

## Tactile and Kinesthetic Sense-Perception in *Practice and Pedagogy of design*

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### **Abstract:**

The document explores the unmanifested forms of tactile and kinesthetic senses in design pedagogy, specifically addressing their integration into educational models. Highlighted contributions from key thinkers like Donald Schön, Juhani Pallasmaa, and Nigel Cross emphasize the importance of incorporating these senses into design thinking and pedagogy. The paper argues for a more holistic approach to design education, one that transcends traditional emphasis on visual aspects and includes other sensory experiences to cultivate a comprehensive understanding of design as an interdisciplinary link across various fields. Evolving foundation programs in design by including these sensory perceptions, will enhance the cognitive and imaginative capabilities of designers, to deal with new situations. *The new 'Frame work', 'Arupa the Implicate Order' also points out to the need for a fundamental change in the 'Inner Order' of the learner as well as the teacher (or coach) for effective transformation of the external World.*

### ❖ Introduction

'Arupa' the un-manifested form of Tactile and Kinesthetic senses is not new to area of Design, which has been dealing with it as Tacit knowledge. 3 thinkers in design have brought out a new perspective to look at design holistically in this context.

- Donald Schon, brought out how practicing designers, engage in a continuous cycle of reflection-in-action and reflection-on-action, which nurtured an educational model rooted in Studio Practice based on 'Action'
- Architect Juhani Pallasmaa argued for adoption of Touch and Kinesthtic senses in addition to traditional emphasis on 'Vision'in Architecture.
- Nigel Cross highlights how designers think and solve problems in ways that are distinct from scientific and scholarly methods. Cross's work supports a pedagogical approach that values design thinking as a unique form of cognition, integrating both rational and intuitive processes, which can involve imaginative engagement with tactile and kinaesthetic experiences.

- Donald Schön was a prominent scholar at MIT is known for his book, *The Reflective Practitioner (1)*. He articulated virtues of tacit knowledge and on-the-spot problem-solving, which are part of studio-based learning in design pedagogy.
- Juhani Pallasmaa, a Finnish architect and theorist advocated for a holistic, multisensory approach to design. His seminal work, 'The Eyes of the Skin'(2) has been a part of Architectural education
- Nigel Cross, in his well-known work 'designerly ways of knowing,'(3) showed the unique thinking ability of designers to solve incomplete, contradictory problems with changing requirements.

Foundation programmes in Design are yet to evolve

- To assert its pedagogic position with adequate articulation based on the above inputs
- Absorb the new findings in all sense perceptions including Touch and Kinaesthetic sense.
- To reframe with the new knowledge in Phenomenology, Cognitive Sciences and philosophy.
- To cope up functioning in design with AI,
- Making 'design' as a link discipline for all fields

With this back ground, we shall Explore 'Tactile and Kinesthetic senses' in the broader frame work of 'Arupa the implicate order' with focus on foundation programme.

The word 'Arupa' comes from Sanskrit. It means un-manifested Form. Such un-manifested form manifests into many 'Rupas' or 'shapes'. Arupa as 'Implicate Order' articulated by Dr.David Bohm is adopted for 'design'.The new frame work facilitates unfolding 'Form and Design' at multiple levels, in various contexts, including adjacent fields. How Such unfolding takes place in case of a concrete object, like 'chair' is dealt in *Arupa' the 'Implicate Order' as a New frame-work for 'Form and Design'-1 (4),*

## 1.0 'Sensory Foundations and Imagination' for Design

Design is engaged with development of Imagination in a particular mode. Seeing Tactile and Kinesthetic Senses as Orders paves the way for our objective.

### 1.1 Sense-Perceptions as orders

Sense perceptions are basic and fundamental abilities which humans acquired even before gaining symbolic language ability. It is necessary to see them as basic orders.

Form and Function, Beauty and Intention become the basic components of origin of human design ability. One can see the role of Tactile and Kinesthetic senses in the origin of stone tools for hunting. What is more interesting is the form(shape) of the stone-age tools. Human aesthetic order shows its presence there.



Stone age tools discovered in Kenya

When we consider 'Hierarchy of orders' in the frame work of 'Arupa the Implicate order', Sensory perceptions can be viewed as fundamental orders because they are the primary means through which we interact with and begin to understand the world. Thus seeing 'Sense perceptions as orders' is important for learning at school level as well as at graduate level' especially in the light of AI. We will look at Tactile and Kinesthetic senses in for 'Pedagogy of design' and professional practice, this context.

### 1.2 Imagination in Tactile, Kinaesthetic senses

Imagination has an important role in acquiring knowledge from both these senses as brought into prominence by Johnson (Body in the mind) (5), and Lakoff (Metaphors we live by) (6), who were inspired by Merleau Ponty's philosophy. Abstraction and metaphoric mapping links language to 'Tactile, Kinaesthetic senses', consolidating their role in imagination.

## 2.0 Harnessing Haptic Perception and Memory in Design: Scientific, Psychological, and Philosophical Studies"

Research related to 'Tactile, Kinaesthetic senses' is going on, in the areas like Medicine, Health, Neurology and Philosophy, bringing exciting new information related to sense perceptions, Body Learning and types of Memory. which have bearing on design pedagogy' directly and indirectly. A brief look into each in its own frame work creates a ground for looking at design pedagogy in new ways.

### 2.1 Haptic Perception

Haptic Perception articulated as a system by Gibson (7), brought into focus unique nature of Tactile and Kinesthetic senses, where equipment (body parts like hands, legs, feet) to sense is same as equipment to do or act. Hands can change environment around as well as change it as well!

*Haptic perception has special significance to design pedagogy, as much of learning happens in studio mode with 'action' as the means*

### 2.2 Phantom Limb Syndrome - Mirror box therapy

Pioneering work of renowned scientist Ramachandran and his team on Phantom Limb Syndrome and Mirror box therapy (1990-96) got world attention (8). Phantom limb sensations were known since 1800s. The mirror box therapy introduced by the team could cure the patients of the syndrome, which showed the remarkable ability of brain plasticity.

### 2.3 Rubber Hand Illusion

The rubber hand illusion, introduced by Matthew Botvinick and Jonathan Cohen, (1998) (9), demonstrated how tactile and visual inputs can be manipulated to induce a feeling of ownership over a false limb, highlighting the brain's integration of sensory modalities to construct the sense of body ownership

### 2.4 Somatosensory system and Somatosensory Perception

*While the somatosensory system is the network of sensory inputs and neural connections, somatosensory perception is about how these inputs are interpreted and understood by the brain. They are parts of a continuum, where the system provides the data, and perception defines the experience and understanding of that data.*

### 2.5 Freeman's Mass Action (FMA)

Freeman's Mass Action (FMA) refers to the collective synaptic actions that neurons in the cortex exert on each other in vast numbers by synchronizing their firing of action potentials. In the aggregate, FMA is a powerful force that creates bursts of cortical neural activity that resemble the vortices of tornadoes and hurricanes.

### 2.6 Integration of Tactile Information

In a research paper, Tamè et al, (10), showed how our brain has an interesting capacity to integrate signals from different modes to process at physical level.

- Mirror signals: Though we tend to think that tactile input is local where the touch takes place, Neuropsychological Evidence indicates that tactile stimulation on one side of the body, produces signals in both sides of the body. Neuropsychological Evidence indicates that tactile stimulation on one side of the body, produces signals in both sides of the body.
- Body schema: This concept accounts for dynamic brain representation of

the body's structure. This schema adjusts as one interacts with environment, helping one understand where one's own body parts are and how they move. Tactile sense is perceived by various parts of the body, but the information is integrated for further action.

- Priors formed with touch and kinaesthetic senses develop through repeated interactions with the environment, which provide a wealth of sensory data. For instance, when one touches different textures or move in various ways, one's brain stores this information as reference points. Over time, these experiences build a database of how objects feel and how movements are carried out relative to body position. This stored information then acts as a baseline that helps the brain predict and interpret new tactile and kinaesthetic inputs, enhancing the ability to navigate and interact with the world efficiently.

#### What are Priors?

In cognitive and perceptual psychology, "priors" refer to pre-existing beliefs or knowledge that influence how we interpret new sensory information. These are built from past experiences and help the brain to process incoming data more efficiently by predicting what is likely to be perceived.

## 2.7 Body Memory and types of Memory

Body memory, as a foundational concept suggests that the body itself can store memories, not just in the brain, but across the nervous system and bodily tissues. Our bodily learnt skills get embedded in each person, and become implicit. These can be seen as different types of memory

- **Procedural memory**  
These are Kinesthetic abilities like well-practiced habits, skillful handling of instruments, sports gadgets, craft skills (like in bamboo craft), etc. which become implicit and unconscious.
- **Situational memory**  
This refers to the intermodal memory of the body encoding the spaces, physical and emotional surroundings.
- **Inter-corporeal memory**  
is the way bodily experiences and interactions with others gets stored, like a submissive-stance of a sub-ordinate employee in front of his/her boss.
- **Incorporative memory**  
refers to the shaping of bodily habits by attitudes and roles taken over from others. It may be understood as a set of socially learned dispositions, skills, styles, tastes, and ways of acting, which are often taken for granted. According to Bourdieu (1990), a 'system of internalized patterns' individuals take to be their own, actually share with the members of their class.
- **Pain, Trauma memory**  
Experiences of pain are effectively inscribed into body memory. Therefore, an education that is based on pressure, constraint, and deterrence has always known to use pain as a disciplining means.

### 3.0. Integrating Mind and Body: New Perspectives in Learning for Design Pedagogy

Phenomenology and Cognitive Science have come into prominence with new findings relevant for learning in all fields. Design Pedagogy in the forefront of learning with 'Action', needs to look at Works of Merleau Ponty, Vareala+, Gallagher, Thomas Fuchs and Michel Gelb for shaping a 'New age Foundation programme for design pedagogy'.

#### 3.1 Phenomenology



Phenomenology is a philosophical movement that emphasizes the study of structures of consciousness as experienced from the first-person point of view. founded by Edmund Husserl in the early 20th century and later expanded by philosophers like Martin Heidegger, Maurice Merleau-Ponty, and others.

Phenomenology seeks to uncover the inherent meanings of experiences by suspending assumptions about the external world, focusing instead on how objects and events are directly experienced.

#### 3.2 Cognitive science



Cognitive science is an interdisciplinary field that studies the mind and its processes, including perception, thinking, learning, and memory

It integrates knowledge and research methods from several disciplines, including AI.

It has a strong bearing for Design as common ground for various professions.

#### 3.3, Merleau Ponty : Embedded cognition

Merleau Ponty's work starting with "Phenomenology of Perception" (1945) (11) emphasizes on direct Experience and Intentionality. He advocated understanding things from the perspective of 'lived experience' rather than 'abstract analysis'. This has gained significance in the field of design.



### 3.4 Varela: Embodied Mind

In a significant book, 'Embodied Mind', Francisco Varela, Evan Thompson, and Eleanor Rosch (12) brought out a new perspective on Tactile and Kinesthetic Sense relevant to field of design.

Essential features of the book:

- Circulation between the sciences of mind (cognitive science) and human experience
- Focus on Cognitive Science: FMA (Freeman's Mass action)
- A new lineage of descent from the fundamental intuition of double embodiment first articulated by Merleau-Ponty
- Self or Cognizing subject is fundamentally fragmented, divided, or non-unified
- Present style of investigation is limited and unsatisfactory
- There remains no direct, hands-on, pragmatic approach to experience with which to complement science.
- Looking at eastern traditions like Buddhism (Vipassana)
- Examining Experience with a Method: Mindfulness/Awareness
- Buddhist tradition is fundamentally a firsthand experiential account by those who attain a degree of mindfulness of their experience in daily life
- A new term **enactive** is proposed for this new approach. In the enactive program, authors explicitly call into question the assumption-prevalent throughout cognitive science that cognition consists of the representation of a world that is independent of our perceptual and cognitive capacities.

### 3.5 How Body Shapes Mind –Gallagher (13)

He suggests that the body plays a crucial role not only in cognitive processes but also in shaping the very structure of human experience

- Distinction between 'Body Schema and Body Image'  
The body schema refers to a system of sensory-motor capacities that function without the need for conscious awareness. In contrast, the body image consists of a system of perceptions, attitudes, and beliefs pertaining to one's own body.
- Gallagher uses "pre-reflective" to describe the **pre-reflective, immediate, and embodied aspects of human experience**. Feeling the texture of a surface or walking or reaching for an object occur as Pre-reflective Experiences, which happen without conscious thought.

### 3.6 Thomas Fuchs: Ecology of the Brain- Circularity of the embodied mind

Thomas Fuchs (14) proposes an ecological model that emphasizes the interrelation between the brain, body, and environment. He argues that the mind is not merely housed in the brain but arises from the dynamic interactions between the brain, the body, and the environment. Resulting concept "circularity of the embodied mind" is a significant contribution to the field of phenomenological psychopathology and philosophy of mind. The "circularity" refers to the continuous and reciprocal interaction between our mental states and our bodily experiences.

Key points

- Reciprocal Causation: Fuchs posits that there is a reciprocal causation between the mind and the body, meaning that while our mental states can influence our bodily states (such

as anxiety causing a rapid heartbeat), our bodily states can also influence our mental states (such as a relaxed body leading to a calm mind).

- **Intentionality and Perception:** Fuchs emphasizes that our perceptions are shaped by our bodily engagements with the world. This means that our intentions (what we aim to do or perceive) are not just mental states but are formed through our embodied interactions.
- **Inter-affectivity:** This concept extends the idea of circularity to interpersonal relationships, where our emotions and intentions are shaped by and in turn shape the emotions and behaviors of others. This mutual influence underscores the embodied nature of social interactions and communication.
- **Temporal Structure of Experience:** Fuchs also explores how our bodily and mental experiences are temporally structured. Our awareness of time – such as anticipation or memory – is deeply connected to our bodily rhythms and interactions, influencing how we experience continuity and change.

### 3.7 Michel Gelb: Alexander Technique'

Michel Gelb popularized the term 'Body Learning', using 'Alexander Technique' (15).

Traditional methods from East, like Yoga, Taichi, are well known for body learning and awareness. Gelb adopted Alexander Technique, as part of training in creative problem solving.

- **Alexander Technique**

The Alexander Technique is a teaching method developed by Frederick Matthias Alexander in the late 19th century. It focuses on improving posture and physical movement to promote greater ease and range of motion, reduce stress, and enhance overall well-being. The technique teaches individuals to become more aware of their bad habits of posture and movement and to learn new ways of sitting, standing, and moving that put less strain on the body, with increased awareness of balance, posture, and movement in everyday activities

## 4.0 Assessing Integrative Approaches to Sensory Perception and Cognitive Theories for Design Education

### 4.1 For Sensory Foundations and Imagination in Design (1.0)

- Seeing Tactile and Kinesthetic Senses as orders in Perception, paves the way to connect them with deeper orders of Aesthetics, Tool making(technology) and Language.
- Works of Johnson and Lakoff provides ground for connecting with Language and Imagination at different levels in body skills. '*Craft skill*' and '*Design skill of 'Craft'*' is elaborated in this context.

### 4.2 For Harnessing Haptic Perception and Memory in Design: Scientific, psychological and philosophical studies (2)

- Understanding of Haptic Perception, seeing 'Tactile and Kinesthetic Senses' with a new lens has led to new approaches in interaction design, accessible technologies for visually impaired and VR environments to simulate virtual objects.
- Phantom limb syndrome and rubber hand Illusion caught the imagination of people in general. Somatosensory system and Somatosensory Perception and FMA opened doors for understanding nature of neural processing of brain.
- Mirror signals, Body schema and Priors provide scientific basis to connect conditioning of body and mind, leading to further theories in Tacit knowledge.

- Body memory and types of memory helps in behavioural studies of users in design.  
*Design Pedagogy at school level can bring in new 'mode to Learn' circumventing present concepts of reward and punishment.*  
*Innovations are due for New Age Foundation programme in design based on types of memory.*

#### 4.3 For Integrating Mind and Body: New Perspectives in Learning for Design Pedagogy (3)

- Merleau Ponty's work has influenced design pedagogy in many ways. It would be possible to connect 'direct experience and Intentionality', in the new frame work of 'Arupa the Implicate Order'.
- Varela's emphasis on Mindfulness and Buddhist theoretical frame work, brings focus on fragmented self and Inner Order of the learner'.
- Gallagher's differentiation of Body schema and body image creates a ground to understand 'unconscious and conscious responses' in Learning.  
Dangers of peripheral adaptations of these notions are further discussed in  
*'Mindfulness Vs Mechanized problem solving'.*
- Thomas Fuch's concepts, 'Circularity of the embodied mind' and 'Ecology of the Brain'(16) lead to *Strategies for New Age Foundation programme.*
- Michel Gelb's adoption of 'Alexander Technique' can be incorporated in design pedagogy along with eastern traditions like Yoga, Taichi, Kalaripattu (of Kerala),etc.,

### 5.0 Innovations for Design Pedagogy: Skills, Mindfulness, and Ecosystems

#### 5.1 Skill as Body-Knowledge: Craft skill Versus Design skill of Craft

Skill as Body- Knowledge: Craft skill Versus Design skill of Craft

As Johnson (5) brings out, 'Imagination is a crucial cognitive process that allows us to extend our bodily experiences to understand and create abstract concepts'. With this premise we can examine nature of Imagination in craft learning.

We see in Practice; skill learning gets encoded as a body knowledge. Expertise in skill acquired over a period remains as tacit knowledge, with 'Imagination' remaining contextual to the traditional learning mode. Such 'Imagination' may have a set boundary. A situation could be seen in bamboo craft where traditional, skilled crafts-person restricts imagination to traditional modes of operation. The craft learning in one material is not extended to use of other materials. Controlling sizes by using moulds is not thought of. When design students learn bamboo craft in conventional mode, their imagination also gets restricted. An example of bamboo chair design at IDC, illustrates such thinking. (17)

Imagination required for 'Bamboo Craft Design' is different. We may name it as *Design skill of Bamboo Craft*. This would make bamboo craft contemporary. Even new generation of practicing crafts-persons need to up-grade 'imagination' by adopting new tools, techniques, small technologies, etc., to make bamboo craft contemporary.

For design students, new knowledge of moulds, jigs, fixtures, heat forming, laser etching techniques, combining with other materials, in bamboo, would form a basis for implied 'Tacit-Imagination'. Such *Design skill of Bamboo Craft becomes* easy to acquire in a conducive environment. Bambu Studio at IDC, with inputs of a UNDP project became the first of its kind Internationally to provide such an eco-system to learn bamboo craft in a new mode! Craft- persons from Gadchiroli, a remote area in

Maharashtra state, attended a course on 'Craft Creativity and Post Modernism' (CCPM) as co-participants with M-Des students of IDC-School of Design. (18).

Such experiments have the power of bringing 'Equity' in educational reach with in the Country. But new technologies like VR can extend such experiences to new cultural surroundings in different Countries as well, leading to Global Learning Experiences (GLEs). New technologies can enable such GLEs to take place in design schools started in remote parts of the Countries whether it is in India, Nepal or Africa!

## 5.2 Mindfulness Vs Mechanized problem solving

Gallagher's (13) 'body schema' refers to a system of 'sensory-motor capacities' that function without the need for conscious awareness. How is such 'Tacit Knowledge' acquired and 'put to use' is a concern for design pedagogy and practice. There is a danger of quick, AI based responses in business mode!

A holistic approach is necessary and that brings us to importance of 'Mindfulness' in Design Practice! 'Buddhist concepts articulated by Francis Varela, needs innovations to adopt into New-age Foundation programmes in Design with inputs of VR.

A simple walking experience as body knowledge can be an actual experience in a given physical environment as well as chosen simulated ecosystem of a different culture, country, etc., in VR.

*An experience in VR can initiate design students to learn 'in new, unknown habitats'.*

Setting 'Innovative Tasks', will be the challenge for design teachers, as social frameworks for design education with large number of students limited to certain economic and social class will remain a reality in design schools.

## 5.3 Eco-systems to learn design

Thomas Fuch's 'Circularity of the embodied mind', and focus on dynamic interactions between the brain, the body, and the environment reinforces the need for conducive environments for Learning.

Present problems in design schools like

- *Education as business,*
- *Authoritarianism as an easy way of Management and*
- *Low personal interaction between teachers and students*

are detrimental to conducive Learning. Young students become victims and try to rebel in wrong directions like taking to 'drugs'.

### *Steps needed at strategic level*

- To start with seeing the 'New-age Foundation programme in Design' as a game changer is necessary.
- There is an urgent need for Design Schools to come together to bring changes at system level. 'Opinion building' by design educators through national and international seminars will be crucial as a first step.
- Peter Senge's Fifth discipline (19) as an operative model (with dialogue as a basis) for running design schools is a possible direction for local management of design schools
- Mindfulness in 'Buddhist thought brought out by Varela', needs adoption.



## 6.0 Innovative Approaches for shaping 'New Age Foundation Programme' in Design

New findings on **Body as a learner**, bring a new challenge to 'Design Pedagogy', to re-frame its practices in Pedagogy. Some guide lines can be drawn from some experiments tried out earlier to construct the new frame work,

### 6.1 Texture Task at NID and IDC: Reaching a Semantic zone

Exercises in 'surface textures' done at different times at NID and IDC

- **Task in Aluminum Textures set at NID in 1967**

I will take a task in textures set at NID, by Prof. Kumar Vyas, for us, as an example. The task was to explore various textures possible to produce mechanically with tools and machines or through chemical reactions, on '5cmx 5cm x 3mm' Aluminum pieces and compose them in a frame. We were all post graduate students with engineering or architectural background. Our explorations brought in exciting textures which can be felt by touch and seen visually. However, the composition remained 'syntactic' in nature as there was no particular 'theme' to address in the task. It had all the potential of 'learning as body knowledge'.



Student: S.Balaram

*Courtesy: prof.S.Balaram*

We may say that *the exercise was successful in developing tactile perception to a finer degree in students.*

Nature of imagination and the knowledge gained, remained tacit and personal as there was no demand on 'verbal articulation' or 'operation in Semantic zone'. There was no 'dialogue' with the teacher or other students apart from judging comparatively.

*On reflection we can see that, we needed 'a framework' for 'dialogue and debate' which was missing in the exercise.*

- **Task set at IDC in Eighties**

In Eighties, as a teacher at IDC, I had an opportunity to set a task on surface textures and colours.

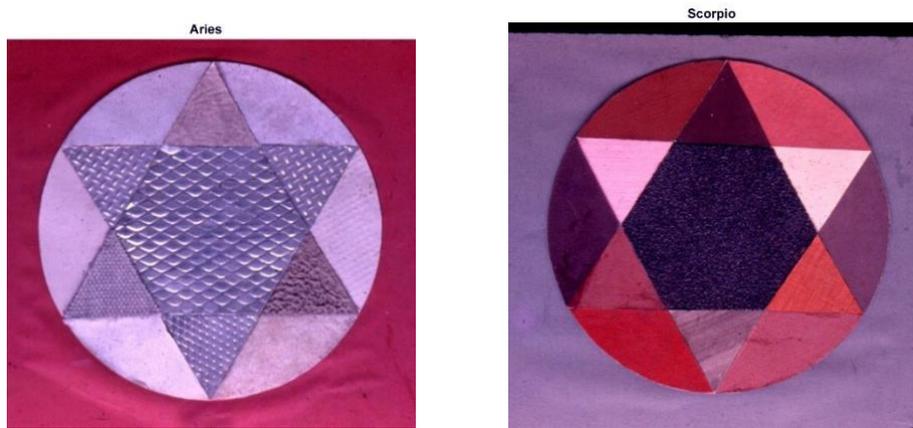
Each student was asked to choose a zodiac sign to start with. A grid based on two inverted triangles, was given to adopt and express the character of a particular zodiac sign, in textures and colours, with different materials. Students were encouraged to create textures by mechanical or chemical means.



*The task had 'syntactic and semantic' challenges. Language and Meaning got integrated with 'Tactile and Visual sense perception'. It had also moved from 'Art zone' to 'Design zone'. Tactile sense got linked with 'verbal and visual' language.*

*One can see the beginnings of frame-work for 'Arupa the Implicate Order'.*

To start with, students selected and created surfaces with different textures and colours. They also studied the personality traits of different zodiac signs, which they expressed as compositions in the given, 'Mystic Grid'. This is when creating a surface in touch zone moved into semantic abstract zone with language as means. This particular step is crucial in 'Learning' as it facilitated *metaphoric mapping*.



*It also had provided a ground for introducing advanced technologies, as an extended step. It would be possible to create alternative solutions for each zodiac sign composition using AI and 3D-printing facilities as additions to the physical execution.*

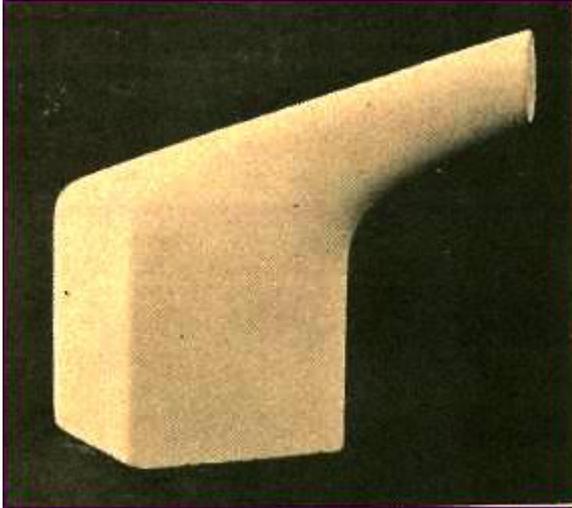
## 6.2 '3DForm Transition' task in Foundation- at IDC in seventies

In seventies I and my colleagues at IDC set 'Form Transition Tasks'(20) based on 'given actions on simple geometric shapes'.

Task: Generate forms with suggested actions on given geometric shape.

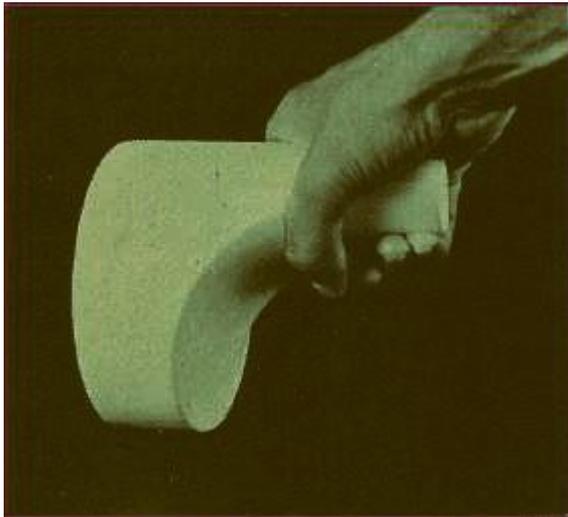


- Lift a cube made of POP with dimensions 12cmx12cmx12cm.



Result of student's work 1

- Lift a Cylinder made of POP with dimensions 15cm dia,4cm width



Result of one student's work2

*At that time, we did not see the output with a lens of Tactile-Kinesthetic Order.*

Learning 3D form in abstract mode frees it from 'functional constraints' and facilitates to create an independent visual language in 3D. It also has the potential to get linked to verbal language at deeper levels in the frame work of *Arupa the Implicate Order*.

- When we do 'form transitions', perceptual modes are 'Tactile and Vision'. A teacher often verifies student's output in Visual mode as it is difficult to 'communicate or verify', in 'Touch mode'. Demonstration is partial option. *Even to see the subtle form in 3D transitions need training*. Lighting plays significant role in seeing 3D Form/shape. Diffused lighting with 'Mercury vapour or LED lamps' is not conducive to see subtle surfaces.

I innovated a 'set up' on a rotating table by placing a 'lamp with incandescent bulb' at one side. Each Form transition model was kept on the rotating table and rotated, to watch it with side lighting. This facilitated each student to see subtle boundaries between convex to concave and straight surfaces. Hidden 'parabolas' became visible, only when the 'precision' in smooth transition was achieved!

This simple set up, was a powerful tool to develop visual sensitivity in students!

*Unfortunately, or Fortunately the method has not been 'named' or 'patented'.* 😊

### Touch sensitization

- In another effort to sensitize 'Touch', a blind folded mode to experience 3D objects was tried out in nineties and later. Special bags were designed and made, where students can insert hands and experience an object inside the bag by touching without seeing it. They were asked to draw the sketch of the object later from the 'Touch memory'. After that, objects which they had not seen, but sketched from 'touch memory', were shown to them.



← a student of M des, sensing 3D object by touch -2017

*This exercise had a surprise effect of increasing the motivation to learn 3D-form.*

*One needs to fall in love with 'Arupa' to learn its manifestations.* 😊

### ❖ Possibilities with Form Transitions with new inputs in AI or VR

Inferences from (1,2,3) make it clear that '3D Form Learning' need to start with actual making with physical experience. However, power of 'Digital mode with 'AI' and 'Virtual Reality'(VR) need to be brought in to picture, *Innovatively*. This demands pedagogic explorations by linking 'Verbal Language and Visual Abstraction'. Some clues can be derived from an earlier article, *Arupa' the 'Implicate Order' as a New frame-work for 'Form and Design'-1* (16), in which how language can become a strategic tool to reveal various manifestations (rupas or shapes) of a product was discussed, taking chair as an example.

Strategies mentioned were

- Finding adjectives
- Looking at associated words in other languages

- Locating metaphoric extensions as nouns, verbs, etc.,
- Searching 'Meaning in narratives, fiction in larger context

Now, we can re-look at the 'action' suggested, **Lift**, in Form Transition, with this context.

Variations like

- Lift from side
- Lift from below
- Lift softly
- Hold from top and lift
- Hold from side and lift
- Lift with both hand
- .....

would be obvious.

Further to this,

- *Imaginative, intriguing and humorous narrative scenes*, can be given as problem statements.
- *A 'context' can be articulated where the new shape 'occurs'.*

Responding with 3D shapes digitally for such new challenges would be the new zone of training in 'imagination' for the students. Power of language and ease of translations like textures in 3D-printing can give additional scope for 'New age foundation programme' in Design.

### 6.3 Theatre Experience at IDC

Theatre Sessions helped in linking Tactile and Kinesthetic senses to Imagination and Self.



Prof.Kamalakar Sontakke conducting a Theatre session at IDC

Traditionally, body engagement is associated with Theatre- participation. After my participation in similar sessions in a week long workshop conducted at Creative Education Foundation, Buffalo (USA) in 1980, I was eager to experiment with a 'Theatre Session' for our students at IDC! With the help of Prof. S.Nadkarni, I found a right person, Prof.Kamalakar Sontakke, well known in the field of 'Theatre' in India. He initially conducted a 'Theatre Session' at IDC for participants from Industry in a 'Creativity and Problem Solving Workshop (21). Later, after long discussions, he agreed to conduct 'Theatre Sessions' for Mdes students, as part of Form Course! Expressions like 'security', friendliness, etc., were taken up 'for enacting' by the students.



These had two significant outputs:

- The new experience of body participation had a powerful impact. Many students lost their 'Inhibitions'. Dramatic change in the 'Inner Order' of some students could be seen especially, when they saw a video of their participation after the 'theatre' session. Observing one's own 'body-self' triggered a 'deep reflection'.
- Students (especially with engineering background) who had difficulty in catching up with the abstract visual language in 2D, 'were able to enact the same expression like 'security' bodily' rather easily, by enclosing a student with bent hands. Later dialogue helped them to connect it to abstract visual language in 2D!

*An initial session in Theatre in the conventional mode can be extended through VR to theatric participation in different simulated environments*

#### 6.4 Guided Imagery with body participation

Guided Imagery sessions initiate participants to participate in a self- hypnotic mode responding to the voice of the conductor. On the suggestion of the 'Voice', participants relax their bodies fully and explore visual imagery! Suggestions like becoming a bird and flying, seem to trigger positive feelings and invoke their own imagery! These sessions with a duration of 20 to 30 minutes left deep impression on participants. I have conducted more than 30 such sessions to different groups over a period of 30 years and the response was always positive. Many felt that, they had deeply relaxed for 'the first time' in their life.

What is relevant is the body relaxation which is similar to Yoga Nidra (sleep) in Indian tradition. Each person was responding with their own inner imagery, even as the body was fully resting with attention.

GI sessions offer us two further directions to pursue:

- Exploring the Active Silence in Tactile and Kinesthetic senses for problem solving which is a conventional concern
- Addressing the 'Inner Order' of participants.

*In both such efforts a new challenge will be to utilize 'AI and VR' in a positive direction.*

Summing up,

- Exercises in Textures and feel of materials can move to semantic zone from syntactic zone to harness imagination of learner.
- Formats for feeling and making 3D form can be extended to semantic zone by incorporating new technologies based on AI and VR
- Body experience in Theatric mode can be clubbed with learning expressions in design in addition to addressing 'Inner order' or self.
- Guided Imagery sessions can become part of design courses with possible integration of new technologies like VR.



- ❖ **Conclusion:** Deliberations in **1.0 to 6.0** support 'Arupa the Implicate Order' Frame work for 'New Age Foundation Programme in Design'. However, the framework demands a holistic approach which can bring a fundamental change in the 'Inner Order' of learner in the very process of 'learning'. We can anticipate a 'beginning of such a process', by adopting 'Free thinking and Dialogue Process', propounded by J. Krishnamurti and Dr.David Bohm. It, inevitably leads us to the question of 'transformation' of 'design facilitator/teacher' to start with!

*'New age foundation programme' certainly demands the preparation of pedagogues to meet the challenge!*

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