in a physical object which gives it a high probability of evoking a strong image in any given observer" (Lynch 1960). These studies have attempted not only to determine what features were abstracted from the real world, but more important to the development of the concept, why these features were selected for building one's mental map. Consequently three components were defined by Lynch for analysis of each environmental image, - "Identity, Structure and Meaning".

Identity implies that a given object possesses individuality, is recognised as a separate entity, and can be distinguished from other items. Structure suggests that individual objects can be related together and to the observer. But for full comprehension, a third component, "meaning" is required. Identity, structure and meaning are closely interdependent components of the image.

In rebuilding our cities, especially a city like Calcutta whose irresistible charm is or was in its old buildings and with an urban heritage from colonial past, the study of urban imagery should be an imminent task with an attempt to determine the component factors that go into build the mental map of its citizens. Evidence from other similar studies suggests that it is not only the physical components but also their familiarly through actual environmental experience that is very important towards building one's mental map.

Clearly, people's knowlede of the city is due to their movement through it, their action and behaviour within it and their involvement with it. Areas which are not seen and even more importantly, not used or experienced actively, are neither known nor understood.

A study carried out in Chandigarh revealed that a high percentage of people mentioned a particular district shopping centre as having the highest imageability rather than the Capital complex, as the former was located along their usual travelling routes. At the same time visual perception, though being dominant, is not alone in forming the image of the city. Other modes of perception, sound & smell also appear to be quite significant in image formation. However the significance of image map in structuring our urban environments is a well established fact now.

ROLE OF MEANING IN IMAGE FORMATION

However important and valid may be the purpose of determining highly imageable design attributes, the role of meaning as a factor in an individual's mental ordering of his physical environment must also be considered. The problem is of relating the role of meaning to that of physical structure within the image one holds of his urban surrounding. Gulick (1963) was among the first to use the Lynch techniques to suggest that Socio-cultural associations, as well as visual ones, were important in building one's mental image. Certain findings centering around the concept of 'social space' currently being developed in several disciplines are beginning to reflect upon the complex personal systems by which urban man comes with grips to order and use his physical environment. Such individual variables such as cultural and ethnic background, personality, motivation, attitude, life style and value orientation appear among the significant factors in the development of an individual's image of his environment. In traditional settlements, societies were mostly homogeneous in character, with the result that people had a common image because of a shared symbol system which in turn enabled the city to provide a clear system of communication where all messages were clear and elicit predictable and appropriate behaviour. In modern cities, where the society is mainly heterogeneous in character, it is difficult to use symbols. Because of multiplicity of groups, message systems are disordered at various levels, consequently resulting in variability among legibility of cues. In such a pluralistic context one obvious way of sharing rules and image, is through clustering i.e. to have areas of people who are homogeneous - in other words to share similar images and rules. In all these areas group identity is affirmed

and reinforced and social space is established through shared networks, behaviour settings and through environmental symbols. It is interesting to note that similar types of structures exist inthe so-called unplanned cities.

CALCUTTA - ITS STRUCTURE AND ITS IMAGE

In an ecological study of Calcutta, Bose (1965) clearly revealed the existence of such social spaces in the city's structure. Different ethnic groupshave had a tendency to cluster together in their own quarters. These groups can be distinguished from one another not only by language and culture but by broad differences in the way they make their living. According to another study by Brian J.L. Berry and Philip Rees (1970), on the factorial ecology of Calcutta, the findings reveal that alongside the rich ethnic variability described by Bose, Calcutta is characterised by both substantial and increasing geographic specialisation of areas in business and residential land uses, gradually replacing the former mixture of business and residences that were separated rather into occupational quarters.

When Calcutta was originally founded by the traders of the British East India Company, inspite of lack of a proper plan (except for the areas around the Fort), an in-built organisational pattern was evident in the structure of the city. The particular location, physical constraints and British colonial situations might have been responsible for this. The city today is found to be subdivided into a set of subregions (social areas) comprising the city core (Dalhousie Square, Esplanade) and residential areas (Bagbazar, Shyambazar, Maniktala, Park Circus). Surrounding the city core/central business district, two traditional ethnic commercial communities cum functional areas (Burrabazar, Chandni Chowk) can be strongly identified. Like its predominant financial and administrative districts, old Calcutta is also marked by an educational institutional district (College square), identifiable residential zones for Europeans (Park Street and its surroundings), a Bengali upper caste (North Calcutta, Bhawanipore) district, districts for the nouveau riche, districts for the refugees from East Pakistan (Jadavpore, Behala, Tollygunge) and others. In the centre of all these is the breathing place - the Maidan. In brief, each zone is characterised by a very definite physical character evoking strong physical image in the minds of old Calcuttans.

THE IMAGE IN TRANSITION

But in the process of transition to the largest urban centre of India, Calcutta has not lost her inbuilt imageability which has earlier contributed towards a sense of orientation and identification by her citizens. In the present situation even those with a good knowledge of geography and directions can be easily confused. With new inputs in the physical structure of the city, e.g.the Metro Railway or the Eastern Metropolitan Byepass, the development of new areas like the Salt Lake City and East Calcutta, or even in the changing of names of old roads and streets, the city has undergone a rapid and radical changes. Indications of emergence of certain specialised zones e.g. recreational cultural complex in the vicinity of Rabindra Sadan or transformance of Camac Street from a residential area to a commercial business spine are evident.

A STUDY: MEANING AND IMAGE GUIDELINES FOR FUTURE ENVIRONMENT

In the absence of any guideline for future development, the city is developing into an urban chaos. As a result, residents are becoming rather insensitve to their urban environment which may ultimately lead to a lack of strong personal attachments to particular places. Now and then strong protests are voiced by citizens' groups against demolition of certain buildings from the Colonial period or against the artificial extensions of certain monuments. But in the absence of any clear understanding of the cumulative perception systems of the Calcuttans, all these remain piecemeal approaches towards the actual solution. Before preparing any blueprint for future Calcutta, what is needed now is a systematic understanding of this complex cumulative perception system that the Calcuttans use, identify with, and to relate and ultimately redirect this towards their physical and cultural environments. Such attitudes and preferences and the meaning Calcutta holds for her people should be employed by the planners in guiding policies for future structuring of the city.

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MEDIA ENVIRONMENT AND EXPRESSION IN CHILDREN

Sushma Datar

'Meaning is a product of coding, and coding is a form of behaviour that is learned and shared by the members of communicating group. This is how words, gestures and other forms of communication can carry meaning. Each of us learns to look at it in a way that other members of our communicating group have learned to look at it' - Culture & communication, Alfred Smith.

When do we start attaching meanings to symbols? How do we learn to look at particular symbol as other members of our community have learned to look at? And what happens to a child whose adult models have not seen the same kind of visual environment in their younger days, which the child sees now? Asking these questions is an effort to motivate many eminent communicators, to think about semantic & pragmatic aspect of visual communication in relation to children.

Let us see what sort of visual environment today's child has. There is a long list of objects. The toys, or just their ads, the wrapers, calenders, books, magazines, newspapers, films, television programme both meant for them and not meant for them. Posters, hoardings, show cases full of fancy goods, many of these directed towards them or not meant for them, visual appearance of their neighbourhood etc. Growing child is part of this environment along with polluted natural environment. The child has to accept this blooming buzzing confusion of an environment. He has to grow with it. He evolves his own code and his own way of understanding the world around him. Towards adulthood he accommodates himself in the communication pattern of the community. For the child growing in modern technological times this might not be as simple as that. He goes to school to learn how to use language. To read as well as to understand it. He also learns numerical skills and other complex faculties of science and culture. But what about the most ancient media of communication i.e. drawing and body language? Does he learn to read visual language? Does he learn to use visual language for expression? He does, but all by himself. He relates to the visual world around him, with whatever capacities he has, with very little adult help.

This environment is full of two dimentional life like pictures of real people, objects, some unknown objects and people as well. He organizes this whole lot in to concepts, catagories and labels. One look at the complexity of present visual environment and we get an idea about the grotesque task the child faces. From this matrix of visual signs & symbols he chooses few, then tries them out for communication through his creative expression.

Types of Expression

The most basic skill of expression which nobody learns but has is directed expression. It's aim is satisfaction of needs. Other type of expression is undirected expression or free expression. It is to show feeling and relate to the environment. This is not always artistic. It is really free and creative in

early child hood.

Channels of Expression

Child uses different channels for expression, such as, music, dance, playacting, talking to himself and others, drawing, painting, story telling etc.

Change with Age

Environment around the child is responsible for deciding ways and means of expression. Now a days, mass media play an important role in influencing child's choice of signs & symbols. Present education pattern and adult attitude towards art in general makes it difficult for an average child to use drawing and painting as an expressive medium. Thus as the child grows he learns more about verbal language and unlearns his inborn skills of visual communication. He also becomes inhibited in using all communication medias other than the verbal medium. Thus expression becomes less and less free from middle childhood towards late childhood.

Observing children's expressive behaviour

The recreation centre provides a good opportunity for observing the relationship between environment & expression. The atmosphere is free and relaxed. The children are not 'performing'. They are spending their leisure time in semistructured situation.

They do not receive any kind of coaching. Alongwith usual sports, creative games are designed. The activities conducted are open for all the children depending on respective age group of children (3 to 5, 6 to 9, 10 to 12 years). The outcome of the activities are observed and sometimes analysed. These observations, day to day contact with children, talking to parents, give ideas about expressive behaviour of the children.

Some special activities

In December 1984 some special activities were conducted for children in the recreation centre as well as in the schools. Three English medium schools, two Marathi medium schools, two Municipal schools and one school run by orphanage, participated in the activity. The children in the age group of 6 to 9 years were supposed to make pictures based on a story and suggest a title. Children in the age group of10 to 12 years were to write a story and a poetry based on a given subject.

The drawing activity was conducted as competition but the organisers of the competition insisted on including all the children. They did not allow the teachers to choose the talented children. All the pictures were observed and analysed.

The story was read out twice. For English medium school it was read in English as well as in Marathi. Time limit was 1 hour but it was not rigid.

The children drew spontaneously. They did not know the subject previously.

Aim of the competition

To motivate children to draw and create pictures for the story and suggest title. To observe which part of the story is more appealing to children.

To observe their preferences for colour, form, common schema, words and pattern of title if any. To observe freeness with which they use the available medium, boldness of the strokes, involvement in the activity.

A story is attached at the end.

There were 409 pictures, 287 were relevant to the story and 277 had titles.

Observation Procedure

The drawings were separated according to age i.e. 6, 7, 8, 9 years. Again these were separated in two parts each, depending on language of instruction at school. The pictures were observed with the guide line of developmental stages in child art. The age group in focus belongs to 'schematic stage' (Lowenfeld, Brittain). 'In this stage drawings are schema or symbol of real objects. Schema represents child's active knowledge of object or child's active feelings about objects. With change in experience schema changes'. It was interesting to note the gradual development of schema from vague resemblance to the referent, towards dynamic recognizable schema. The clarity and details in drawings increased with age. These expressive drawings could be a reflection of children's emotional world.

Following schema were noticed:

Sun, clouds, mountains, garden, birds, Giant. Giant's house, children, jail, occasionally animals.

Drawings of 6 years olds - The objects were drawn randomly. Very few drawings had spatial relationship between objects. The drawings did not capture any particular situation from the story. Schema for trees, flowers, sun were clear. Human schema was simple and primitive in developmental stages, Head, abdomen, limbs were differentiated. The facial features were present, but ears were absent. The schema of giant and children were differentiated by their sizes. Most houses looked like huts. The variation was not there. On the whole costumes were not differentiated from the body.

But there were few exceptional drawings. e.g. A picture showing objects arranged in horizontal parallel lines - plants, children, flowers and clouds. All these were composed together by a vertical tree. Another was a picture of a girl wearing frock with wavy hemline. This is not common with 6 years old. Drawings of 7 years old - They showed some improvement of schema and spatial relationship. But contentwise, there was very little improvement. Pictures of 8 & 9 years old were more relevent to the story. They tried to capture dramatic events of the story, chronological order of the events, in

better ways than 6 & 7 year olds.

The following are important observations:

1) Three dramatic events in the story were captured by the children in following order.

a) The giant chasing the children
b) The children behind the bars or punished
c) The children making the garden beautiful.
One child drew nothing else but children tied to the pillars and a giant standing aside. It was one of its kind.

2) Some events were expressed with the help of dialogues, included in the picture. Some exclamations, sound effects also were present. They were similar to comic book format. This pattern was used more by English medium school children than Marathi medium school children.

3) Common schema of giant was observed. The giant had long protruding teeth and two horns on the head. The costumes varied. Some had trousers and a shirt, some wore dhoti, some wore grass shirt like green costume.

4) The garden contained trees and flowering plants. Most of the gardens had well laid out plan and potted plants were very common.

5) Details of the house, garden, giant increased with the age. Hut like schema of house was common. Few drew it as a castle or a temple.

6) Development of concept of perspective in drawing could be traced from 6 to 9 years. Horizontal division of paper according to foreground, middle ground and background was seen. Relative sizes of objects depending on their position on the ground were not very clear.

7) The drawings and colours tended to be more realistic. The fantasy elements of the story was not explored and expressed, through colours.

8) Crayons was the most popular medium. Then came felttip pens. Water colours were very few. Some children expressed well with pencils. Colours were available to them but they preferred pencil drawing.

9) There was marked difference between drawing of children going to English medium schools and children going to Marathi medium schools. Drawings of children from English medium schools were bold, colourful and occupied whole available space. In case of 8 to 9 year olds, for English medium school children - out of 164 pictures 90 were colourful and big. In case of Marathi medium school children it was 40 out of 218. This might be because of greater exposure to colourful pictures from comics, other book illustrations, colourful magazines etc. Books and magazines in Marathi are less colourfull and also there is lack of well illustrated story books in Marathi.

10) The drawings of children from the two municipal schools and the orphanage school were far less colourful. The schema were also less developed. Very few pictures were relevant to the story. Only few 8-9 years old drew relevant pictures. Other drew objects taught in the class. e.g. Rangoli, ball, flowers, National flag, tap and a bucket. These drawings were

either taught in the class or they were similar because children copied each other. There were 2 or 3 drawings irrelevant to the story but were expressive and were child's own. One child drew a schema of car and a boy underneath. The lable said 'boy is dead under the car.'

Some children also drew schema of children playing cricket. On the whole these children prefered to draw in the corner of the paper and schema were small and lower on developmental ladder. Human schema were invariably primitive even for 9 year olds.

11) In general, girls grew more decorative pictures. Details like Gajra, kumkum, ribbons, hairstyle, colourful design on the frock were observed.

One girl's schema of giant was like goddess 'Ambabai' with the typical neck and the big kumkum.

12) Analysis of the titles
This showed some preference of words which differed with medium of instruction in school. Choice of words changed with age. 6-7 years old, chose the words to describe their drawings rather than giving a title to the story. 8-9 yearsold understood the meaning of title. In Marathi 'Giant's garden' was preferred. In English 'Giant & children' was more common. In Marathi 'story of a Giant' was another choice of many children but the word 'story' was missing in English titles.Probable reason behind this might be as follows -

Marathi children's books are invariably called as 'story books' i.e. 'Goshtiche pustak'. But English speaking children use the word 'comics' more often.

Similarly Marathi word 'Wada' seemed more interesting than 'house' or 'palace' in English.

There were very few titles which described the feelings of the story. Most expressive was in Marathi 'Punha Baharnasi Bag' i.e. 'The garden that bloomed again'. This was chosen by a 9 year old boy. His drawing was also very expressive.

There was another title in English by a 7 year old boy 'Garden beautifully making children'. The boldness with which he used the words was fascinating. He really expressed the essence of the story with whatever vocabulary he had. He combined the title with the picture. Majority of traditional Indian stories are 'Moral stories' and their titles are also typical. But choice of such titles were far less in number e.g. 'Giant who learned a lesson' 'greedy giant' 'cruel giant' 'selfish giant' 'How the foolish giant understood his fault'. 'The Giant was fooled' etc. There were single examples of each of the above titles.

Among Municipal school children, titles were less in number and less imaginative. This clearly shows the effect of exposure, on the intellectual & expressive ability of the children.

On the whole, expressive choice of words i.e. using more adjectives was far less in number. Expressive and imaginative schema were also less. The reasons behind these might be as follows:

1) Age puts limitations on choice of words and schema.

2) Though the children have greater exposure to pictures and literature the mediator's role is not effectively performed. Children need mediators to make use of vast pool of visual knowledge. It's far too abundant for them to organize, and use it creatively for better expression.

3) Media influences their expression but do not kindle their spark of imagination. The messages received might be remaining on the level of amusement.

4) As soon as children go to first standard they are almost cut off from the pattern of Kindergarden school, which gives more emphasis on creative play. Suddenly, children are left with their 'subjects' rather than 'activities'. Some children have expressed it through their choice of labels. Along with their name, name of the school, age etc. they have mentioned 'subject - drawing'.

Story and Poetry 'writing competition'

This activity also was a spontaneous one. Children did not prepare for the activity. They wrote spontaneously. Story and poetry writing competitions were conducted for 10 to 12 year old children. Theme of the story was 'Shamu is lost' and for poetry it was 'Jumbo Jet'.A picture was shown and children were supposed to write a story based on the picture. Picture contained a rabbit couple looking at an old dilapidated house in the forest with a signboard on the fence 'To let. Meet Mr. Fox'.

Following were the observations

1) Children from marathi medium schools were more expressive with their language. Few English medium school children wrote in Marathi. Poems in Marathi had more sensitive use of language and English poems were more like Nursery rhymes. General knowledge reflected in poems on 'Jumboo Jet' were more in English than in Marathi. For example one boy rhymed 'Air borne' with 'Melbourne'.

2) Treatment of the story
Influence of dramatic news items, films, comics, popular adventure stories was obvious. The ideas like holding for ransom, kidnaping, killing, badguys verses good guys, twins or friends meeting after 20 years seperation, leaving behind the trail, getting mixed with smugglers, gundas, tieing to the pole, etc. were prominent.

But there were 2 to 3 stories which used real life events and by put them together in an expressive way. An interesting combination was created. Shamu - a boy who is lost is actually sleeping under the bed and everybody is looking for him. Another boy used Bhopal tragedy, rehabilitation of those people leading to cutting down of the forest, then animals migrating elsewhere, democracy in the forest, increasing cost of housing, animals looking for better houses etc. This story was based on a picture of house for sale. In other stories number of rooms in the house and cost of the house

changed with the economic background of the child and age of the child as well.

3) More than 500 children participated in the competition and response was facinating. 11 and 12 year old children wrote the stories with ease. Many had clear idea of structure of the story. Typical structure with introduction, conflict/ problem, resolve were observed in the stories. Some drew a moral to the story as well.

4) Clarity of thought and ideas in the stories increased with age, and with media's influence.

5) On the whole, media influence was strong. Ideas closer to child's life were rarely used in stories. More emphasis was given on dramatic events than human characters.

Apart from these organized activities, recreation centre provides opportunity to observe free play of children of 3 to 5 year olds. This free play is creative and is one of the ways in which the child expresses himself. Television characters, dramatic visuals have influence on play pattern of children. They like to immitate them in make-believe play. They break into a room through glass window, jump like spiderman, fight with different make-believe weapons. Aggressive expressions were observed but make-believe play has a catharsis value. Invariably, aggressive behaviour, out of make-believe play, had it's roots at home. Children who see more television tend to use their facial features and hands more while talking. Acting like sportsmen at play and receiving medals is another favourite make-believe play. Older children are more concious of the style of their play than skill.

These are few observations related to the media's effect on expressive behaviour of children. The children today have large number of visual stimuli around them, but this infact leads the child to copy rather than express creatively through art. An art education at school is at the level of craft, and not for the purpose of self expression. Let us not just offer them colourfull packages of entertainment and education. Let us offer them some opportunities to express themselves and learn to appreciate other people's expressions. Let us use child art as a base for communication with children, today. Then they might grow up to be better communicators tomorrow which is essential for peaceful and harmonious future.

Communication researchers today tend to isolate television from other media's of communication and study its effects. Very little is known about media environment as a whole on children. Talking to 11 or 12 year old children gives some idea about their critical abilities. Normal children from normal homes are sensible users of media. But what about thousands of deprived children who look at the advertisement of attractive looking eatables, which they have never tasted and would never might taste? What do children make out of hoardings of beautiful homes hung above overflowing garbage cans? What kind of meaning do they draw from book illustrations where a fairy or a queen or a main girl's character is always fair and lovely. Good guys are fair skinned and bad guys have dark complexion. We know very little about the ways in which child attaches meaning to visual symbols concieved by senders unknown to him. And we do not have a common base of understanding between adults and children, as senders and receivers.

Therefore anyone who generates a public visual image has a responsibility towards the children.

THE STORY

Once upon a time there lived a giant. He had an old and strong house. It was surrounded on all sides by a beautiful garden. He was very proud of it. The children loved to play in this garden. But the giant was very angry and shouted at them. As soon as the children heard the giant they ran away in fear.

One day in January the children broke a branch of a tree while playing. The giant came out angrily and asked his servant to lock the children without food for a whole day. The next day while setting them free the giant shouted "You little rascals, Beware, Don't come here anymore. I will break your necks if I find you here ever again". The children were very hungry. They went home very sad and in tears.

The giant was happy that his garden would remain beautiful now. But, Alas! slowly his gardent started withering. The creepers dried up, the trees withered and no flowers were left on the trees. The rustle of leaves nor the songs of the birds could be heard. The greenery started disappearing. The giant felt very sad. His garden was no longer beautiful.

The giant was very sad and spent many a sleepless night. One day he felt asleep very late. After a few hours he woke up with a start. He could hear a bird singing.

He was excited and ran out of the house.

Some children were dancing around a tree. That tree was in blossom. Birds were singing a happy song. The children wanted to run away as soon as they saw the giant. But he stopped them and said "Please, Please don't run away. Do come in and play and make my garden beautiful."

All the children came in happily and played in the garden. They took the giant by the hand and made him play with them. The trees were green and colourful again. The giant was very happy and played with the children from that day onwards.

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