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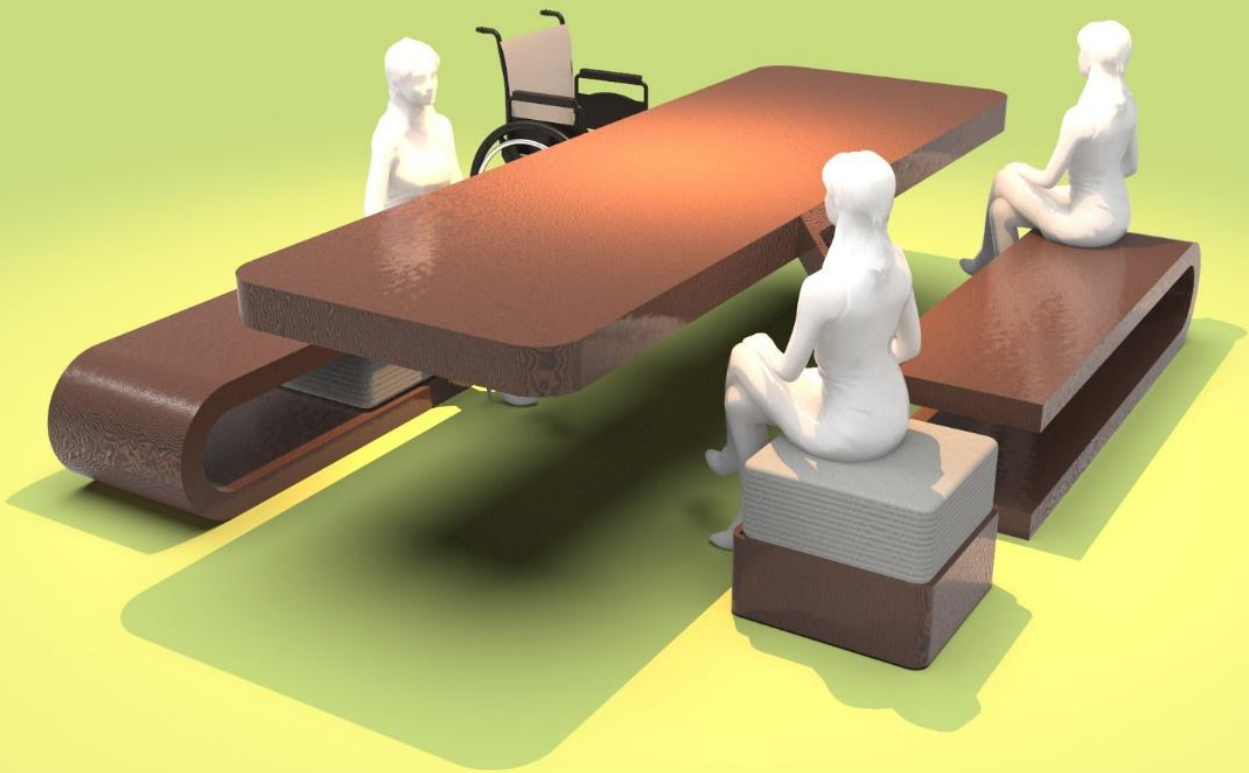

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The Relational Nature of Thinking

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Abstract

Thinking has often been referred to as a process of producing thoughts. In spite of the fact that thought is a fundamental human activity familiar to everyone, there is no generally accepted agreement as to how thought is created. In this study we view thinking as a relationship building activity. It is through building relationship that language and its constituents come into being and then language itself becomes a thinking tool. Thinking is an active process that modulates the process of sensing and collecting data from the surroundings. This data collection & it's processing, from different viewpoints, generates different types of intelligence and styles of thinking. The different styles of thinking are discussed and how they process the resources in the environment for creativity, innovation and development of man made environment. Thinking in human beings though truly a marvelous instrument can sometimes degenerate into mental disorders when deprived from appropriate environment.

Keywords

Human thinking has produced great luminaries who have shaped the course of human civilization and advanced our understanding of the universe we live in. Their impact has been deep probing and far reaching. Their contribution became building blocks on which further

contributions were made. They inspired us to imagine, conceptualize, unravel, validate, express and disseminate. Every country and every culture, irrespective of color, caste, race or gender, has its share of such luminaries.

Human thinking has also produced criminals, conman, thugs and brutal exploiters who are only good enough to be executed and jailed. At best they represent examples of what we should not be.

Further human thinking has produced mentally ill people who have languished away from social glare in lunatics asylums of the past and mental hospitals of today. Human thinking has also produced suicide bombers dying for a cause, terrorist inflicting wanton damage and criminals planning heinous crimes..

Human Thinking can be positive, resilient, agile and versatile. It can also be narcissistic, cruel and demeaning. It can also be characterized by convoluted tangled patterns devoid from reality, sometimes accompanied by uncontrollable fits of rage and anger and incapacity to form constructive relationships.

Origin of thinking

The origin of thinking predates development of mathematics, even development of language, even development of bees, birds and goats working in swarms, flocks and herds, even development of locomotion, even development of awareness of surroundings and their influence. Perhaps it begins with a single or a multi cell organism becoming aware of it self. It would be impossible for an organism to make any effort to maintain its physical integrity if it

was not aware of itself, its boundaries and the forces/ resources that are for and against its existence. Only an organism that is aware of itself can evolve. There is a necessity for the opening & closing of an open system for small organisms to manage its sustenance & proliferation trajectory. This requires thinking. Further it is required for recognizing patterns in the environment and for locomotion. Working in teams and collaborating would further the requirement on thinking. Seeking out or avoiding preferred patterns in the environment would add to the thinking process. Next could come manipulating and restructuring of the environment. This would further the demand on the thinking process. Language and mathematics and the ability to imagine the unseen is the epitome of human intelligence that we admire and hold in high esteem.

The development of imagination, language and mathematics is built upon the experiences in real. So language and thinking tends to take up a structure that is conducive to describing the real world.

When we look at thinking we find that the underlying thread in all aspects of thinking is the process of looking for relationship and development of valid relationship between thoughts. Thoughts are the atoms and molecules of the thinking process. Thoughts combine to create new thoughts. Thought combine on the basis of the properties they carry with them Thoughts have affinity for combining or not combining, of forming stable or unstable relationship. Right thinking and wrong thinking are only in the context of whether the relationship derived is right or wrong. A thought structure being right essentially implies that it is stable in some context. The thought is then right in that context. The cultural

world of reality is also seen as a thought. A thought is right if it is stable in this context of reality.

Thinking is an active process that requires active participation. This is where awareness, attention and focus are needed. It is like way finding. One should know where one is, where one wants to reach and whether one is heading in the right or wrong direction. Only then a course correction can happen. The final destination could be a feeling of WOW, or completeness or synthesis. Along the course towards achieving this one sees conflicts, resolves conflicts, brings about symbiosis and approaches synthesis. In this journey two things are most important to the thinking process. The first is the properties or characteristics of a thought; the other is the relationship between thoughts. Thoughts have to represent objects, characteristics of objects, its behavior patterns and its ability to bring about relationships with other thought objects. Only then can we manage complexity in our thought process.

In the Middlesex University resource provided by Andrew Roberts [1999], 'ABC of thinking', he lists words used to think about thinking which are reproduced below. Reflection shows that a concern with evoking, understanding and establishing relationship is at the core of these words.

Abstract, Analogy, Analysis, Axioms, Conceive, Concept, Critical, Deduction, Dialogue, Dogma, Empirical, Empirical Research, Explanation, Explanandum, Explans, Falsification, Flow, Generating ideas, Geometry, Hypothesis, Ideas, Imagination, Impressions, Induction, Library Research, Logic, Metaphor, Metaphysics, Metatheories, Paradigms, Positivism, Proof, Proposition,

Rationalists, Rationally, Reason, Reasoning , Reflection, Research, Review, Sceptic, Scepticism, Semantics, Semiotics, Sequential, Symbol, Testable theory, Theory, Theory structure, Theory types, Verification.

Sensory Processing

We think about ourselves. We think about the world around. We wish to know how the world around us works. We wish to know our place in this world. What is our role in this world? We connect with our world through the five senses viz. vision, auditory system, tactile, olfactory. These are essential to learn about the external environment. There are different parts of the brain dedicated to each sensory stimulus. But these are not functional silos. Communication within and among these specialized areas also takes. Multisensory integration is necessary for a more vivid representation of objects and experiences.

In addition to the five senses mentioned above we also have proprioception, vestibular system, interoception. Proprioception is concerned with a sense of the relative position of one's own parts of the body and strength of effort being employed in movement. A cat wishing to walk through a whole must know its boundaries and compare it with the size of the hole before it ventures to do so. Vestibular is concerned with the sense of the relative position of one's own parts of the body and strength of effort being employed in movement. This is necessary to maintain balance when walking over a boundary wall. Interoception is defined as the sense of the internal state of the body. It encompasses the brain's process of integrating signals relayed from the body into specific sub regions—like the brainstem, thalamus, insula, somatosensory, and anterior cingulate

cortex—allowing for a nuanced representation of the physiological state of the body. This is important for maintaining homeostatic conditions in the body and, potentially, aiding in bodily self-awareness. These together allow us to perform are day to do activities while maintaining the integrated functioning of the body.

Human sensory processing is purposive. It is active. It is goal directed. It is very much different from man made sensor like a digital camera chip or an audio recorder. These are passive. They record all data that falls in its ambit.

Colin Ware [2008] has extensively written about the nature of visual sensory processing in the context of human brain. It is likely that his description of how visual processing works can be safely extended to other senses.

Colin outlines a three stage processing of sensory stimuli leading to recognition of an object. A copiously reproduce some of the paragraphs.

"The main feature processing stage occurs after information arrives in the V1 cortex, having traveled up the optic nerve. There are more neurons devoted to this stage than any other. Perhaps as many as five billion neurons form a massively parallel processing machine simultaneously operating on information from only one million fibers in the optic nerve. Feature detection is done by several different kinds of brain pixel processors that are arranged in a distorted map of visual space. Some pull out little bits of size and orientation information, so that every part of the visual field is simultaneously processed for the existence of oriented edges or contours. Others compute red-green differences and yellow-blue differences, and still

others process the elements of motion and the elements of stereoscopic depth. The brain has sufficient neurons in this stage to process every part of the visual field simultaneously for each kind of feature information."

"At the intermediate level of the visual processing hierarchy, feature information is used to construct increasingly complex patterns. Visual space is divided up into regions of common texture and color. Long chains of features become connected to form continuous contours. Understanding how this occurs is critical for design because this is the level at which space becomes organized and different elements become linked or segregated. Some of the design principles that emerge at this level have been understood for over seventy years through the work of Gestalt psychology (gestalt means form or configuration in German)."

"Some neurons that process elementary features respond to little packets of orientation and size information. Others respond best to redness, yellowness, greenness, and blueness. Still others respond to different directions of motion.

Although something labeled "dog" might be one of the objects we hold in our visual working memory, there is nothing like a picture of a dog in the head; rather we have a few visual details of the dog that have been recently fixated. These visual details are linked to various kinds of information that we already know about dogs through a network of association, and therein lies the power of the system. Concepts that dogs are loyal, pets, furry, and friendly may become activated and ready for use. In addition, various possibilities for action may become activated, leading to a heightened state of

readiness. Actions such as petting the dog or avoiding the dog (depending on our concepts) become primed for activation. Of course if it is our own dog, "Millie" a much richer set of associations becomes activated and the possibilities for action more varied. This momentary binding together of visual information with non-visual concepts and action priming is central to what it means to perceive something."

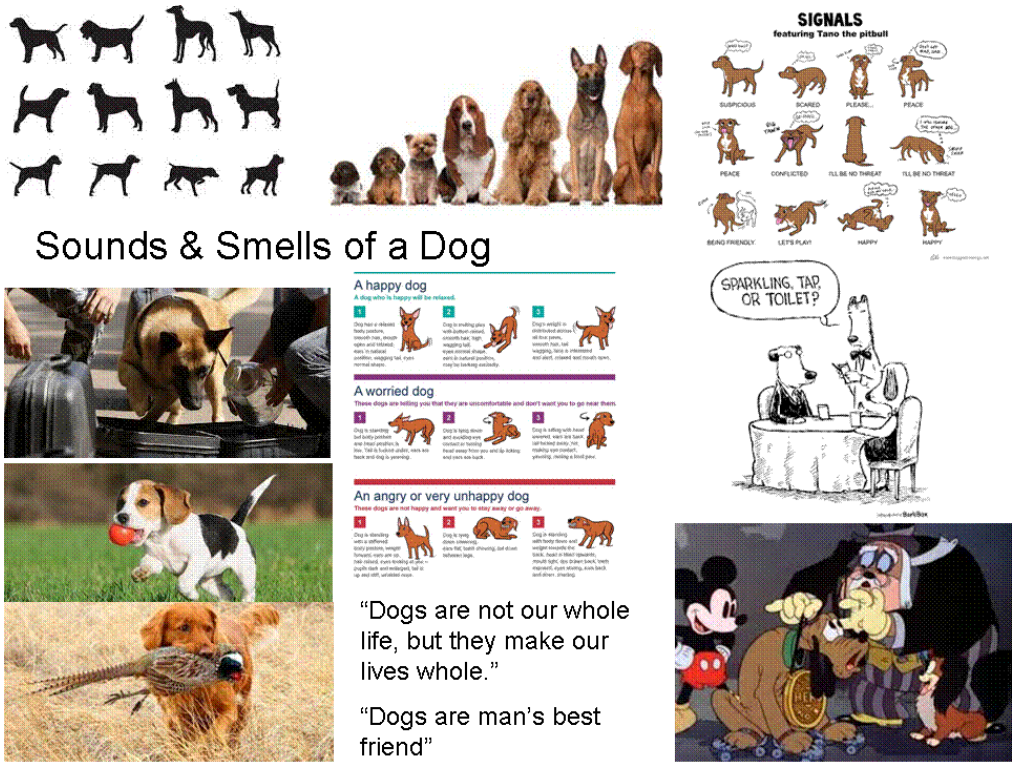

Fig1. Building relationships is the key to the formation of objects in the memory. All objects have a rich and detailed set of attributes associated with it.

Thinking is building relationships

Under the Human Connectome Project [2011] funded by the US National Institutes of Health to study the neural pathways of the brain, some 461 health people taken by real-time brain scanners called functional magnetic resonance imaging (fMRI) and attempted

to see if there were any significant correlations with 280 different behavioural or demographic measures, such as language vocabulary, education and even income. I generously reproduce the findings.

The brains of high-achieving individuals with high cognitive abilities were found to be well wired-up and quite different from those with fewer intellectual or social abilities.
Well wired up means there are lots of connections. Lots of connections means lots of relationships.

The researchers found that "positive" abilities, such as good vocabulary, memory, life satisfaction, income and years of education, were linked significantly with a greater connectivity between regions of the brain associated with higher cognition. This was in contrast to the significantly lower brain connectivity of people who scored high in "negative" traits such a drug abuse, anger, rule-breaking and poor sleep quality, the scientists said.

It is pertinent to reflect on the products of thinking like language, creative processes, and scientific methods to hypothesize about the nature of thinking. Later we will take up different styles of thinking and how social & technological processes facilitate creative thinking.

While thinking is present in all living creatures, more dominantly in higher ones, well developed language spontaneously emerges in human beings. The development of language and human dexterity especially with the hands has significantly enhanced the propensity of intellectual and creative output among human.

Language

Language is a repository of all experiences that were deemed worthwhile to be captured, expressed and shared within a culture that subscribe to that language. Vocabulary is a pointer towards worthwhile experiences. The language also has the inbuilt tools to explore the merit of those experiences in conjunction with the brain. As the civilization & culture advances, new objects and experiences with associated words are incorporated into language. Many obsolete experiences fall by the wayside. Vocabulary in any language is constantly growing. Literacy is not merely ability to read and write. Linguist literacy should empower us to critically think and express, enter into a dialogue, discuss and debate. Our power to use a language depends on the vocabulary we can use with lucidity. Various estimates prevail. They all border around.

Beginner 1 up to 2,500 known words
Beginner 2 up to 5,000 known words
Intermediate 1 up to 10,000 known words
Intermediate 2 up to 15,000 known words
Advanced 1 up to 20,000 known words
Advanced 2 up to 25,000 known words and beyond

Language is a powerful vehicle for intellectual, social & cultural growth if actively used. Vocabulary in a language will be indicative of the explorations made and limits and potential and potentials for further explorations. More the users of a language explore new things, more words it acquires. More the user of a language write

discusses and debate, more the language becomes a tool for creative expression & critical thinking.

Examination of language shows that the mind creates objects based on their structural and functional attributes. This is expressed as 'nouns' and 'pronouns'. Further it captures the states of the objects and its behavior. Behavior is expressed as 'verbs'. All sentences must have a noun and a verb. That is, all sentences are concerned with objects and behavior. Further these 'adjectives' and 'adverbs' further qualify nouns and verbs. 'Prepositions' (on, in, before, after, by, etc.) positions objects in space in time with other objects. Conjunctions are an operator that enables us to create rational relationships. Examples of 'conjunctions' would be and, but, for, nor, or, so, and yet, after, although, as, as if, as long as, unless, until what. These are rational operations among objects and their behavior in space and time.

It is evident from the structure of language that thinking is concerned with objects, their constituents and their behavior in space and time and relationships among different objects in space and time and their effect, influence and impact on their surroundings. This is a recurring activity in all fields of learning.

Directly and indirectly perceived and derived objects

There are objects in our vocabulary that are perceived directly by our senses. These are common nouns. They can be termed as real and rational. Then there are object indirectly seen through physical instruments, e.g. atoms or black hole. These are also seen as real objects and real nouns. Then there are objects like 'heaven' derived from non perceivable objects like God or soul. These may be termed

as non real, non objective and non rational. Then are nouns like freedom, liberty, love which are also seen as objects. They are a product of real objects and real behavior but may be real or quasi real. It is very interesting that our brain and the associated thinking process have the affinity to abstract, theorize and derive and will do so with all objects and behavior it entertains. It is worth hypothizing that there are neuron structures or other structures within the brain that acts like senses and are responsible for concepts like love and freedom being widely acceptable and desirable in our choice patterns and decision making. What about objects like god, heaven, hell, karma all created within the broad domain of life and life force? Here again we may hypothesize that there are neuron structures or other structures within the brain that are responsible for continued predominance of such objects. Unless we can identify the existence of such neurons or sensory organs, we will never be sure if these irrational or real and rational objects.

Our language consists of

Directly perceived objects

Directly / Indirectly Perceived States of objects

Directly / Indirectly Perceived Behavior of objects

Directly / Indirectly Perceived Feelings

Direct / Indirect Experience

Derived Value

Derived Lore / Wisdom

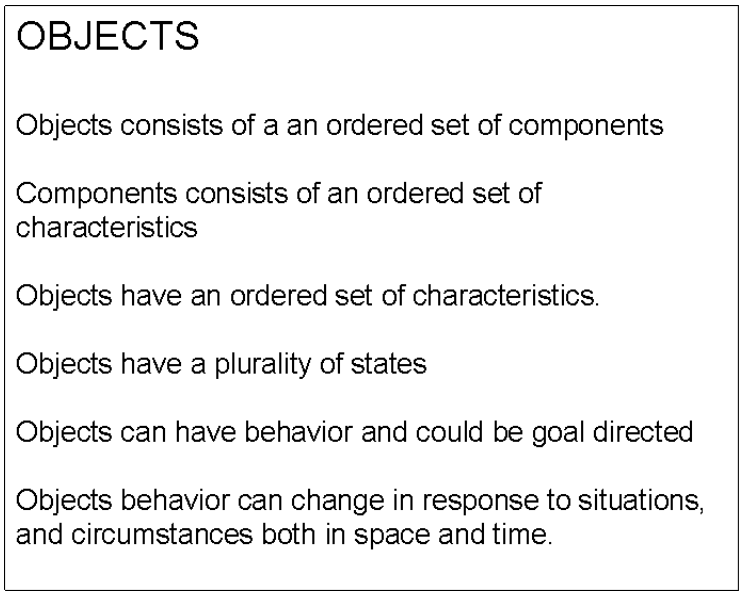

Fig2. Structuring an object with the associated generic characteristic is significant challenge

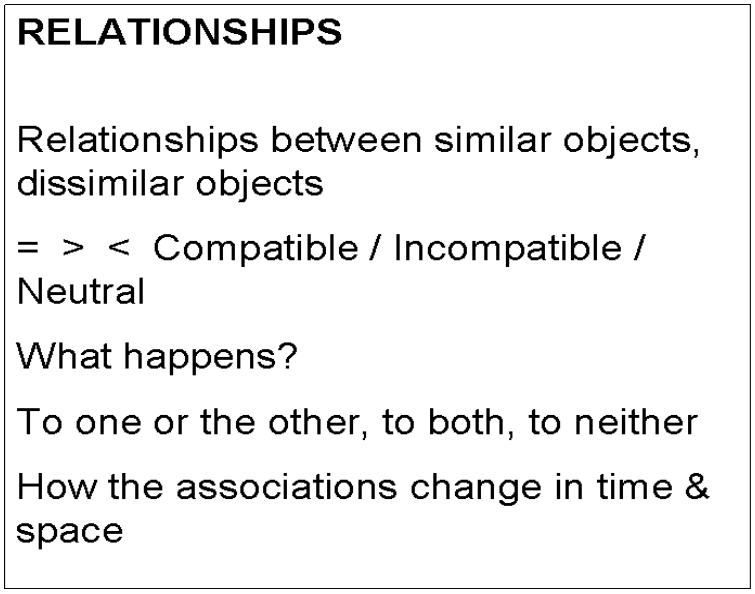

Fig3. Structuring the generic & special relationship associated with an object is significant challenge

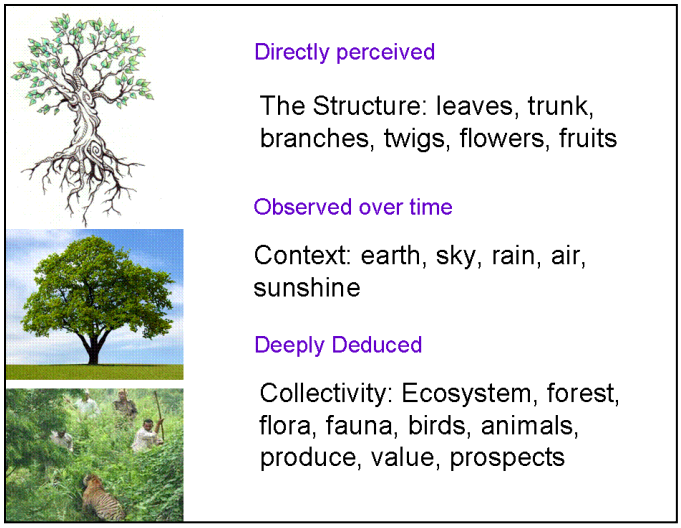

Fig 4. Certain relationships emerge over a period of time through continued observation & analysis

Types of Intelligence

Different types of intelligence offer many ways of seeing, expressing & excelling. The challenge of identifying objects & deciphering relationships is complex because life is dynamic, multilayer & multifaceted. No one individual is able to unravel its complexity. Often it is beyond the capacity of the senses itself.

In 1983 an American developmental psychologist Howard Gardener [1983] described 9 types of intelligence

Naturalist (nature savvy): Darwin, Chief Seattle

Musical (sound savvy) : A. R. Rehman, Beethoven

Logical-mathematical (number/reasoning savvy) : Issac Newton. Srinivas Ramanujan

Existential (life savvy) : Winston Churchill, Mahatma Gandhi

Interpersonal (people savvy): Lee Iacocca, Rattan Tata

Bodily-kinesthetic (body savvy) : Sachin Tendulkar, Nadia Elena Comăneci

Linguistic (word savvy): William Shakespeare, Rabindranath Tagore

Intra-personal (self savvy): Jane Godall, Milarepa

Spatial (picture savvy) : Leonardo Da Vinci, Le Corbusier

The examples are mine. The reader will immediately notice that these geniuses could also fall in some other category. Every man possesses a variety of intelligence and capacity to excel in two or more types of intelligence. Being great in one and an all rounder in others would be a certain prescription for the emergence of a visible performer. Excelling as an all rounder would be truly great, because then one can examine and express reality from many viewpoints. These nine types of intelligence enumerated by Howard Gardner is not the end of the story. There are likely other types of intelligence waiting to be identified. There has to be an intelligence associated with every sense organ. In addition there will be intelligence that correlates and integrates information from different senses. What is nature of intelligence required of a wine taster? What about intelligence of an Amazon rain forest doctor who is able to link plant with cures for different illnesses? What about the intelligence of the magician who can amuse entertain and flabbergast the audience.

Different professions require and cultivate different types of intelligence. Selection boards specialize in identifying potential candidate through conversation & tests.

Intelligence Creativity Inventiveness & Innovation

Unlike intelligence, concepts of 'creativity, innovation and invention' are generally clubbed together because they are not so simple to define and distinguish. However it is important that we should be able to differentiate them. We have seen that thinking is a relation building process. We are solving problem by building relationship. "Intelligence is the ability to find at least one solution. Creativity or creative thinking is the ability to find a plurality of discrete set of relationships that constitute a set of solution. In Invention the nature of relationship is original, novel and useful" [Das, Lalit K. 2009]. Novelty should be in the mind of an expert in the field. The useful attribute is seemingly useful in the mind of the inventor, the patent officer and the field expert. Creativity is an important part of invention as is intelligence a precursor to creativity. As a matter of fact, creativity is the starting point of all invention and innovation. In innovation the jury changes, from an individual patent officer to society and culture.

Cognition	Ability to sense
Intelligence	Ability to see relationship or configuration
Creativity	Ability to see many relationship or configurations
Inventiveness	Ability to see new viable & meaningful & breakthrough relationship or configuration
Innovation	Ability to create new socially & culturally meaningful & breakthrough relationship or configuration

Fig 5. It is rational to define enhanced thinking levels with reference to shared relationships

Innovation all requires novelty and usefulness.

The meaning of innovation is well summed up by the word INNOVATION itself.

NOVA OVA OVVATION

It is the society and culture that offers ovation. It is the society and culture that recognizes an innovation. The patent office stops at inventions.

Styles of Thinking

An object can be considered from many different viewpoints. This when consistently followed will lead to different styles of thinking. For the purpose of this study we may consider the following four styles of thinking, viz. metaphoric thinking, rational thinking, empiricism, and system thinking and reflect its relationship with cultural development. The first three of these epistemic were discussed by Kearsley (1976).

1.*Metaphorism ensures continuity through similarity and synonymity of different levels, components and structures and thus lends character and identity to the system. It introduces plasticity in thinking and brings about condensation, symbolization, displacement, neologism.*

2.*Rationalism leads to knowledge structures that are consistent and coherent. It helps divide and distinguish and as such stimulate questions.*

3.Empiricism ensures that there is compatibility between the knowledge system and the perceptually verifiable systems. It ensures design operation ability and physical realisability.

4. Systems thinking enable us to take into account larger and larger numbers of interactions as a unified activity. This results in sometimes strikingly different conclusions than those generated by traditional forms of analysis, especially when what is being studied is dynamically complex or has a great deal of feedback from other sources, internal or external. System thinking ensures that the focus is always on the goals / purpose of the system. The behavior is studied with reference to the behavior of the element that constitutes the system and can often work in different ways to ensure the stability of the system.

Each of these styles of thinking has produced its characteristic professional groups with its characteristic output.

While all styles of thinking were prevailing at all times in history, there seems to be a preponderance of one style over others in certain periods [Das Lalit Kumar 2008]. This seems to be determined by the need of any society to take the next step towards advancement and stability. Also at any time there are always forces that will like status quo to remain. These forces will come in the way of thinkers / opportunity providers who are providing the algorithms for change.

In history of design, we will like to consider all products created by people. These may be concepts, theories, scriptures, poetry, novels, plays, films, theorems, products, artifacts, devices, and machines, processes, control systems, etc. Development in one class of design

items in one geographical area has affected another class of designed items in another area and so on and so forth.

HyperHistory Online takes us through 3000 years of world history with links leading to important persons of world historical importance. Table 1 of historically important thinkers / opportunity creators is presented on the basis of people's index as per HyperHistory.

On a timeline one sees a preponderance of metaphoric thinkers to begin with, followed by rational thinkers and subsequently empirical thinkers.

AMOS	Hebrew Prophet	c.802 - c.745 BC	Metamorphic	'Justice for all human beings'
HOMER	Greek Poet	c.850 BC ?	Metamorphic	'The many separate Greek states were united by the Homeric epics ' the 'Iliad'
ZOROASTER	Persian Prophet	c.630 - c.550 BC	Metamorphic	Dualism 'Man has the power to choose between good and evil.
LAO-TZE	Chinese Philosopher	c.604 - c.521 BC	Metamorphic	'Man, be like the universe, which endures because it does not live for itself
JINA	Prophet in India	c.580 - c.527 BC	Metamorphic	' Abstinence from violence and contentment
BUDDHA	Prophet in India	c.560 - c.477 BC	Metamorphic	'Universal path to salvation
PYTHAGORAS	Greek Philosopher	c.575 - c.500 BC	Rational	' The world was to be discovered with the aid of mathematics, geometry
CONFUCIUS	Chinese Philosopher	c.551- 479 BC	Rational	'Sought to provide sound rules for every occasion in life
ANAXAGORAS	Philosopher Scientist	c.501 - 428 BC	Rational	' Spirit of scientific inquiry while accepting a cosmic mind
SOCRATES	Greek Philosopher	469 - 399 BC	Rational	'Mastery of the rules of logic, correct methodology of argument
PLATO	Greek Philosopher	427 - 348 BC	Rational	'Theory of Ideas; mathematics, the world of being and the world of becoming.
ARISTOTLE	Greek Philosopher	384 - 322 BC	Rational	Established basis of formal logic, classification of field of knowledge
EUCLID	Greek Mathematician	c.365 - c.280 BC	Rational	The Elements', a collection of geometrical theorems
ARCHIMEDES	Greek Scientist	c.284 - 212 BC	Emperist	Inventor mathematician
CHANG-CHIEN	Chinese Discoverer	c.172 - 114 BC	Emperist	Traveller, explorer, ambassador, brought horses and new plants to china
HERON	Greek Mechanician	c.152 - c.82 BC	Emperist	Scientist, inventor, engineer
HORACE	Roman Poet	65 B.C. - 8 B.C.	Metamorphic	Poet
VITRUVIUS	Roman Architect	1st century BC	Rational	De architectura'. Planner architect engineer
JESUS	Spritual Prophet	c.6 BC - c. A.D. 30	Metamorphic	Spiritual preacher, wisdom from the mundane
WANG-CHUNG	Chinese Philosopher	26 – 99	Emperist	He insisted that any theory must be supported evidence and experimental proof
HUA TO	Physician Scientist	c.190 - c.265	Emperist	Successfully invented surgery
BHASA	Indian Playwright	c.275 - c.335	Metamorphic	Poet
KALIDASA	Indian Poet	c.353 – 420	Metamorphic	Poet
SUSRUTA	Indian Physician	c.380 - c.450	Rational	Advocated sterilisation of wound, developed plastic surgery
TSU CH'UNG CHI	Chinese Mathematician	c.430 - c.501	Rational	Astronomer, calculated the value of pi and time of the solstice
ARYABATTA	Indian Astronomer	c.476 - c.535	Rational	Mathematician of repute, discovered rotation of earth
Alexander of Tralles	Byzantine Physician	c. 525 - c.605	Emperist	Twelve Books on Medicine, a major work on pathology and therapy,
MOHAMMED	Prophet	c.570 – 632	Metamorphic	Religious teacher
BANA	Indian Poet	c.595 - c.655	Metamorphic	Poet biographer
BRAHMAGUPTA	Indian Mathematician	598 – 660	Rational	Mathematician astronomer
HUAN-TSANG	Chinese Traveller	602 – 664	Emperist	Traveller monk writer
TAO-YUE	Chinese Inventor	c.608 - c.676	Emperist	Empiricist 'Inventor of white porcelain
AL-KARISMI	Arab Mathematician	c.778 - c.850	Rational	Rationalist 'Brought algebra and decimal system into European mathematics.
ABU KASIM	Arab Surgeon	936 – 1013	Emperist	Father of Modern Surgery'.
LEIF ERICSSON	Icelandic Mariner	c.961 - c.1021	Emperist	Norseman to seek out the coast of North America.
AL-HASSAN	Arab Optician	965 - 1039	Emperist	First to recognise the optical nerve in the human eye.
BHASKARA	Indian Mathematician	c.1114 - c.1185	Rational	Leading mathematician development of algebra decimal system and trigonometry
AL IDRISI	Arab Geographer	c.1096 – 1166	Emperist	Geographer published an atlas with 71 maps
ROGER BACON	English Philosopher	c.1214 - c.1292	Rational	Forerunner of modern experimental science finally imprisoned for his thinking
MARCO POLO	Italian Traveller	1254 - 1324	Emperist	Travels of Marco Polo' - fired the imagination of all Medieval Europe.
IBN BATTUTA	Moorish Traveller	1304 - 1377	Emperist	Travel book 'Rihlah', covering China, Sumatra, Ceylon, Arabia, Syria, Egypt, East Africa
CHENG-HO	Chinese Admiral	c.1371 - c.1433	Emperist	Several famous naval expedition visited south east asia, arabia egypt, no conquest
GUTENBERG	German Printer	c.1400 - 1468	Emperist	The inventor of moveable-type mechanical printing in Europe.
COLUMBUS	Italian Navigator	1452 - 1506	Emperist	Sought a westward route to Asia, but found America instead
Leonardo da Vinci	Italian Genius	1452 – 1519	Emperist	All round genius, greatest of artists and the greatest experimental scientist of his age
Johannes Kepler	German Astronomer	1571 – 1630	Rational	Explanation for planetary orbits and he discovered that the orbits are elliptical
Galileo Galilei	Italian Astronomer	1564 – 1642	Emperist	Founder of modern science, improved the refracting telescope, explored the solar system
Michelangelo	Italian Sculptor	1475 – 1564	Emperist	Michelangelo was a visionary painter, and a supreme sculptor
Shakespeare	English Playwright	1564- 1616	Metamorphic	Extraordinary writer explored the complexity of the human soul with unparalleled insight
Sir Francis Bacon	English Philosopher	1561 – 1626	Rational	Established inductive reasoning wrote 'Novum Organum' & 'The Advancement of Learning
Rene Descartes	French Philosopher	1596 - 1650	Rational	Formulated a rational scheme of knowledge in his work 'Meditations on First Philosophy'.
Sir Isaac Newton	English Scientist	1642 – 1727	Rational	Developed calculus. Developed the laws of forces Invented the reflecting telescope
Immanuel Kant	German Philosopher	1724 – 1804	Rational	Attempted to reconcile the conflict between rationalism and empiricism
James Watt	Scottish Engineer	1736 – 1819	Emperist	Invented the steam engine and associated components
Wolfgang Mozart	Austrian Composer	1756 – 1791	Emperist	Prolific composer writing masterpieces in every branch of music
G. W. F. Hegel	German Philosopher	1770 – 1831	Rational	Influenced the development of Existentialism and Marxism
Charles Darwin	English Naturalist	1809 - 1882	Emperist	Postulated that natural selection was instrumental during evolution.
Tolstoy	Russian Novelist	1828 – 1910	Emperist	World's great writers. Important moral thinker and reformer.
Thomas Edison	American Inventor	1847 – 1931	Emperist	Greatest of inventors. Organised teamwork in systematic research
Niels Bohr	Danish Physicist	1885 – 1962	Emperist	Bohr's theory of the atomic structure & orbits
Sigmund Freud	Austrian Psychologist	1856 – 1939	Metamorphic	Dreams are disguised manifestations of repressed sexual wishes
Albert Einstein	German Physicist	1879 – 1955	Rational	Most creative scientists in human history. Theory of relativity
Max Planck	German Physicist	1858 - 1947	Rational	Laid foundation of quantum theory
Bertrand Russell	English Philosopher	1872 – 1970	Rational	"Principia Mathematica" Pure mathematics follows from premises that are strictly logical
Pablo Picasso	Spanish painter	1881 - 1973	Metamorphic	Most prodigious and revolutionary artists in the history of Western painting
Jean-Paul Sartre	French Philosopher	1905 - 1980	Metamorphic	Philosophy of existentialism, free will to bring meaning to ones life

Table 1: Thought leaders from 800 BC to 1900 AD and their characteristics thinking style

Metaphoric Thinking

They worked with feelings and emotions and constructed and related things on the basis of feelings and emotions. Organ, organiser, organization, orgasm, may be different products altogether yet they are related together at the level of 'feeling expectations' that are associated with each other.

Metaphors are the basis of thinking itself. Without it relationship cannot be established. Rational thinking is only a subset of metaphoric thinking. Here, only certain types of relationship have been permitted. Study of dictionary and origin of words itself can give important insights into the study of design history.

Some of the important concepts that thinkers have striven to establish, as important metaphors, are the following. Without the establishment of these metaphors the present day, modern development would not have been possible. It is our understanding that these concepts are central to the concept of the development of any complex organization or evolved civilization.

Oneness of clan

Oneness of citizens of a city / nation

Oneness of mankind

Oneness of all sentient beings

Oneness of consciousness

'I – thou' relationship and vice versa

'I – It' relationship and vice versa

'Is and is not' relationship

'Are and are not' relationship

Oneness because of feeling.

Two things are similar because they generate or lead to the same feelings / emotions.

Concepts of vision, visionary, seeing, seer, derive their value and justification from the contribution made by the above concepts of oneness.

Metaphoric thinking is also used extensively by saints, poets, playwrights, novelist, inventors and scientist, advertisers, and statesmen when they are toying with new concepts or laying out the foundations for new directions in ideology and human action.

Metaphoric thinking is most primordial. Metaphoric thinking becomes increasingly important when a new paradigm appears. Later it gives way to rational approaches. Information Technology is a good example, which extensively explores metaphors to find new ways of using information technology.

Bible, Gita, Koran, Lotus Sutra, Upanishad are all designs that extensively use metaphors for its dialogues. Similarly tools, spears, traps, baskets, bins, reservoirs, dams, cave paintings, images of mother goddess, gods, use metaphors and analogies for their conceptual feasibility.

Rational Thinking

When the foundation of oneness as enunciated by different seers had been established, civilization could grow into larger conglomerates. Some common rules of day to day interaction, trade and treaties become essential. This gave impetus to the concerted development of rational thinking. Rational thinking involves imposition of certain rules, which now guide the thinking process. At the meta-theoretic level, many of these rules were imposed from the enunciation of the saints and prophets of 700 to 400 BC. These had to be supplemented by rules to take care of equity in physical transactions. Rational thinkers started flowering from 600 BC to 200 BC. A second impetus comes during the 1600 AD onwards.

Rational thinking has played a very important role in the development of civilized behavior and interaction especially in the context of material transaction, property ownership, business organizations, development of judiciary, etc.

Algebra, arithmetic, geometry, land survey, development of currency, calendar, astronomical tables, categories of family relationship, etc. could not possibly come about without the development of rational thinking

Realizing how feelings and emotions can lead to wrong conclusions, these thinkers developed methodology of logical and rational thinking and the use of the same to arrive at reliable knowledge and truth that can be trusted.

What is the nature of sameness?

What is the nature of differences?

Under what circumstances same things become different

Under what circumstances different things become same

How to ascertain the cause effect relationship

What is the methodology of conducting / ascertaining correct thinking / conclusion?

The development of reading, writing, and formal mathematics allowed the codification of math knowledge, formal instruction in mathematics, and began a steady accumulation of mathematical knowledge. Today the ultimate challenge in mathematics is on definitions, conjectures, theorem proofs related to a single problem in a narrow subfield in mathematics. Mathematics that seemingly is abstract is closely linked to the physical world, even beyond the physical world we see.

Mathematics has developed at length the concept of real, rational, irrational numbers and imaginary numbers and the associated mathematics. They all are necessary to represent and model reality. Without imaginary numbers we could not have explored quantum mechanics which the foundation of modern electronics.

"The product of a non-zero rational number and an irrational number is irrational

"The product of two irrational numbers is SOMETIMES irrational." The product of two irrational numbers, in some cases, will be irrational. However, it is possible that some irrational numbers may multiply to form a rational product. Multiplying two rational numbers produces another rational number.

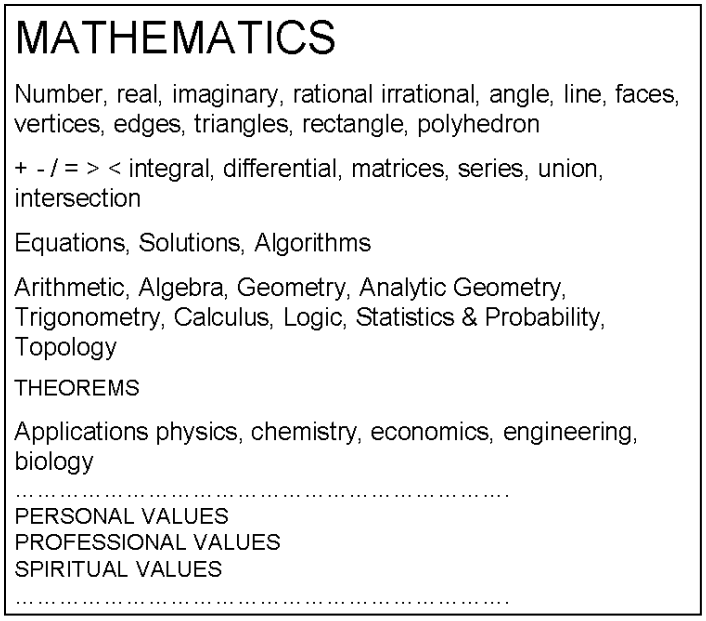

Fig 6. Abstraction, integration & application is an inherent characteristic of the thinking process

Deductive and inductive reasoning are two very important developments. Arguments can be put into these two categories

A deductive argument is one in which it is claimed that it is impossible for the premises to be true but the conclusion false. Thus, the conclusion follows necessarily from the premises and inferences.

An inductive argument is one in which the premises are supposed to support the conclusion in such a way that if the premises are true, it is improbable that the conclusion would be false. Thus, the conclusion follows probably from the premises and inferences.

Inductive argument provides us, with new ideas and thus may expand our knowledge about the world in a way that is impossible for deductive arguments to achieve. Thus, while deductive arguments may be used most often with mathematics, most other fields of research make extensive use of inductive arguments.

Empiric Thinking

Empiricism is a theory that states that knowledge comes only or primarily from sensory experience or through extension of senses by aids and appliances. It is one of several views of epistemology. Empiricism is at apex of design materialization, because what is designed must exist in a space and time. Empiricism as a scientific method opened new methods of exploring and learning about the physical world of materials and structures. New insights into the functioning of the physical and biological reality were developed. Greater confidence in the functioning of the world, catalyzed the new age of inventions.

In metaphorism we were seeking relationship at the abstract level, in empiricism we are seeking relationship at the physical level of existence. In rationalism we were ensuring that we had a body of knowledge structures, which is consistent. And the relationship holds in all space and time. At least this was the ideal expectation.

Each culture at different periods of time has had different approaches to empiricism.

Western empiricism was built on the idea of a mechanistic universe; the universe both physically and socially was eventually conceived of as a vast machine whose principles of operation could be grasped by the human intellect without recourse to divine or superstitious explanations. Correspondingly, each aspect of the universe operated in a different manner: the machine of physical phenomena operated differently from the machine of social phenomena.

In Indian thought empiricism took a different manifestation as in Buddhism and Tantra.

89-90. "Second-hand knowledge of the Self gathered from books or gurus can never emancipate a man until its truth is rightly investigated and applied to himself; direct Realization alone will do that. Therefore, follow my advice and realize yourself, turning the mind inward" - Tripura Rahasya .

The emphasis was always on emancipation of man and had profound effect on the construction of man product relationship, which was quite different from those in other cultures.

The three most important building blocks of empiricism were

- ***Relying on or derived from observation or experiment***
- ***Verifiable or provable by means of observation or experiment***
- ***Guided by practical experience and not theory.***

System Thinking

At the core of system thinking was the search for elements that constitutes the underlying thread in different things. Zhu Xi or Chu Hsi, an eminent thinker second only to Confucius made an attempt. Zhu Xi represented all objects in nature as composed of two inherent forces: li, an immaterial universal principle or law; and ch'i, the substance of which all material things are made. Whereas ch'i may change and dissolve, li, the underlying law of the myriad things, remains constant and indestructible. Zhu Xi further identifies the li in humankind with human nature, which is essentially the same for all people.

The concepts of Yin and Yang and the Five Agents provided the intellectual framework of much of Chinese scientific thinking especially in fields like biology and medicine The organs of the body were seen to be interrelated in the same sorts of ways as other natural phenomena, and best understood by looking for correlation and correspondences. Illness was seen as a disturbance in the balance of Yin and Yang or the Five Agents caused by emotions, heat or cold, or other influences. Therapy thus depended on accurate diagnosis of the source of the imbalance.

Similar schemes like concept of 'shiv shakti' as the underlying principle in all phenomena especially living systems, vastu purusha in architecture, tridosha in the Indian medicine system of ayurveda become the building blocks for synthesis of system of knowledge and practise.

The twentieth century saw the developments in this direction. Ludwig Von Bertalanffy (http://www.isss.org/quotelvb.htm) laid the foundation of General System Theory and System thinking. Before him there was no way to think about a complex world? The earlier approach was to break the complex world into smaller, more manageable pieces. It was argued that if we can understand the separate pieces, then we can put our separate understandings together to understand the whole. This was reductionism, or Cartesian (after René Descartes) thinking. It works for simple things. Cartesian thinking fails to address complex problems because, in the process of breaking up the overall concern into parts, the connections and interactions between those parts get lost. The idea of the whole as more than the sum of its parts was as old as Aristotle.

System dynamics has evolved into a methodology for studying and managing complex feedback systems, such as one finds in business, public infrastructure and in a limited way to social systems.

Arthur Iberall and many of his colleagues have developed study of Physics of Complex Systems. It goes by many names. A few common ones in use today are: The Science of Complex Systems, General Systems Science, The Science of Self-Organising Systems, Unified Science, and so on.

Christopher Alexander's work entitled The Nature of Order is another interesting work towards understanding wholeness. Developments in Fractal geometry, object oriented programming, Java applets, parallelism, generative designing are other important developments in the direction of system thinking.

New ways of thinking

The above developments are already giving way to new ways of thinking which will lead to a new category of products, system services and environment. New metaphors will become active which will regroup the world into new categories. New axioms will be identified which will lead to evolution in rational thinking. Nature of empiricism will change because of exploration of new realm of reality and greater concerns with the viability and self generated evolution of complex systems.

The Building Blocks of Man Made World

Men lacking in omnipotence cannot create out of nothing. Therefore operates by bringing together already existing elements into a new and distinctive relationship to each other and thereby creating a resource that is new and often propels a new matrix of growth. (Das L.K. 1977) developed at length the importance of energy, materials, structures, process, machines and control systems as elements of the matrix of physical realizability of man made environment. To this we would like to add energy and material as the other elements to form a more complete matrix for new developments in the man made environment. While existence of these is necessary condition for the coming into being of new products, it is not a sufficient condition. A need and an associated product must continue to prevail for development in each of these elements to impact development of the product itself.

Having an idea together with the resources is not enough. What is also needed is a large number of people desiring, wanting, and working for it simultaneously.

Persistence of a need, for a sufficiently long period of time is a prerequisite to evolutionary change even in the man made world. New forms of energy and associated supply sources have created opportunities that have influenced the design and development of new product and services. Transportation was always an important need. Vehicle was a fundamental product to fulfil the need. It was a need that was shared by large masses of people. Transport vehicle evolved because of development in energy sources.

- ***Manually driven wheeled carts***
- ***Horse driven wheeled chariots and carts***
- ***Buoyant hot air balloons***
- ***Steam powered railroad locomotive***
- ***Gasoline-engine automobile***
- ***Zeppelin air ship***
- ***Motor-driven aeroplane***
- ***Petrol fired jet aircraft***
- ***Electric vehicles***
- ***Nuclear powered submarines***
- ***Hydrogen powered space flight***

Our ability to pack and deliver more energy has brought about phenomenal changes in the speed of travel and the distance travelled.

Consider another fundamental product. The wheel, without it there will not be any carts, carriages, bicycles, or cars, not even aeroplane that fly in the air. The development of wheels was prompted by development in materials, new structural understanding, process of manufacturing and development in control systems to manage high speeds and heavy load.

• Oldest wheels were wooden disks consisting of three carved planks clamped together by transverse struts. (structural development)

• Spoke wheels appeared about 2000 BC, when they were in use on chariots in Asia Minor. (structural development)

• Later developments included iron hubs (centrepieces) turning on greased axles, and the introduction of a tire in the form of an iron ring that was expanded by heat and dropped over the rim and the ring on cooling shrank and drew the members tightly together. (process development, structural development)

• Metal spokes wheels (material development, structural development)

• Solid rubber tyres (material development)

• Pneumatic tyres (material development, structural development)

• Nylon and steel reinforced tyres (material development, structural development)

• Alloy Wheels (material development, structural development)

• Composite wheels (material development, structural development)

• Wheel balancing systems (control system developments)

• Online tyre pressure and temperature monitoring systems (control system developments)

Similarly developments in steering system, engine, breaking system, suspensions, seating, safety aids, method of manufacturing, method of presenting details of components for manufacture influenced the style and performance of the automobile.

While the modelling of the human form in stone was as good in ancient Greece as it is now. The form of the car could only evolve with advancements in the matrix of energy, material, structures, process, and control systems. This of course was facilitated by the ever-increasing demand for the automobile and a large group of contenders vying to fulfil this need for commercial gains.

Thought Disorders & Mental Disorders

Till now we have been looking a properly functioning thinking process, how it happens, its different manifestations and the remarkable results it could produce. However often there can be errors in the thinking process.

Some thought disorder are mere thought fallacy and are a result of a mistaken belief, especially one based on unsound arguments, it is a failure in reasoning which renders an argument invalid. These have been extensively studied and can be easily corrected by merely pointing out the fallacy. They are often prompted by a dislike for a person advancing an argument, or a desire to win an argument in a limited time or with limited knowledge, etc. Fallacies have been extensively documented. Internet Encyclopedia of Philosophy lists 223 fallacies. We will not discuss these here but the scholar

interested in the thinking processes should definitely become aware of its different manifestations.

Like all bodily functions, thinking also can severely malfunction. There often very serious disorders in the thinking process which are very difficult to correct. This could be because of a physical abnormality or injury in the brain. It could also be because of excessive & obsessive sadness, anger, hatred, anxiety, fear with an object or an event; leading to lack of attention and focus needed to carry on a normal day to day life. It can become delusional and hallucinatory. Broadly termed as psychotic disorders, it has many categories.

Perhaps the key to understanding psychotic disorders could lie in the role that derived concepts play in creating an environment milieu for the thinking process. Abstract nouns play an important role in this context. Obsessive sadness, anger, hatred, anxiety, fear are such abstract nouns that can create havoc with our thinking process These abstract nouns set the attitude and tenor towards the objects or event involved in thought.

Negative impact would mean that it restricts the thinking process. It will introduce bottle neck. Fear, anger, sadness, anxiety slows down the functioning of the brain; obsession and phobia sends it into a tailspin and will allow only constrained exploration. Further bias and prejudice will limit exploration, and thinking will roller coast to a sub-optimal end. Further stupor and lethargy would limit energy flow into the thinking process.

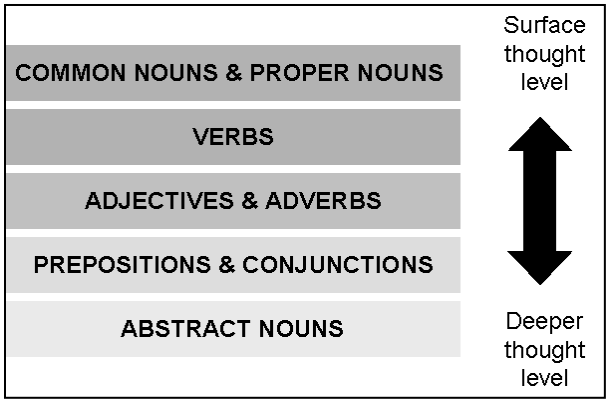

Fig 7. The deeper thought levels provide an environmental milieu that governs the thinking process

All great thinkers from Confucius to Buddha to Sigmund Freud have emphasized the significance of positive emotions and perils of negative attitudes.

Mindfulness, meditation & enlightenment

The most important aspect of mindfulness and meditation is the effort to give kind attention to our angers, fears, anxiety and sadness, etc. By giving kind attention, just like one would to the fluttering leaves, ripples in a pond or floating clouds, to our chattering thoughts; we do not allow these thoughts to send our thinking and the associated behaviour into a tailspin. We handle situations. Situations do not handle. We let go of bottle necks. We cultivate openness. We move from muddled agitated awareness to clear and cool awareness. The brain's thinking potential thrives in such an environment.

A balanced open mind is a movement towards full brain potentialities. Freedom from all conditioned expectations about

objects, behaviour and relationships is a movement towards enlightenment.

Conclusion

Thinking with the help of brain and its 86 billion neurons is the most complex imagining, conceptualising, and fact finding algorithm in the universe. Thinking can decipher and learn about any environment it senses through its sense organs. It has the capacity to discover and define objects, capture their behaviour and relationship with other objects and environment in space and time. It can examine objects from different viewpoints leading to the development of art, language, mathematics, sciences that can describe the universe in great complexity, precision and beauty. The capacity to view from different view points helps create different types of intelligence and different styles of thinking. It uses resources in its environment to create new resources and thereby becomes a creative, innovative means to shape human civilization and planet earth. Thinking has the capacity to actively distil information from the data it receives through the sense organs and continues distilling it into knowledge and wisdom. The wisdom becomes the driving force of thinking itself. Sometimes wisdom goes astray because of unfortunate traumatic happening and then thinking loses its capacity to transform conflict into symbiosis and synthesis. This leads to mental disorder. For thinking to manifest fully, it requires a kind, loving, caring environment free from all expectations for the curiosity to peak and fathom the mysteries of the universe.

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Inclusive Outdoor Bench

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Introduction

Universal Design (UD), an idea from the field of design, is progressively apparent in discourses of ways to deal with upgrade instructive access for understudies with handicaps(1). A few rising models of instructive utilizations of UD—Universal Design for Learning, Universal Design for Instruction, and Universal Instructional Design—are talked about, with a call to the field for a collective way to deal with analyze the adequacy of uses of UD to instructive situations. A few basic territories for an examination plan are enunciated, with provisos that the guarantee of UD for improving access not be undermined in light of untimely advancement of the idea before its legitimacy is completely analyzed.

Inclusive Design is the plan of a situation with the goal that it very well may be gotten to and utilized by however many individuals as could be expected under the circumstances, paying little respect to age, sex and handicap. A domain that is structured comprehensively isn't only significant to structures; it likewise applies to encompassing open spaces, wherever individuals go about ordinary exercises. This incorporates shops, workplaces, medical clinics, recreation offices, parks and boulevards. Comprehensive plan keeps the assorted variety and uniqueness of every person as a primary concern.To do this, built environment professionals should involve potential users at all stages of the design process; from the design brief and detailed design through to construction and completion.

Where possible, it is important to involve disabled people in the design process.

In the course of the most recent twenty years, investigate on comprehensive plan has conveyed an abundance of distributions and activities, framing a rising learning base for comprehensive structure. The comprehensive plan learning base separates into two discrete zones – understanding end clients from a wide range of points of view, and understanding the data needs of the information clients (for example originators) who are associated with advancing and conveying comprehensive structure arrangements. Much research has concentrated on the end clients, however as of late, understanding the requirements and the attributes of information clients has added another measurement to the exploration task.

Literature Review

The fundamental point of the exploration examine is a nitty gritty examination of perusing inclinations of natives with physical handicap. The motivation behind the examination is to look at the relations between the present idea of explicit media substance to individuals on wheel seat and individuals from the group of onlookers and their emotional needs and inclinations. Concerning explicit character of physical incapacities , in Braille or those perusing of which is conceivable utilizing the PC and working while at the same time sitting on a seat. Optional point of the investigation is the examination of the idea of open bistros and parks that give such media substance adjusted to this objective gathering . A subjective research technique was utilized inside the actualized research. The down to earth execution of information gathering and examination was done utilizing the system investigation. In view of

the examination methodology concentrated on setting factors identified with the issue of individuals with physical incapacity individuals we present in the investigation arrangement of critical ends and discoveries associated with the talked about issues(2).

This paper focuses on the knowledge users of inclusive design. It discusses the different types of knowledge users and their knowledge needsThe connection among hypothesis and practice has progressed toward becoming overwrought,meaning that a lack of social significance in configuration is overflowing. Rehearsing modelers oftenview hypothesis as exclusive, while scholars only from time to time show their thoughts into the real world and build.With the division augmenting, this paper is composed with means to persuade and encouragethat there is genuine worth and significance in impelling ideas and arrangements proposed inthis paper, which are pertinent to the city of Lincoln, yet are versatile andapplicable to all urban communities. The worldwide change in outlook in populace measure, the blast ofurbanisation and far reaching expanded life span desperately calls for change in urbandesign. This is certainly not a subject to be overlooked, yet to be followed up on without a moment's delay. Roused bythe vision of an obstruction free world, this paper would like to motivate the soul required toeradicate social disparities in urban plan. The paper will finish up talking about thecomplex connection among societal and spatial elements, declaring that segregationis created through misled plan

(3).There are an estimated 1.19 million wheelchair users in Spain. People use wheelchairs for a variety of reasons, the most common one is paralysis from spinal cord injuries. Current estimates indicate

there are around 504.000 people alive in Spain with spinal cord injuries. Among other reasons for using wheelchairs are: fatigue from multiple sclerosis, muscle weakness from muscular dystrophy, lower limb spasticity from cerebral palsy, and missing limbs due to amputation. People who use wheelchairs may encounter a variety of obstacles at their workstations depending on their limitations. Some possible accommodations could be adjustable height desk or table for a person who cannot work comfortably at an existing desk, accessible filing system or office supplies, and frequently used materials on most accessible shelves or drawers for a person who cannot reach upper and lower shelves and drawers. This paper presents the graphical design of a workstation for wheelchair users, in this case, technical, anthropometric, ergonomic, aesthetics and scientists aspects have been analyzed. The design of composite structure conduct to explicit safety constraints applied to office furniture requirements kept continuously current and updated as part of innovation. Finally, results are showed in a three-dimensional model.

Process

Aim:

To design a minimalistic public outdoor bench for people with physical disability (People on wheel chair). In which people with ability and disabilty can interact with the Furniture.

Purpose:

As the people on wheel chair, face Day to day problems with the public furniture. It is difficult for them to adjust or interact the table

(for instance). And the existing public benches need an upgrade in the designs.

So that they would not have to adjust according to the design flaws in the existing products. And will be easy to interact with.

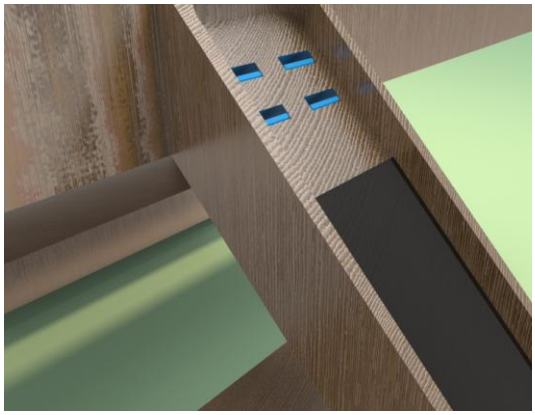
The real importance of the wheelchair is on the limitations of movement that the user may suffer and on the limitations of range, uncomfortable postures and ineffective job performance.

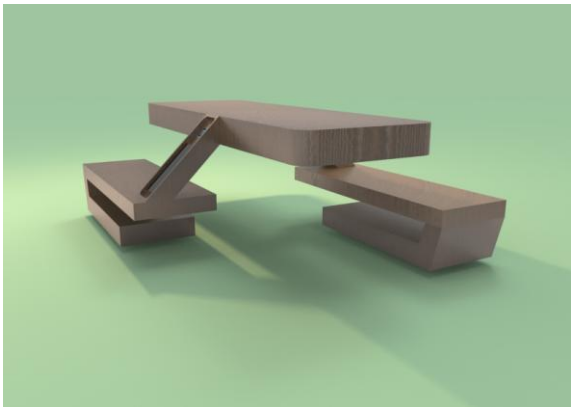
To produce a correct longitudinal displacement, it is necessary that the width between two obstacles which have to pass the user is at least 91 cm or 81 cm. provided that width not longer more than 61 cm. So that there will be no problems with his arms drive. The minimum diameter for a full rotation is 153 cm.

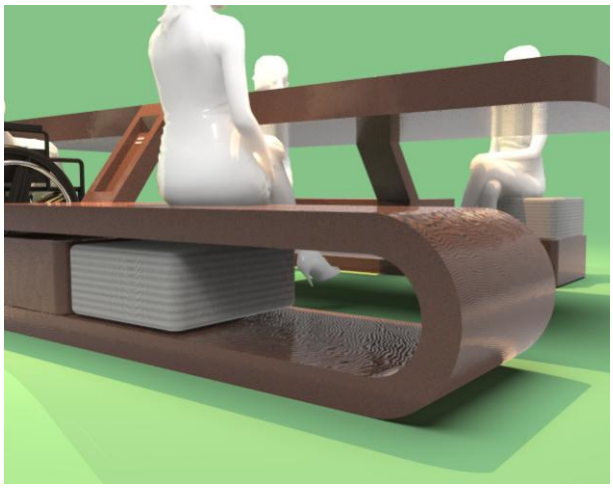
The main objective of this phase is to get the job according to the premises established in the specifications.

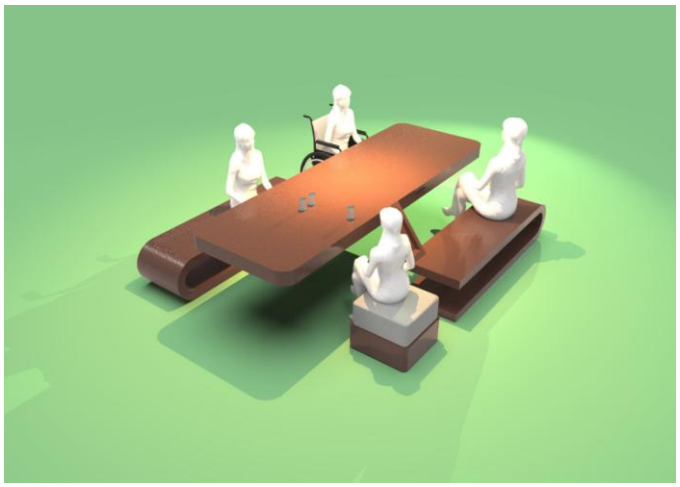
Proposed Framework

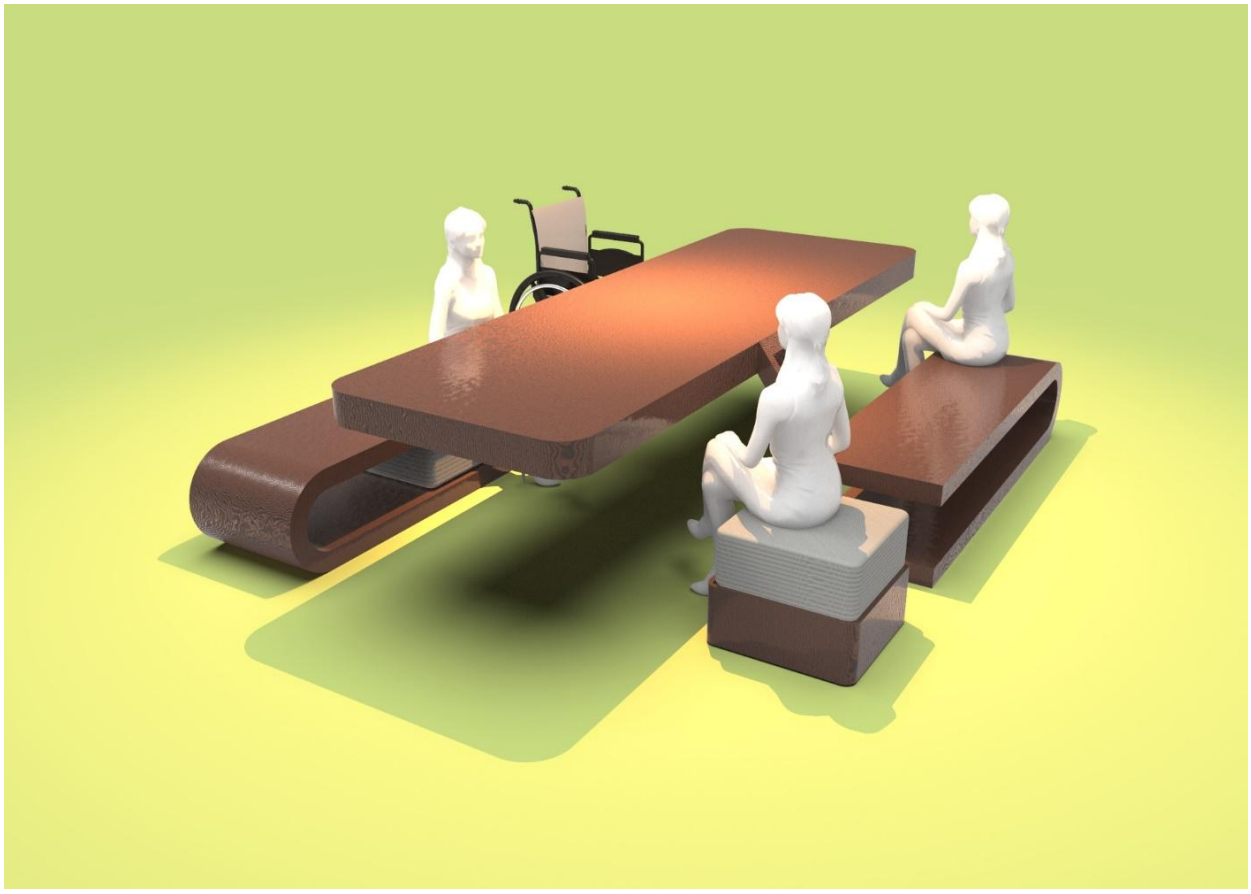
The solution for the given problem is a design exploration in the benches. The purposed chair will be for both audiences abled and disabled(people on wheelchairs). The design of this bench is very simple and aesthetically pleasing , easy to interact with and a person will not be confused with design.











Methodology

Research Design

A research design[1] is the set of methods and procedures used in collecting and analyzing measures of the variables specified in the research problem research. The design of a study defines the study type (descriptive, correlation, semi-experimental, experimental, review, meta-analytic) and sub-type (e.g., descriptive-longitudinal case study), research problem, hypotheses, independent and dependent variables, experimental design, and, if applicable, data collection methods and a statistical analysis plan. A research design is a framework that has been created to find answers to research questions

exploratory inquire about, then again, tries to create a posteriori speculations by analyzing an informational index and searching for potential relations between factors. It is additionally conceivable to have a thought regarding a connection between factors however to need information of the course and quality of the connection. On the off chance that the specialist does not have a particular theories already, the investigation is exploratory regarding the factors being referred to (despite the fact that it may be corroborative for other people). The upside of exploratory research is that it is less demanding to make new disclosures due to the less stringent methodological confinements. Here, the specialist does not have any desire to miss a conceivably intriguing connection and accordingly expects to limit the likelihood of dismissing a genuine impact or connection; this likelihood is some of the time alluded to as β and the related blunder is of sort II. At the end of the day, if the specialist essentially needs to see whether some deliberate factors could be connected, he would need to expand the odds of finding a

critical outcome by bringing down the edge of what is regarded to be huge.

CONCLUSION

The benefits for the given purpose i.e. the inclusive outdoor bench are as follows

- ***It is easy to interact with, People will not have a hard time while interacting with the bench.***
- ***On the Handle there are usb ports installed which can charge your devices (if the bench is placed in the park , then the ports will be charged by solar panels installed on the handles.)***
- ***People will not have to adjust according to the design flaws.***
- ***There is enough space for 3 people on each side. The maximum limit for people on this bench is 8.***
- ***When the place for the wheel chair is empty. We can simply use a puffy (a small stool) to use to space.***
- ***This table is for working in cafes and Designing, sketching too.***

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Inclusive Outdoor Interactive Furniture

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Author Note: Intention was to work on experience *(A different Perspective for solving problems)*

Abstract

Purpose:

The idea behind designing this outdoor furniture was a question, why there is always a utility product designed for people with Specially abilities? Why to make them feel to always have a helping hand in there live? The main project was to make a completely satisfying product in the form of furniture which is for everyone, *Theme- Design for all.*

The quality of Furniture and spaces has a great influence on the quality of people's lives. Decisions on the designed products, the planning of the location and the creation of the environment can enhance or limit a slight sense of belonging. They can remove real and imagined barriers and foster understanding between communities.

Intention:

WORKING ON EXPERIENCE ***(A different Perspective for solving a problem)***

Keywords**:** ***Inclusive furniture, Outdoor interactive furniture, sense of belongingness, Design for all, Quality of life***

Introduction

The designed environment can contribute to a more equal, inclusive and cohesive society. The facilities we use, our neighborhoods and meeting places are mostly designed to be accessible and tried to make it inclusive. If we look at a broad meaning of inclusion – not just access – starting with what an inhospitable built environment looks and feels like, and the unintended social, cultural and economic inequalities that follow People experience the built environment differently according to who they are – their social, cultural and economic background. The full diversity of this experience needs to be considered if all users are to be comfortable and feel that a particular space or place belongs to them.

There is a proper link between the management and the designed product. the space building and nearby development makes the society inclusive the places even includes the feeling of welcoming to everybody. to be accessible and easy to make it work. Increase the ability of our mental and physical health. to show the diversity of our society and wellbeing. Encouraging friendly behavior and relations among the social group and ensure nearly everything.

Methodology

Inclusive Environment with the Inclusive design the places and their spaces are mostly and also deliberately designed, maintained to exclude people and the implementation of this thing should be done very carefully.

The places like Delhi Metro is certainly designed in such a way that it should not let many people sit so that it can consume a maximum number of people comfortably at a time. even then people in India are finding places to sit which in this case they find the floor as the best option. it is the next challenge for Delhi Metro inculcate such type of problems and find a proper solution.

Most of the people don't have the idea that intentionally in metro before the gate of entrance no handles are provided. that is to reduce the number of people at that particular place, as it is the most crowd fluctuating and busy space.

Defining the subject:

The definition of the word disability has been debated for the UN Convention on the Rights of Persons with Disabilities, and the final draft will soon be submitted to the UN General Assembly for approval.1 WHO has been mandated to produce a world report on disability and rehabilitation by 2009 to collate the best evidence about the prevalence, distribution, and trends of disability and recommend action.

About the project

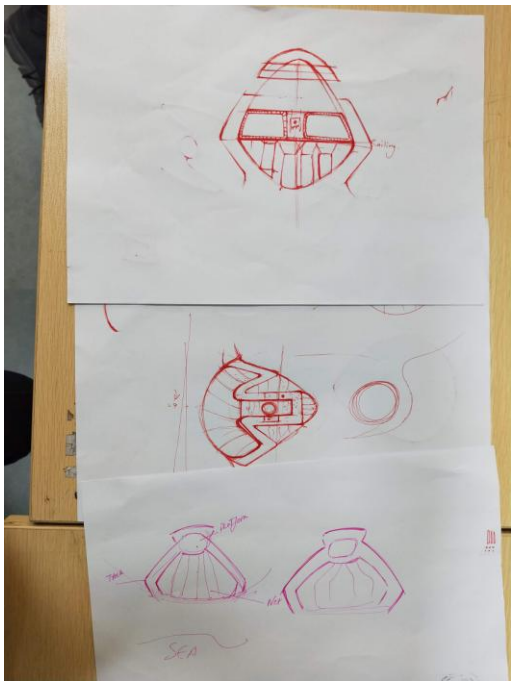
Ehsaas in a roman Urdu word that means feeling something. We have used it as the names of our furniture piece because we intent to makes our user feel a sense of satisfaction and pleasure when they are using our furniture. We intend to make our user feel all the five senses and to make them feel the joy of using it. The user will feel ideo and socio pleasure hence it will bridge the gap between people and make them more social.

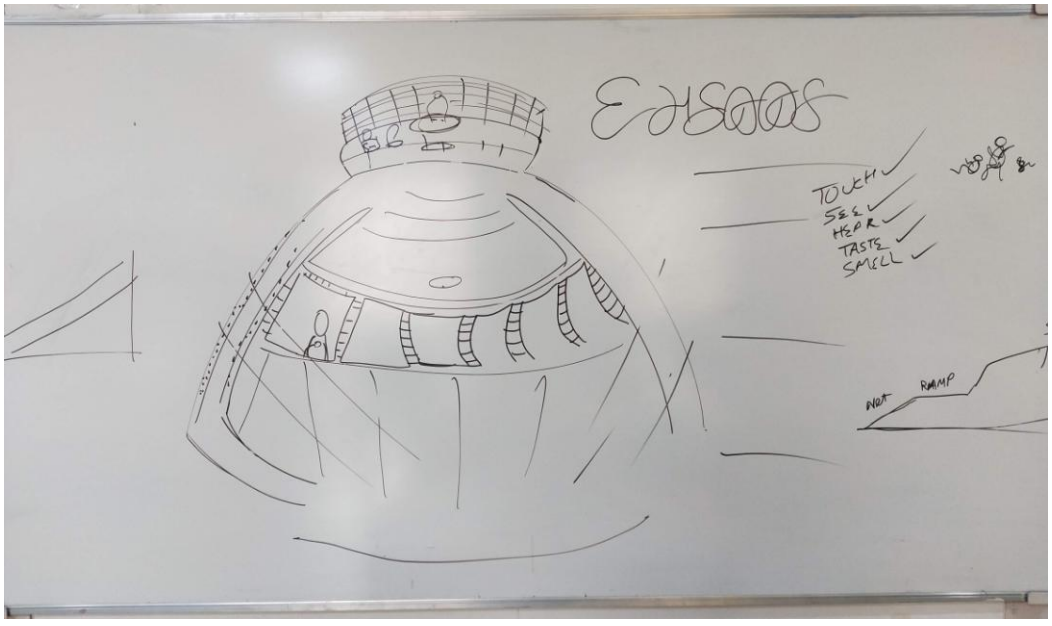
Inspiration

Our inspiration is a sea shell. A sea shell is a sign of firmness and it represents beauty in simplicity. It also represents a sense of calm and hence when you will use our product you will feel all these emotions and hence it will truly be an 'Ehsaas' for you.

(Creating a common Platform for all)

Process (conceptualization, sketches)

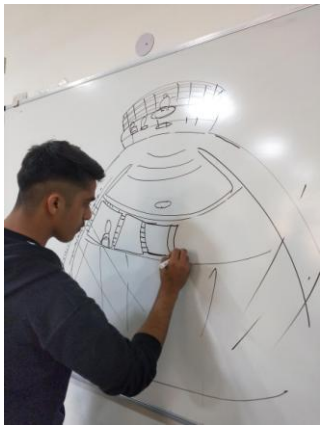



TOUCH
SEE
HEAR
TASTE
SMELL
RAMP

Concept

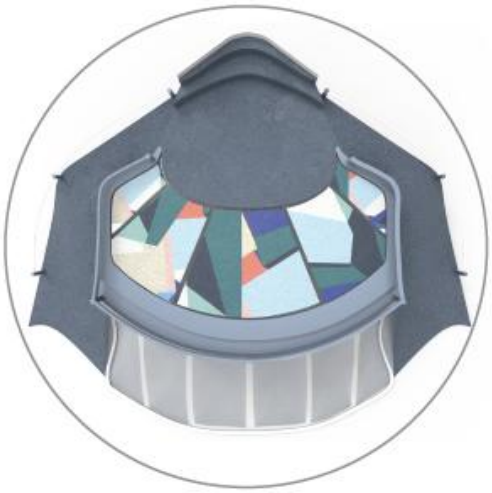
This project starts from the overview of a piece of furniture that is made for the people to give them certain kind of pleasure. This structure is formed and characterized to emphasize on the level of satisfaction that it is providing to the user. In the initial stages of the formation of this product, we were concerned with the kind of satisfaction that was received by an especially abled. We have focused on the kind of materials that we use and hence wanted to make our product sustainable by using ocean plastic waste as our building material.

Working on)



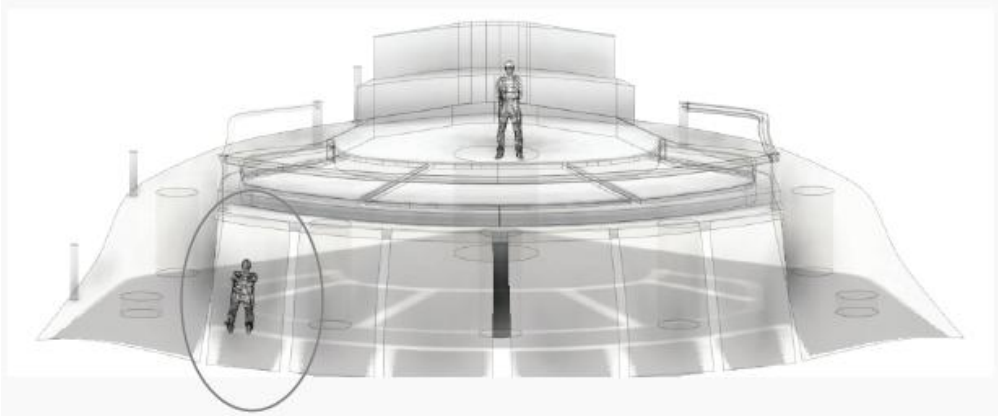
Vision

We want each one of our users to get the exact same amount of satisfaction from our product than the other user. We want to develop a sense of respect in between people rather than a sense of pity for other. All the people will enjoy in the space provided to them and attain a certain kind of pleasure that is unexplainable to others because it is an 'Ehsaas' that only they can feel and that will make them want to use the product again and again.



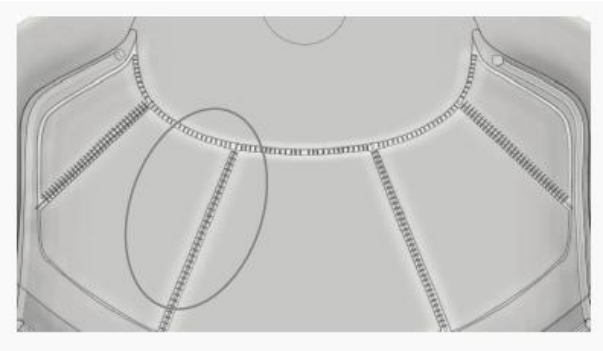
About the Material

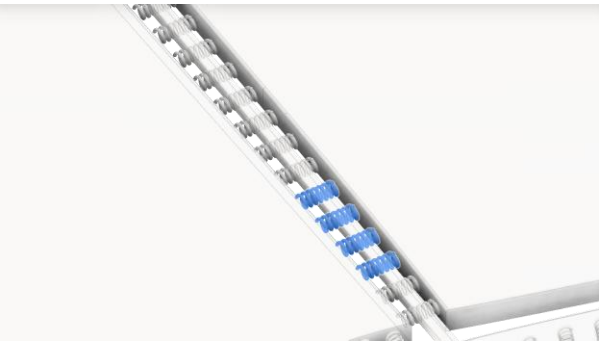
Our product is made from the ocean waste plastic and the waste generated from the beach. This will further allow the users to have a topic of discussion as to how this product is made of and they will be happy to spend time here as it is an eco-friendly way of generating social pleasure. The main aim of this work is to reduce the plastic waste that is rising in the present world and to achieve this; a system is designed incorporating a plastic extruder which plays a prominent part in recycling waste plastic into useful products. This work uses waste plastics and converts them into building materials with the help of an extruder, thereby reducing the plastic waste which is a key factor for environmental pollution. Presently waste plastics are effectively converted into useful building materials like bricks, interlocks, roof tiles, railway sleepers, paving slabs, retaining blocks etc., using either single origin plastic waste material or a mixture of different plastic wastes along with waste rubber powder as filler.



This furniture has a front hammock so people can relax and enjoy the beautiful beach view, targeting the human sense of feel. The cool breeze from the ocean will have the pass-through way to make you feel into it.

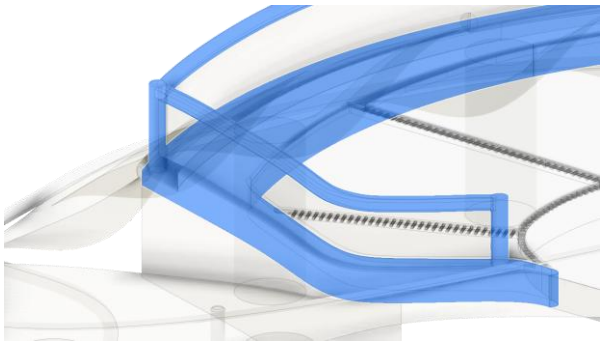
Trampoline

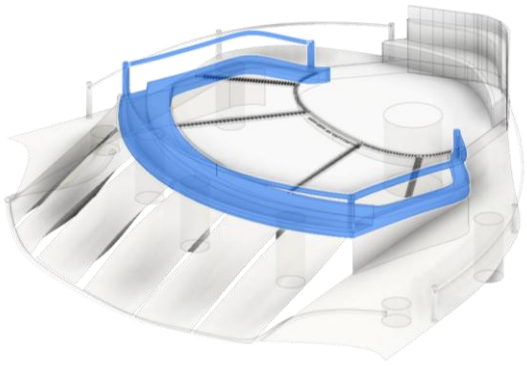




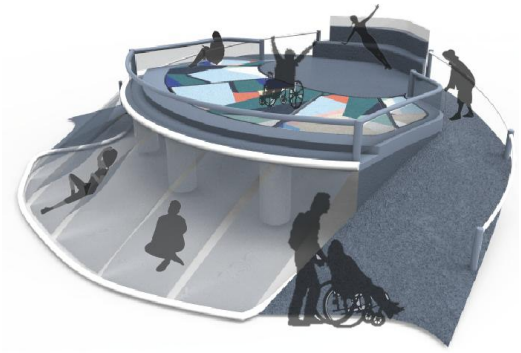
We have a special sitting area for a new experience that has springs attached to it, giving it a different feeling and movement. On top we have an activity area where people can exercise and meditate, even jamming with friends, creating plenty of memories.

For Blinds Creating a fence



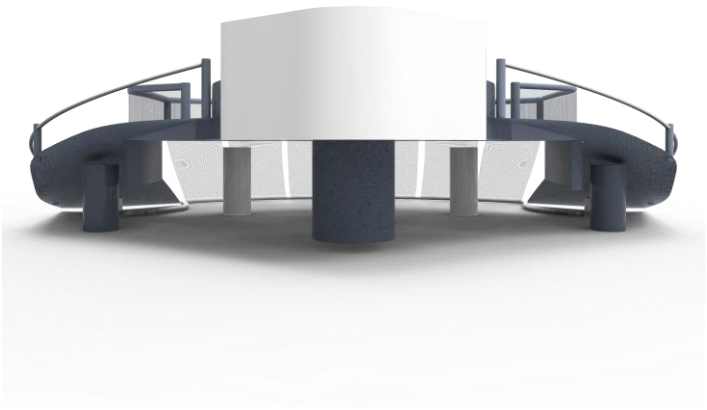


Creating the Scenario

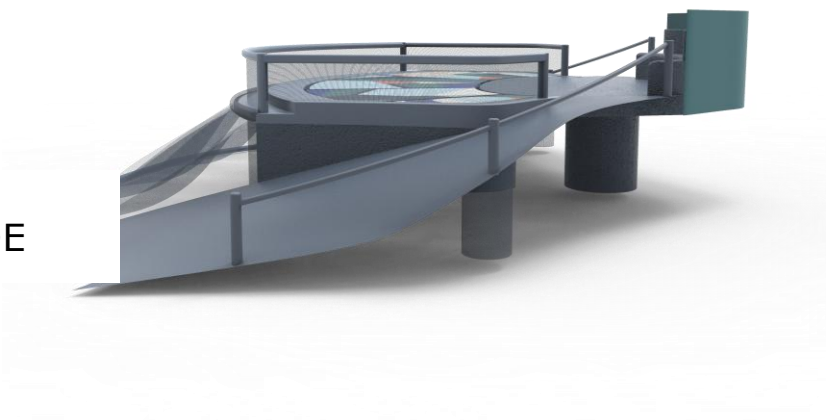


Visual Prespectives

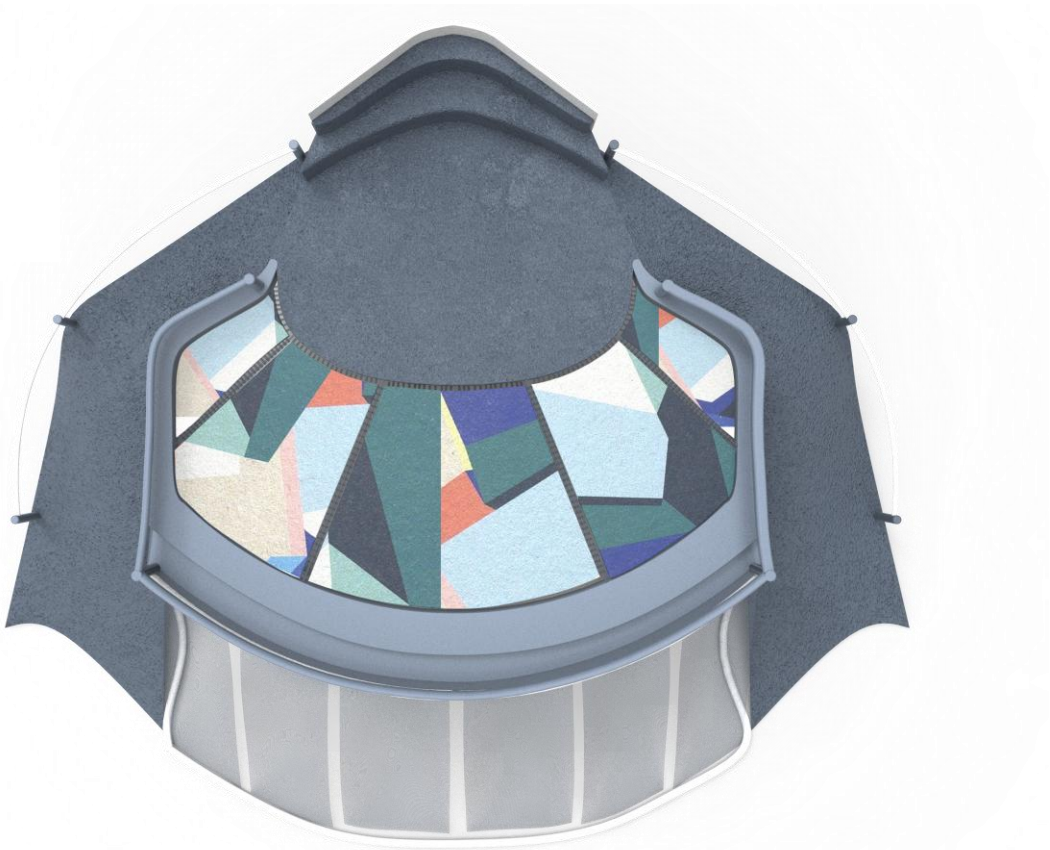
BACK



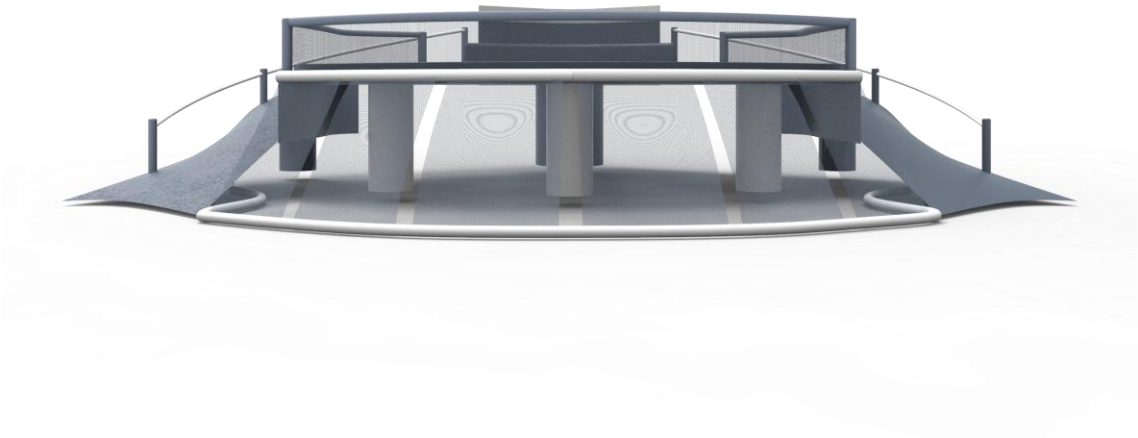
LEFT SIDE



TOP



FRONT



Conclusion

This concept is made to accomplish many aspects, it focuses on sustainability, Inclusiveness, accessibility, Recycled material. Till today's date description about sexuality, equality, building environment is forced on physical access. according to the physical attributes people are being judged and thought where there they are reliable to do certain task. inclusiveness doesn't only include the physical attention but also mental making a person realize or feeling sorry is not always bearable, which gives the sense of left alone.

Inclusive does not only mean designing a product for especially abled but also the literal meaning is "Including everything or all type of" which means we need to be focused on all type of people with different it is ages and different body structures. The bigger picture should be persons comfort with according to human body dimensions. Hear the furniture which is an outdoor interactive furniture is specially designed for all. it provides a common platform for people. It shows a sense of connectivity.

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1. ***www.designcouncil.org.uk/sites/default/files/asset/document/inclusion-by-design***
2. ***Tuomilehto J, Lindström J, Eriksson JG, et al. Prevention of type 2 diabetes mellitus by changes in lifestyle among subjects with impaired glucose tolerance. N Engl J Med 2001; 344: 1343–50.***

Info

Name: Sankalp Sanjay Pathak

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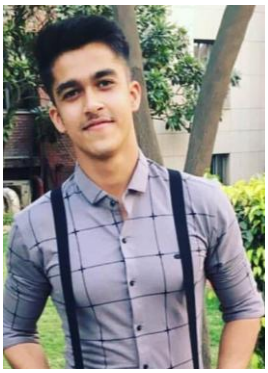
Program name: Bachelor in design (B. Des)

Institute: Amity school of Design

Personal Bio: I am a Product designer with serious Interest in observation. My passion is products and their usability. Solving the problem logically I believe, it leads you to focus on a particular thing and that's where my observation skills help. Trust and satisfaction create a brand and trusting on your product matters the most.



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Name: Jay Parekh

Course name: Product Design

Program name: Bachelor in design (B. Des)

Institute: Amity school of Design

Name: Ayman Zahra

Course name: Product Design

Program name: Bachelor in design (B. Des)

Letter from the Chairman's Desk

By Sunil Bhatia PhD

One day I was invited for attending the lecture of the founder of various prestigious design institutes and his talk was focus on management by design. Initially, I took keen interest but as his lecture progressed I found a woman in the audience was managing her hair by twisting and fixing with clip. 'Was not her action for the management of hair by design?' As I looked at another side, another woman was combing by looking at holding a small mirror in her one hand. I could not resist my curiosity, observed the attending audience and found a few tied their hairs and some have used rubber band even some were comfortable with long flowing hairs, some with bob cut hair and a woman was adjusting the hairnet of the bun for management. Some men were using the hair band for fixing their head hair and a few were used hair oil or cream for fixing as per their desire style and noticed a variety of hair management in the audience. 'Is it not all managing by design?' Women or men were using different size of buttons or hooks or belt for fixing their dresses for proper management by design. Even holding of clutches or bag hanging from the shoulder of person were designed for management of items required out of the house for the convenience of users. My mind stuck with an idea of what new thing in pioneer's talk. I lost my interest because what he was telling it was aged old practice and even I can say it is primitive practice and the man was

aware from the days of survival struggle and at the time of the beginning of human development focus was not deliberate but management by design in practice. "A branch would have remained branch if someone has not designed an arrow for management of killing."

The man was not born superior rather acquired this status from the other living beings by mastery in the art of management of fire by design. He understood in the early stage that fire has two characters. One is heat and other is light and management by design would help in achieving respective objectives. He designed the products in such a manner that it should meet their objectives by managing the fire through design. Flames were used for scaring for protection and the same was used for killing other living beings. Other living beings continue to be helpless from the effects of fire and staring with fear from the safe distance because of unaware of management of fire by design for countering as well use for their benefits as man does. The heat was optimized by designing three stones designed in open rectangle for cooking and another side torch was designed not for heat but for light where one end was burning and another end was at the distance for safe holding. I do not know how the torch was designed but it expressed the design of meeting the objective of light, how to keep burning a sustaining fire for long duration and how to be safe not to burn. It might be something of holding a burning log and achieved the present days of dry cell operated torch. Man learned the art of management of accidental fire for extinguishes by design. Even design of matchsticks store in box that can be easily carry anywhere without any extra effort and it will ignite if someone strikes edge of chemically coated stick on attaching outer chemically layered strip

for a fire that was the reason it is called safety matchbox that prevents fire accidents. The visualization of design of knots was nothing but management for optimizing the available resources in the best manner in the absence of another man for performing the task of holding for joining end. This knot has led to another world of stitching. Another marvelous design is a needle that has a tiny hole for holding the thread. The earlier thread was holding by design of knots but the design of needle has taken to the next level for management by design of stitching, embroidery.

Look at the design of pen where management of ink flow for writing by using the concept of capillary astonished me. Earlier management of ink was limited to bottle by capping not allow to evaporate the ink as well as control spilling and by dipping the stem pen anyone can draw the desired picture. This design of waterman pen has revolutionized the cumbersome management by designing inbuilt tightly closed tube for prevention of leakage of fluid and design of metallic nib for the proper need of ink for writing. Earlier inkpot and stem pen were two entities to manage but the design of the fountain pen has clubbed both. An earlier design of wheel was used for transportation for the not heavy item because limited to manual or animal power. But the design of automobile has changed the face of transportation for the management of heavy items, by design. Various types of jars for the management of items were nothing but proper management for not allowed to waste by design. Entire ergonomics was developed for convinces of users without taxing their physical as well mental conditions is nothing but management by design. Present designers are trying to introduce this concept of universal design in their products for it operational for across the society and it is the next level of management by design.

Handheld fan or using of movement of an open palm as a fan for air was nothing but management of air by design. The way our ancestors thought of designing the mechanical bearing for low friction for movement of a manual fan by introducing a bamboo pipe inserted in the handle of the fan was an excellent example of management by design. Later that concept helped in designing ball bearing for better management of airflow by design. Water supply with the help of pipes, water storage design at the height and various sizes of pipes for managing for proper water flow is nothing but management by design using water properties. Even James Watt designed the engine by managing the power of steam by design for linear movement for managing rotational. Design of steering wheel in the automobile has helped in managing the vehicle movement on road.

Design of basket or bags even pocket helps in management by design for carrying items. Humans knowledge progressed with time so understanding the precious and valuables items that are not easily available that has changed the concept of management and helped in designing concealed pocket, lockers and iron safe. Design of doors windows and locks is for managing the house and to avoid untoward possible incidences. Hinges of doors and windows are small but its contribution for management by design has a great impact in human thought process various designs of chairs have come to existence for exhibiting the sitting person power and authority that helps in good management. A person sitting on the floor in front of a person sitting on the chair gives a different picture. A person sitting on a raised platform with different attire holding a hammer for silencing by striking on table expresses man of justice. A chair that has arm designed with lion and two people standing close

by holding weapons shows his authority as king. Earlier sitting on the skin of a dead lion as the mat was considered that person was distinct from the rest of the people.

Another example from day to day life management by design is the shoe to meet the challenges of the rough terrain of the earth. Safety of sole was protected by adding another sole of animal leather and for holding design upper. Further added new features on shoes as per their objectives and need, walking or where steps are not exerted they used small lace with fewer eyelets and where running is required used the good number of eyelets for proper hold as well long lace. Managing the kitchen chores is the most difficult task for women and the greatest revolution is visit in this area in modern time. It was possible for management through design. Design of cupboard helps in managing the dress organizes in the best way. Design of library is for management of books. Accounting books or printing books are designed for management by arranging pages by binding.

Entire agriculture is managed by design where every plant needs specific management for optimum yields. Later on, design of warehouses, cold storages or refrigeration and in modern time cryogenic plants for management of yield not to waste is because of design. The idea of adding preservatives or drying or making powder by crushing or various techniques for enhancing shelf life is nothing but management by design. The processing required various tools for that management designed various tools and utensils for meeting needs.

Our emotions are managed by the design of products. The moment someone looks at the old photos it revives his memory and facial

expression changes. Movie or television is other tools. Even the design of an audio reproduction system affects our emotions and takes to that situation and its associated memory. Sometimes artificial emotions are required by performing actors and use glycerin for tears and it is management by design. Design of punishment is helping in management for wrongdoers. Cage was designed for controlling the wild animal but careful analysis informs that it was an attempt of management by design. Later on, the extension of the cage was jail where criminals are kept for the management of society. If there was fear that culprit may break the jail for escape and disturb the functioning of society designed handcuff or chaining of hand and legs of the culprit. A reward is another tool for management by design for encouraging individual or group for their contribution to the benefits of society. With the concept of introduction of photography, a new associated thought emerged for preserving that precious moment of emotion as the photograph and one of the archive techniques come handy that is framing and it was management by design. An author died but his thought remains with us in the form of painting, video or book is nothing but management by design. Barter was the confusing and troublesome way of the transaction so designed the idea of currency for better management by design that later helped in designing cashless transaction in the form of credit/debit cards. The earlier best mode of communication was personal communication and it was limited to small gathering of people but the introduction of design of the internet has extended for vast reach and appear world has shrunk to fingertips. There are various items supporting the need for human emotion for evolving better human material for better management of society by design.

It was the design that helps in management for reducing the cost by introducing 3 in 1 or many items in one. Even army knife of various tools was designed in one for management that may require during the war. In an emergency, we act fast and manage to defuse the situation. If the room is filled with smoke and troubling breath or suffocating our first job is to open the window and door for a wider opening so that it should diffuse by spreading in large volume. We avoid on /off of the electric switch not to spark the leakage of inflammable gas for catching the fire. Pain management by ointment, jell, spray, bandage, injections, and physiotherapy are designed. Heart bypass or stents surgery is for management of blockage in artillery for smooth blood flow. Design of specs or wheelchair or artificial limb is nothing but helps in managing the defective body parts by design. We have natural mechanisms of design for management of throwing the unwanted elements stuck in food pipes or foreign elements harmful to body by vomiting or developing abscess where it is in the body and pus allows to easily slipping out of the body. Clearing the itching items like wax of ear by inserting softly dry tinder by holding in hand is management by design .Extension of tinder was soap or jel for clearing the dirt o outer surface of body for proper bathing.

Plants and other living beings have the limitation of using inbuilt natural instincts of designing but humans moved beyond not to limited to natural but designed with artificial intelligence for management by design. This action makes him distinct and powerful from the rest. They not explored the natural world of design of galaxies but thought the tiniest particle to quantum level for management for designing. One side, man has designed a rocket for the landing of man on other planets for exploration and other side

thinking of quantum computing for management by design. That rare quality makes human superior from the rest of other living beings. Plants are smart in managing by design for each leaf arranged in such a way gets proper foods for living without creating hindrance for others. Honey bees designed the beehives and store the honey for managing the future by design. Birds design the nest for managing the offspring in a safe and protected way. Formulas are nothing but design for management for optimizing limited memory for optimization of storage of information. Another side, man designed the jumble manner of words for managing secret message not be interpreted by enemies is also design for management.

Management of social life has used pre-emptive techniques by extensive design for avoiding any confusion that may lead to ultimately fight. A woman who is engaged is supposed to wear a ring in a specific finger to avoid confusion. In India, a particular community married woman uses red vermilion (sindoor) on her forehead and she is allowed to wear some dress code where an unmarried girl lives differently. Similarly, specific dress for a specific job was design for smooth functioning by the management of design and associated ethics and morals were attach for performing duties. Man devised new concept of humanity by defining love, respect and sharing as foundation of it for smooth functioning of society and framed in mind of an individual in such a way it turns necessary practice for appearing distinct from animals and wherever it loses foundation or appear its foundation is shaky a new concept of religion was designed in support for as stand by for divine intervention not to shake the faith in goodness. It is all manmade

design for management of society and it has created supporting products of temple, prayer place, idol, and prayer items.

Whenever I pulled the drawer, it surprises me how our ancestors thought for management of space by design. I feel like to salute the unknown hero who got the idea and implemented in such a beautiful way that pulling takes out the drawer and pushing makes it slide inside. Pushing does not require special attention but pulling need something for the convincing hold that should not be taxing also so knob was designed for holding but the use of finger power for fixing on pull handle for management by design.

Man has devised techniques of design for management for prevention of any eventualities that might harm and simultaneously working for betterment in life. The man also managed by design for making life comfortable but progress has inbuilt character of hidden harmful effects and it helps in inviting unwanted accidents. It is the beauty of human effort that manages by design for survival and achieving longevity in such a way knowing that our delicate body can collapse by one cut and can prove fatal.

LAMBERT Academic Publishing has published book "Design For All, Drivers of Design" author Dr. Sunil Bhatia of Design For All Institute of India and it is available on www.morebooks.de one of the largest online bookstores. Here's the link to it:

https://www.morebooks.de/store/gb/book/design-for-all/isbn/978-613-9-83306-1

This book is dedicated to our esteem readers, contributors and well wishers.

With Regards

Dr. Sunil Bhatia

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Forthcoming Issues

September

2019 Vol-14 No-9

Bogdanović Aleksandar ,Belgrade, Serbia of CRID (Inclusive Society Development Center), national organization, Belgrade, Serbia will be the Guest Editor.

October 2019 Vol-14 No-10

Dr. Ravindra Singh is an Assistant Professor of Design at Delhi Technological University, Delhi. He is passionate about human-centric design; designing a product for an extensive variety of users. His major research interest is Universal Design, Innovative Product Design, Sustainability, and Frugal Design. Ravindra Singh has done BTech in Mechanical Engineering from UP Technical University. He received his Master of Design (MDes) and Doctoral degree (Ph.D.) in Design from Indian Institute of

Information Technology, Design and Manufacturing, Jabalpur (IIITDM) and has authored research papers in referred journals and international conferences.

Partha Pratim Das is working as an Assistant Professor in the Department of Design, Delhi Technological University. His Research interest areas are Human Centered Design, Design for Sustainability, Grassroots Innovation, Design Thinking, Systems Design, Design for Experience. He has a Bachelors in Civil Engineering, an M.tech in Environmental Science and Engineering and M.Des in Industrial Design. Currently, he is pursuing Ph.D. from IIT Delhi.

November 2019 Vol-14 No-11

Elisabete (Bete/Bebé) Castanheira from Brazil will be Guest Editor for this special issue. Designer, university professor, researcher and consultant in the development of design projects, Elisabete Castanheira has solid market, academic and content experience. As a lecturer she works in the courses of Design, Graphic Design and Product Design.

As a volunteer, she is a member of the board of directors of adp (Brazilian association of product designers), as an administrative director (having served as a financial director for the two previous managements) and is a member of the advisory board of objeto brasil association and the brasil criativo institut. She participated in

several exhibitions in brazil and abroad, receiving awards and honorable mentions.

In 2017 participated in the group that represented Brazil at the Cannes Festival as jury in the category of Product Design and coordinated the team that prepared the application process of Brasília to the Creative Cities Network of Unesco - Category Design (application that was accepted).

December 2019 Vol-14 No-12

Dr (Ms.) Ketna L Mehta, PhD. Founder Trustee, Nina Foundation, an NGO for rehabilitating friends with Spinal Cord Injuries, an incurable permanent disability. Editor & Management Advisor, S. P. Mandali's Prin. L. N. Welingkar Institute of Management Development & Research. Author, Professor, Researcher, Thought Leader on Disability Solutions, Inspirational Speaker and Management Curator. Recipient of the prestigious NCPEDP Shell Helen Keller Award.

WOMEN DESIGNER YEAR 2020

January 2020 Vol-15 No-1(INNAGURAL ISSUE)

Onny Eikhaug is the founder of Innovation for All AS and President of EIDD Design for All Europe, a network comprising of 36 members, consisting of both design institutions, innovation centres and academia. She was for more than 13 years Programme Leader at Design and Architecture Norway, responsible for promoting the Centre's activities in the fields of people-centred, inclusive design as a strategy for innovation. She was Programme Leader for the Innovation for All programme promoting inclusive, people-centered design as a practice and an effective tool for innovation in both private and public sector.

She is committed to sustainable, people-centred design and is focused on demonstrating the potential of this approach as a powerful and profitable strategy for innovation. A key aspect of this is presenting and implementing effective methods that can easily be adopted by any organization or enterprise. She writes, publishes, lectures, facilitates workshops and curates exhibitions both in Norway and internationally, and works closely with designers, education, industry, research and government using real projects and other knowledge transfer mechanisms to achieve this. She advises and coordinates people-centred inclusive design projects within business and public sector applying and testing new tools and methods for user research and involvement. She is responsible for the books Innovating with people –The Business of Inclusive

Design» and Innovating with People - Inclusive Design and Architecture as editor-in-chief and author.

She holds an MBA from the Norwegian School of Economics and Business Administration. She has a broad executive experience in international marketing, sales, innovation, product development and design management in the fields of personal products, ergonomic lighting, and contemporary furniture having worked for companies such as Unilever and Luxo across Europe and the US. She was also Managing Director of a Norwegian Graphic design company.
She was in 2015 appointed Inclusive Design Champion Award by an international jury at HHCD Royal College of Art, London at the Include conference.

February 2020 Vol-15 No-2

Sharmistha Banerjee is an industrial designer with an experience in working in collaborative innovation and sustainable product design. Currently I am working as Assistant Professor at Department of Design, Indian Institute of Technology Guwahati. My area of PhD research is Design for Sustainability in the arena of agricultural equipment design. I did my bachelor in Industrial Design from IIT Guwahati and a master in Integrated Product Design from Technical University of Delft, Netherlands.

I have co-founded the Sustainability and Social Innovation Lab at Department of Design, IIT Guwahati. The lab focusses on creating systems for sustainable human consumption and production through a complete revamp of the consumption structure with our design

interventions. We are part of the global network on sustainability, the Learning and Education Network in Sustainability (LeNS) consisting of 150+ global universities. Currently a large part of our sustainable product-service development projects are in the domain of agriculture.

At IIT Guwahati I teach courses like System Design for Sustainability, Usability Engineering, User Research Techniques, Product Detailing, Interaction Design, Product Design, Design Management, Plastics and composites and Design Semantics. I have also developed a MooC course on System Design for Sustainability which had more than 600 subscribers in the academic year 2018 - 19. In the past few years, I have worked in India, Bangladesh and Netherlands with companies like Philips, Infosys, MIDCO, VU Medical University Amsterdam, Conpax Verpakking, Beat Belly, Botanische Tuin Delft, ACC Ltd, educational institutes like IIT Guwahati, MIT Institute of Design Pune, IDC, IIT Bombay and L'Ecole de Design (Indian Operations), Nantes-Atlantique, France and NGOs like International Development Enterprise Bangladesh.

May 2020 Vol-15 No-5

Having been a wheelchair model from an early age, Samanta has always felt frustrated by the lack of luxurious clothing available for disabled people. Working as an advocate for inclusion within the fashion industry, Samanta has decided to join forces with some of the most innovative emerging designers to develop her brand, 'SB' – a unique line of clothing based on the principle that "its not about being disabled,

but about feeling beautiful and comfortable whilst in the siting position".

Born in Brazil, Samanta moved to London 10 years ago and has since dedicated her life to improving the lives of people living with disabilities. She hopes that her collection will open people's minds and hearts. Samanta is a former Brazilian no. 1 wheelchair tennis player winning a doubles silver medal at the ParaPanAm Games in Rio de Janeiro in 2007 & representing Brazil in three World Team Cups.

"We must be seen to exist" – Samanta Bullock

June 2020 Vol-15 No-6

Debra Ruh is a Global Disability Inclusion Strategist, Market Influencer, internationally recognized keynote speaker, published author, branding expert, successful entrepreneur, and an exceptional mother. Debra is host of popular program: Human Potential at Work (Audience in 84 countries).

Debra Ruh received her call to action when she was told by so-called "experts" that her daughter, Sara, who was born with Down Syndrome (Trisomy 21), would never walk or talk. She refused to accept the prognosis and perception of this condition. Driven by her unshakeable faith in the power of human potential and the love for her daughter, Debra was determined to dedicate her life to create a path to empowerment and the success for all those with disabilities.

Debra had built a multi-million-dollar firm focused on ICT accessibility. Debra was convinced that "the real disability is being

unable to see human potential" formed Ruh Global Communications. This new firm focuses on Global Disability Inclusion Strategies, Digital Marketing, and Branding among many other services.

Debra consults with Multi-National and National Corporations and the United Nations. Debra is now internationally renowned global keynote speakers and travel the world inspiring and advocating for governments and corporations to include people with disabilities.

Debra Ruh is an active public figure she was invited to address the United Nations General Assembly at the Conference of State Parties 9th session (COSP9) by the President's office of the UN on May 13, 2016. More recently Debra was selected as the North American representative for the United Nations (UN), International Labor Organization´s (ILO), Global Business and Disability Network (GBDN). Additionally, in 2018 the U.S. State Department selected Debra Ruh as a global speaker and ambassador for the United States when visiting foreign nations and speaking on inclusion and disability. Selected as a Global Goodwill Ambassador in 2018.

Debra is a recognized global influencer, frequently interviewed by various media outlets and she has gathered a significant presence on many social media platforms, with over 300,000+ followers across all mediums. Co-founder of the award winning #AXSChat the second biggest tweet chat in the world with a reach in the billions. Debra was also named in the "Top 5% of Social Media Influencers" and "Top 0.1% of people talking about Disability Inclusion and Accessibility" by KLOUT. Named #15 in Digital Scouts Top #100 Global Digital Influencers in Sept 2018.

July 2020 Vol-15 No-7

Jani Nayar , Executive director of the SATH (Society for Accessible Travel & Hospitality), a tireless advocate and effective educator on travel & disability.

New Books

it is available on **www.morebooks.de** one of the largest online bookstores. Here's the link to it:

https://www.morebooks.de/store/gb/book/design-for-all/isbn/978-613-9-83306-1

The Ultimate Resource for Aging in Place With Dignity and Grace!

Are you looking for housing options that are safer and more accommodating for independently aging in place? Do you want to enjoy comfort, accessibility, safety and peace of mind – despite your disabilities, limitations and health challenges? The help you need is available in the Universal Design Toolkit: Time-saving ideas, resources, solutions, and guidance for making homes accessible.

This is the ultimate resource for individuals and professionals who want to save time, money and energy when designing, building, remodeling or downsizing a home. The Universal Design Toolkit will help you take the steps to design homes for your clients or yourself while eliminating the costly trial and error challenges you'd inevitably encounter if faced with this learning curve on your own.

Rosemarie Rossetti, Ph.D., teamed with her husband Mark Leder in creating this unique Toolkit. They bring ten years of research, design and building expertise by serving as the general contractors for their home, the Universal Design Living Laboratory– which is the highest rated universal design home in North America.

Within the Toolkit's 200 richly illustrated pages, you'll find: Insights that distinguish *essential* products, services and resources from the *unnecessary*.

Proven, realistic tips for finding the right home.

Home features you need to look for. Nothing is assumed or left out.

Handy home checklists and assessments.

Interview questions to help you hire industry professionals with knowledge and experience.

Photographs that provide a frame of reference to inspire, clarify and illuminate features andbenefits.

Valuable resources to save you time, money and energy.

Helpful sources of funding.

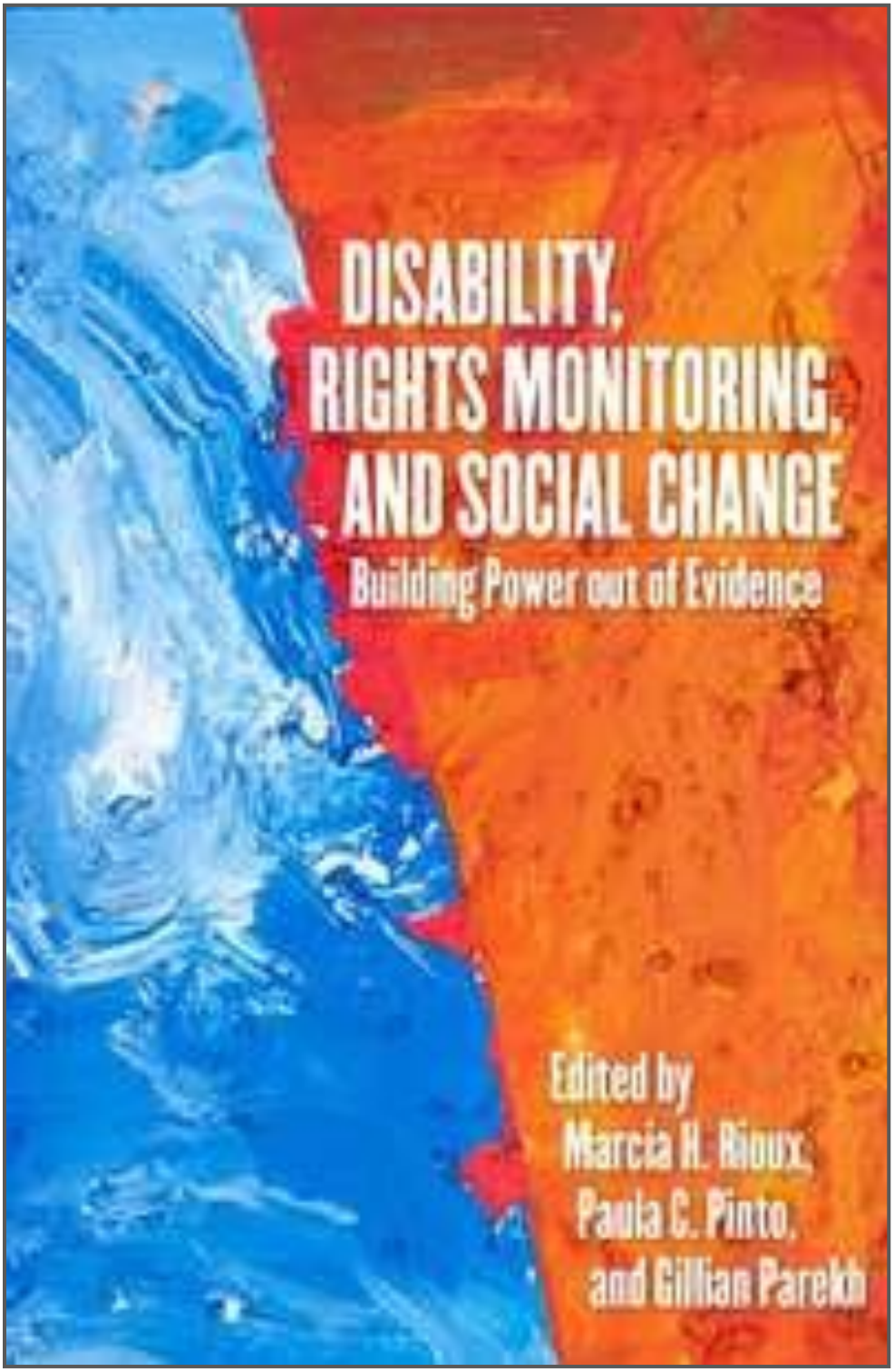
Space planning dimensions for access using assistive devices such as wheelchairs andwalkers.

And so much more!

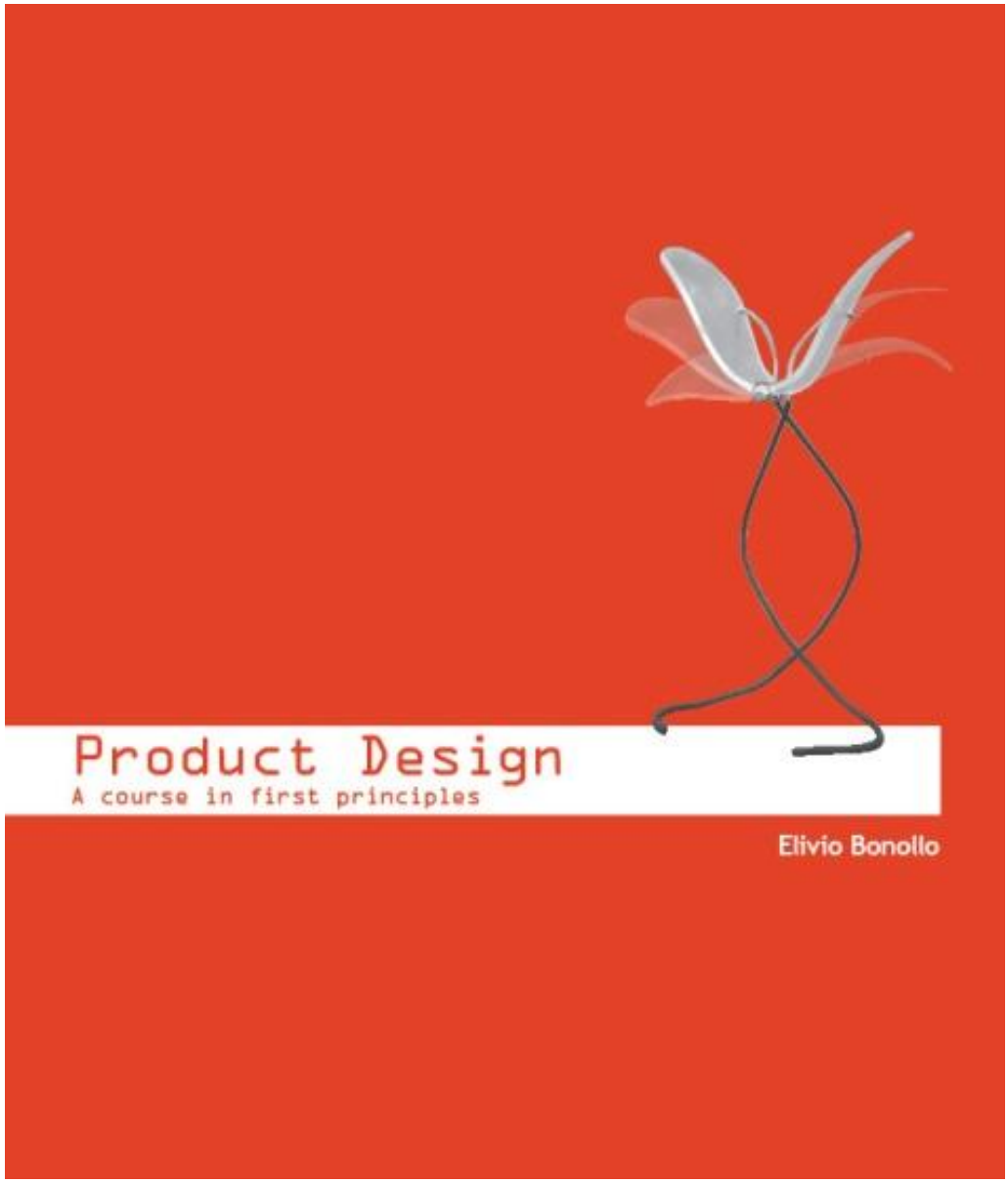
If you want useful, dependable advice and easy to implement ideas from respected experts who know the ropes, you'll love Rossetti and Leder's perspective. As a speaker, author and consultant who uses a wheelchair, Rossetti has helped hundreds of people design their ideal homes. Now her comprehensive Toolkit is available to help and support you!

Get the Universal Design Toolkit now to start your project!

Disability, Rights Monitoring and Social Change:



New Update: ELIVIO BONOLLO (2015/16) PRODUCT DESIGN: A COURSE IN FIRST PRINCIPLES



Available as a paperback (320 pages), in black and white and full colour versions (book reviewed in Design and Technology Education: An International Journal 17.3, and on amazon.com).

The 2018, eBook edition is available in mobi (Kindle) and ePub (iBook) file versions on the amazonand other worldwide networks; includingon the following websites:

ePub version:www.booktopia.com.au

https://www.booktopia.com.au/ebooks/product-design-elivio-bonollo/prod9781784562946.html

mobi (Kindle versions):www.amazon.in

https://www.amazon.in/Product-Design-Course-First-Principles-ebook/dp/B07FNV2F4L/ref=sr_1_1?ie=UTF8&qid=1532999395&sr=8-1&keywords=Product+Design%3A+A+course+in+first+principles

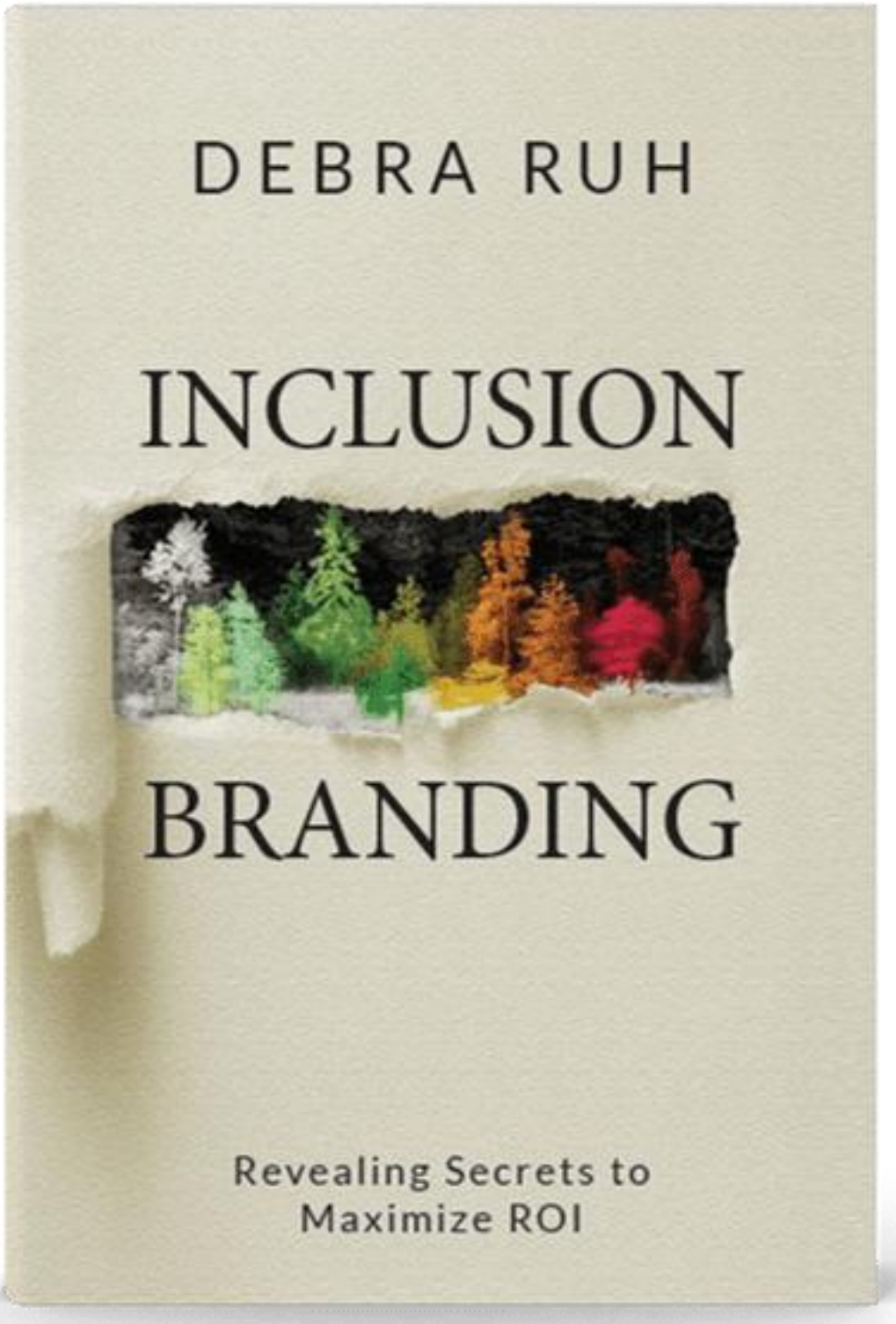
www.amazon.com

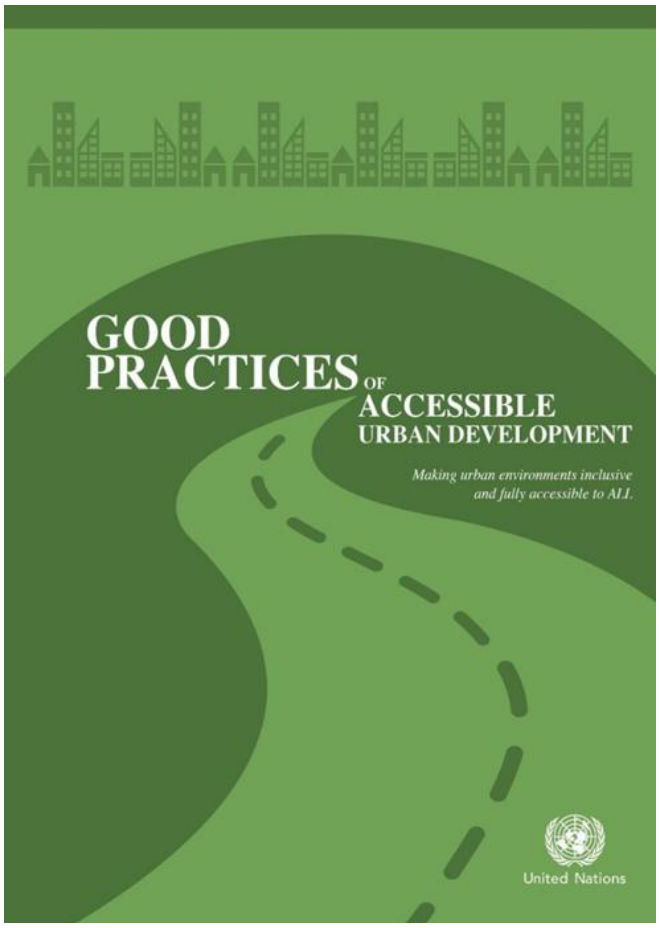
http://www.amazon.com/Product-Design-course-first-principles/dp/1784562939/ref=sr_1_sc_1?ie=UTF8&qid=1456434322&sr=8-1-spell&keywords=Bonollo+Product+Design%3A+A+course+infirst+principles

www.amazon.com.au

https://www.amazon.com.au/Product-Design-Course-First-Principles-ebook/dp/B07FNV2F4L/ref=sr_1_fkmr0_1?ie=UTF8&qid=1532497383&sr=8-1-fkmr0&keywords=Product+Design+a+course+in+first+principles

READING HINTS: ePub files can be read with the iBook app on Apple MacBook/iPad devices; ePub files can also be read on Desktops PCs, Laptops and Surface devices using readers such as the Microsoft *freda*ePub reader. The Kindle (mobi file) reader isflexible and suitable for reading the eBook on PCs; Kobo readers can also be used to read ePub files on MacBook and iPad. All formats are very interactive with very good navigation.


DEBRA RUH
INCLUSION
BRANDING
Revealing Secrets to
Maximize ROI

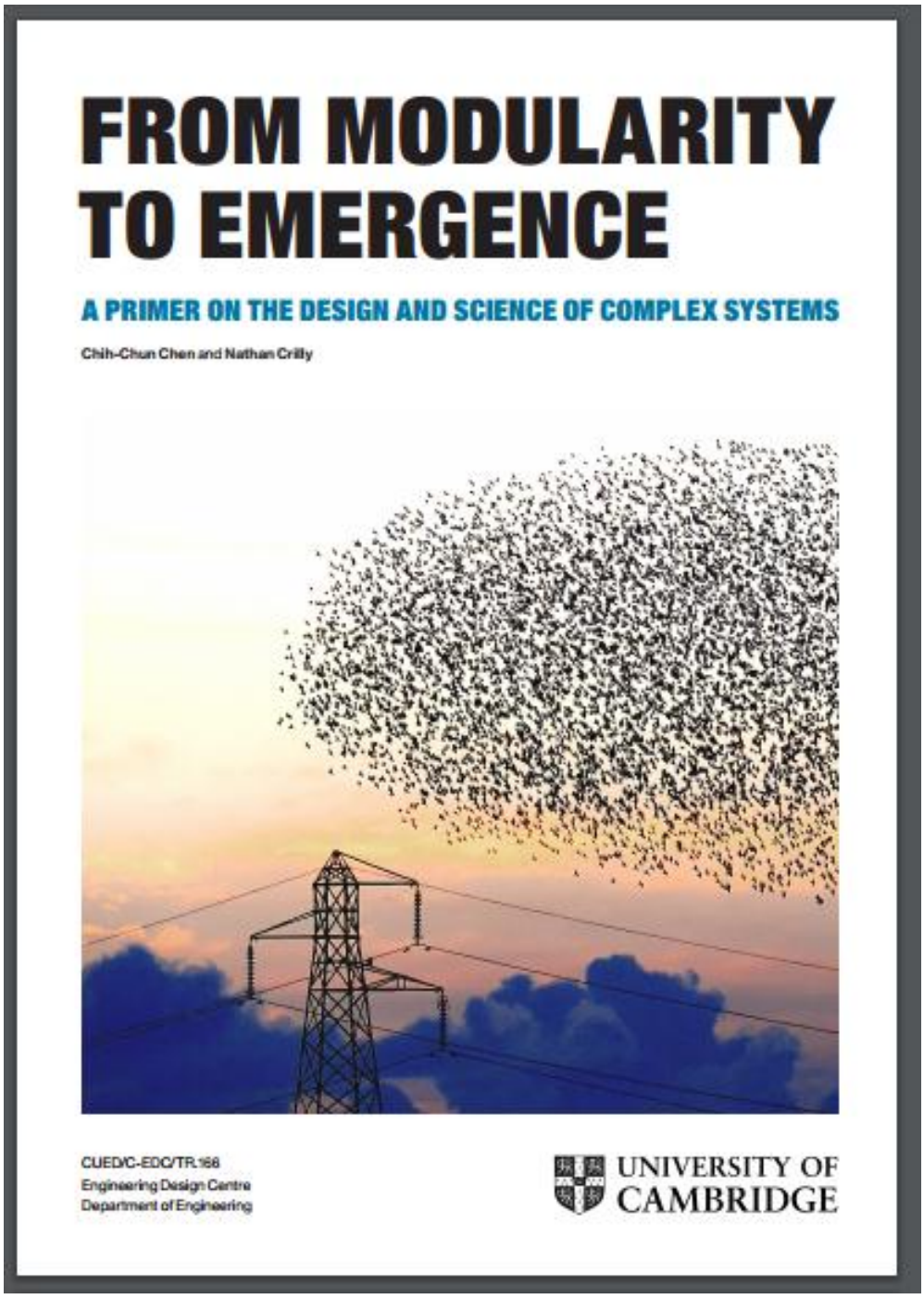


In light of the forthcoming United Nations Conference on Housing and Sustainable Urban Development (HABITAT III) and the imminent launch of the New Urban Agenda, DESA in collaboration with the Essl Foundation (Zero Project) and others have prepared a new publication entitled: "Good practices of accessible urban development".

The publication provides case studies of innovative practices and policies in housing and built environments, as well as transportation, public spaces and public services, including information and communication technology (ICT) based services.

The publication concludes with strategies and innovations for promoting accessible urban development.

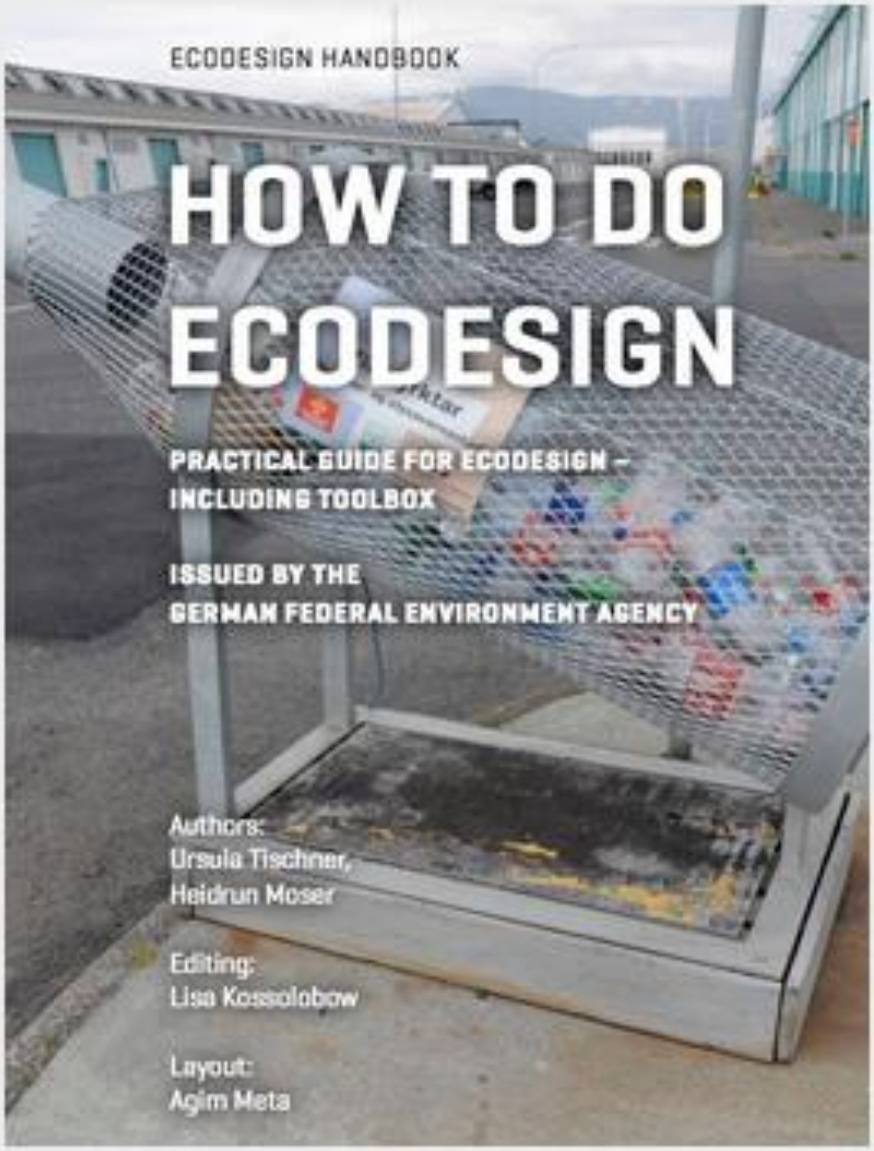
The advance unedited text is available at:http://www.un.org/disabilities/documents/desa/good_practices_urban_dev.pdf



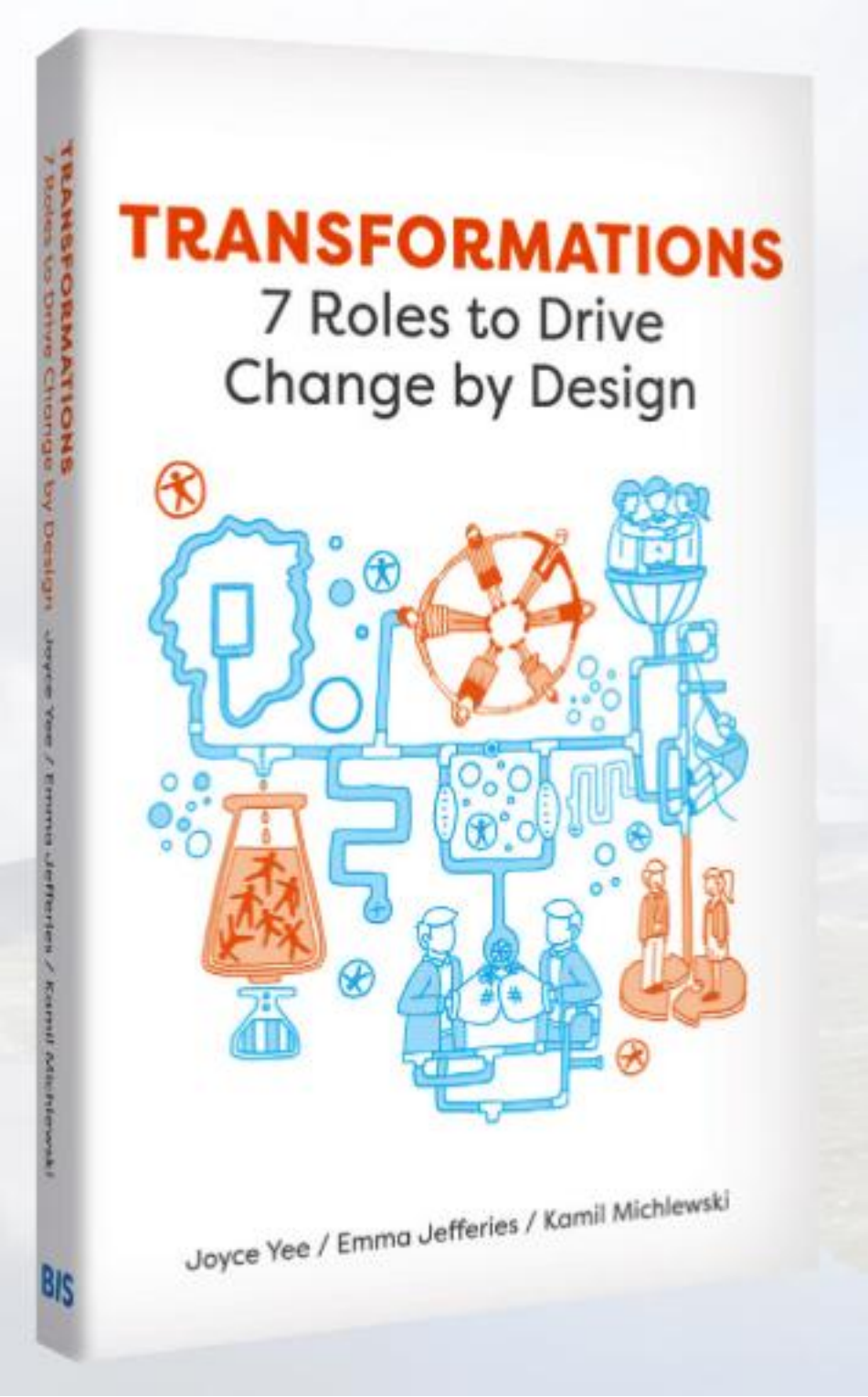
Dr Chih-Chun Chen and Dr Nathan Crilly of the Cambridge University Engineering Design Centre Design Practice Group have released a free, downloadable book, _A Primer on the Design and Science of Complex Systems_.
This project is funded by the UK Engineering and Physical Sciences Research Council (EP/K008196/1).
The book is available at URL: http://complexityprimer.eng.cam.ac.uk

Changing Paradigms: Designing for a Sustainable Future

New iBook / ebook:
HOW TO DO ECODESIGN

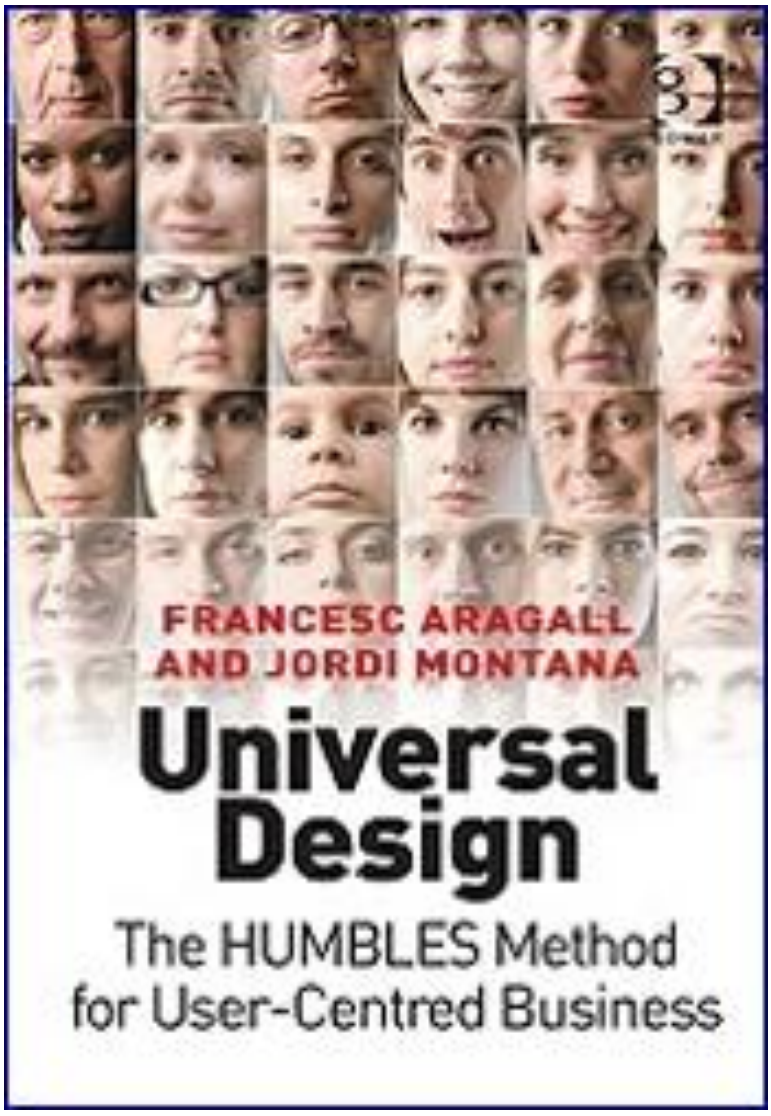


Practical Guide for Ecodesign – Including a Toolbox
Author: Ursula Tischner


TRANSFORMATIONS
7 Roles to Drive Change by Design
Joyce Yee / Emma Jefferies / Kamil Michlewski
BIS


Arnar Árnason and Sigurjón Baldur Hafsteinsson
DEATH AND GOVERNMENTALITY
Neo-liberalism, grief and the nation form

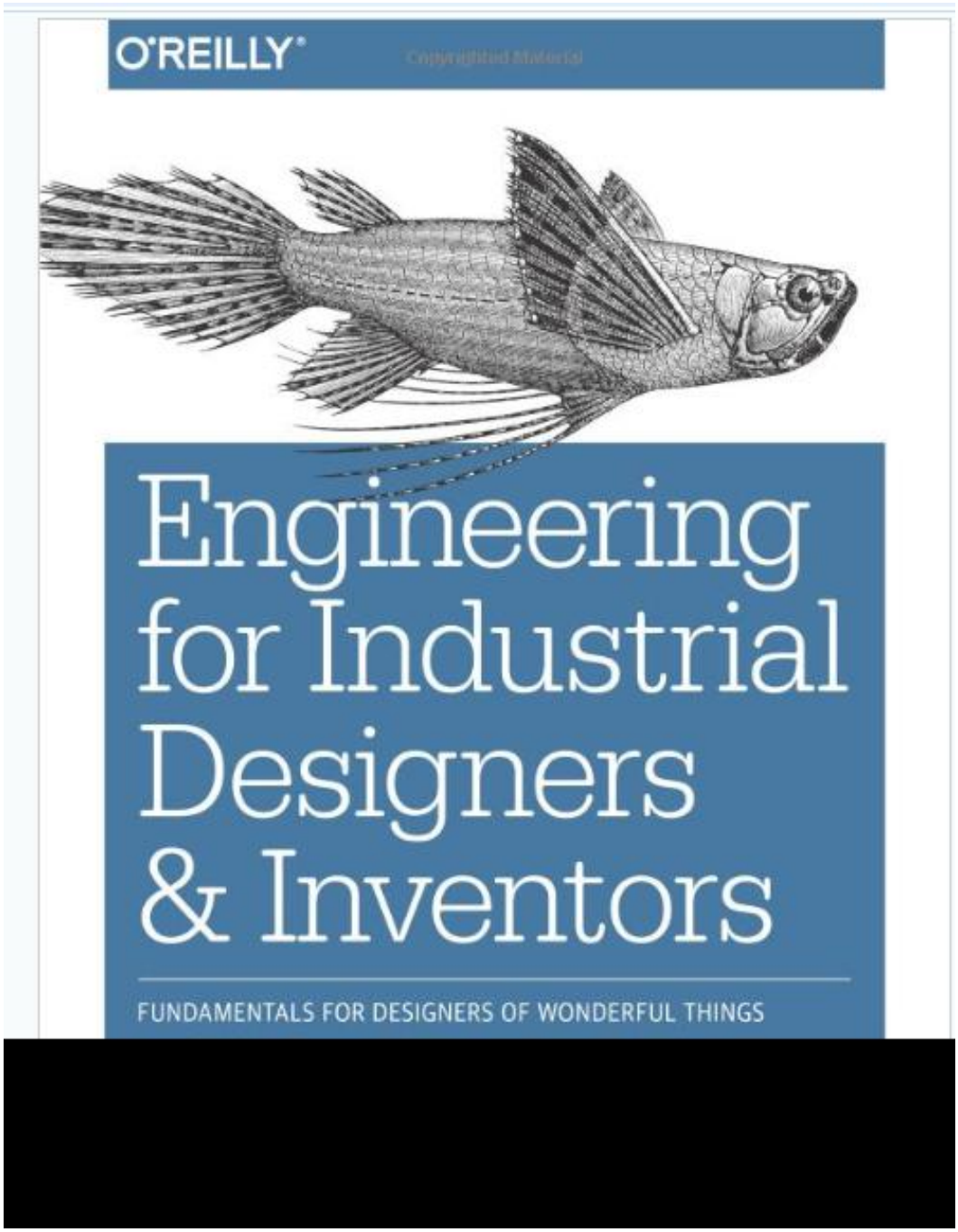
Universal Design: The HUMBLES Method for User-Centred Business



"Universal Design: The HUMBLES Method for User-Centred Business", writtenbyFrancescAragall and JordiMontañaandpublishedbyGower, providesaninnovativemethod to supportbusinesseswishing to increase the number of satisfiedusersand clients andenhancetheirreputationbyadaptingtheirproductsandservices to the diversity of their actual andpotentialcustomers, takingintoaccounttheirneeds, wishesandexpectations.

The HUMBLES method (© Aragall) consists of a progressive, seven-phaseapproach for implementing Design for All within a business. Byincorporating the user'spoint of view, itenablescompanies to evaluatetheirbusinessstrategies in order to improveprovideanimproved, morecustomer-orientedexperience, andtherebygain a competitiveadvantage in the marketplace. As well as a comprehensiveguide to the method, the bookprovidescasestudies of multinationalbusinesswhichhavesuccessfullyincorporated Design for All intotheirworkingpractices.

According to SandroRossell, President of FC Barcelona, who in company withotherleadingbusiness professionals endorsed the publication, it is "requiredreading for thosewhowish to understandhow universal design is the onlyway to connect a brand to the widest possible public, increasing client loyaltyandenhancing company prestige". To purchase the book, visiteither the **Design for All Foundation website**



I have a new book that presents fundamental engineering concepts to industrial designers that might be of interest to you. This is the link:

https://www.amazon.com/Engineering-Industrial-Designers-Inventors-Fundamentals/dp/1491932619/ref=sr_1_1?ie=UTF8&qid=1506958137&sr=8-1&keywords=engineering+for+industrial+designers+and+inventrs

Appeal:

Greetings Dr. Sunil Bhatia,

I hope this greeting and collaborative outreach communiqué finds you well.

I am seeking International Academic Collaborative Partners to explore the possibility of engaging this year (Fall Semester 2019) with 2020 Stanford Center on Longevity Design Challenge that will address "Reducing the Inequity Gap: Designing for Affordability!"

I will be leading a Graduate Seminar this Fall Semester, "Design for Living, & Social Innovation" that will participate in the intellectual & innovative exploration of the Stanford Design Challenge theme. As a result, I am reaching out to my design scholars, leaders, & advocates, like yourself to gather insight, interests & case studies on this inclusive subject matter that impacts the society & constituencies that we may represent, or consider. In this regard, I am also seeking to establish a network of international academic partners and colleagues to share in an open-source shared discourse on this subject matter, and competition.

If you have not seen the following video from The Stanford Design Challenge, please do: Check out this short video for more information and advice from previous winners and industry leaders. (Further details can be found on our website.)

https://youtu.be/lChsiBmMFwo

I am also seeking to establish a network of international academic partners and colleagues to share in an open-source shared discourse on this subject matter, and competition.
(Possible Outreach with Prof. Mugendi M'Rithaa, University of Machakos, Kenya; University of Science & Technology, Kumasi Ghana; the School of Art & Design, University of Nairobi; Prof. Ephias Ruhode, Cape Peninsula University of Technology, Cape Town, South Africa; Dr Eddie Appiah <eddappiah@gmail.com Kwame Nkrumah University of Science and Technology (KNUST); *Dr. Cecilia Loschiavo Dos Santos, University of São Paulo, Brazil; Dr. Qiu Yue, Beijing Institute of Technology; Dr. Paola Trapani, Tongji University, Shanghai, China)*

Your thoughts and comments are welcome on the consideration of the following books, for my Graduate Seminar's references:

Required Reading

https://learning.oreilly.com/library/view/the-business-solution/9781609940775/xhtml/ch01.html
from The Business Solution to Poverty

Optional Recommended Reads:

"Diversity and Design," Beth Tauke, Korydon Smith, Charles Davis, Routledge,
Diversity and Design explores how design - whether of products, buildings, landscapes, cities, media, or systems - affects diverse members of society. Fifteen case studies in television, marketing, product design, architecture, film, video games, and more, illustrate the profound, though often hidden, consequences design decisions and processes have on the total human experience.

The book not only investigates how gender, race, class, age, disability, and other factors influence the ways designers think, but also emphasizes the importance of understanding increasingly diverse cultures and, thus, averting design that leads to discrimination, isolation, and segregation.

"Architecture & Design versus Consumerism: How Design Activism Confronts Growth," Ann Thorpe, Routledge

The mentality that consumerism and economic growth are cure-alls is one of the biggest obstacles to real sustainability, but any change seems impossible, unthinkable. Our contemporary paradox finds us relying for our well-being on consumer-driven economic growth that we actually can't afford — not in environmental, economic or social terms. Although architecture and design have long been seen as engines for consumerism and growth, increasing numbers of designers are concerned about the problems resulting from growth. But designers face a paradox of their own; in scenarios of sustainable consumption, where people consume or build significantly less, what will be left for designers to do?

The Ten Faces of Innovation: IDEO's Strategies for Beating the Devil's Advocate and Driving Creativity Throughout Your Organization

Over the years, IDEO has developed ten roles people can play in an organization to foster innovation and new ideas while offering an effective counter to naysayers. Among these approaches are the A*nthropologist*—the person who goes into the field to see how customers use and respond to products, to come up with new innovations; the *Cross-pollinator* who mixes and matches ideas, people, and technology to create new ideas that can drive growth; and the *Hurdler*, who instantly looks for ways to overcome the limits and challenges to any situation.

Filled with engaging stories of how Kraft, Procter and Gamble, Safeway and the Mayo Clinic have incorporated IDEO's thinking to transform the customer experience, *The Ten Faces of Innovation* is an extraordinary guide to nurturing and sustaining a culture of continuous innovation and renewal.

Design for Good: A New Era of Architecture for Everyone In *Design for Good*, John Cary offers character-driven, real-world stories about projects around the globe that offer more—buildings that are designed and created with and for the people who will use them. The book reveals a new understanding of the ways that design shapes our lives and gives professionals and interested citizens the tools to seek out and demand designs that dignify.

TED Talk: How architecture can create dignity for all | John Cary

https://www.ted.com/talks/john_cary_how_architecture_can_create_dignity_for_all?language=en

If architect and writer John Cary has his way, women will never need to stand in pointlessly long bathroom lines again. Lines like these are representative of a more serious issue, Cary says: the lack of diversity in design that leads to thoughtless, compassionless spaces. Design has a unique ability to dignify and make people feel valued, respected, honored and seen -- but the flip side is also true. Cary calls for architects and designers to expand their ranks and commit to serving the public good, not just the privileged few. "Well-designed spaces are not just a matter of taste or a questions of aesthetics," he says. "They literally shape our ideas about who we are in the world and what we deserve." And we all deserve better.

Hope to hear from you soon

Ricardo Gomes, IDSA

Professor/Coordinator

Design Center for Global Needs/Shapira Design Archive
School of Design
San Francisco State University
ricgomes@sfsu.edu
415-338-2229
https://faculty.sfsu.edu/~ricgomes/

News

1. Culturally inspired medal designs revealed exactly a year before start of 2020 Tokyo Paralympics

The medals for next year's Tokyo Paralympics were revealed Sunday, exactly one year to the day before the games kick off in the Japanese capital.

The bronze, silver and gold medals, which for the first time can be distinguished by touch for those with visual disabilities, were presented to the public at an event to mark the countdown.

Designer Sakiko Matsumoto employed the motif of a spreading Japanese *ogi* fan, symbolizing both a breath of fresh air and a pivotal point that brings people together.
"I was looking for a motif that would be easily recognized as Japanese," Matsumoto told reporters. "Athletes are people who can influence the world … and when you think of the games, the pivot will be the athletes."

On the reverse side of the medals, 10.7 millimeters deep at their thickest point, are designs of rocks, flowers, wood, leaves and water — portraying nature in Japan — in different textures.

To help visually impaired athletes, each medal has between one and three indentations around the edge, with gold having one, silver two and bronze three.

"I didn't want them just to look beautiful on the outside but also to be things that are recognizable when touched; a universal design," Matsumoto said. "My mind went blank when I got the call saying my design had won."

The medals were created entirely from metals recycled from mobile phones and other electronic devices, just as the Olympic medals for next year will be.

Approximately 5,000 medals will be produced using metal collected from small recycled electronic devices. These were donated by the Japanese public in a nationwide campaign between April 2017 through March this year.

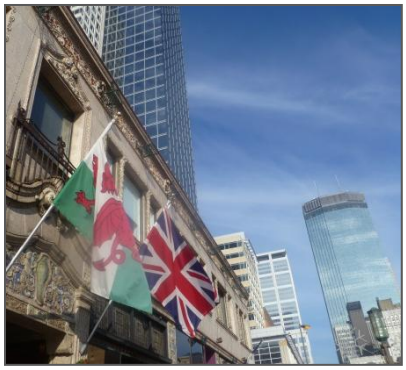
Chief Cabinet Secretary Yoshihide Suga, Tokyo Gov. Yuriko Koike and Tokyo Games organizing committee President Yoshiro Mori all attended the event before Mitsunori Torihara, the president of Japan Paralympics Committee, made the announcement that Aug. 25 will be named Japan Paralympic Day from next year.

"I hope understanding about the paralympic sports will deepen across the nation, and the symbiosis of a society with those with and without disabilities will accelerate," he said.

Tokyo last hosted the games in 1964, and will be the first city to have hosted the Summer Paralympics twice.

Japan is aiming for 22 gold medals — a result that would be its best ever— despite finishing with none in Rio de Janeiro four years ago.

(Courtesy: Japan times news)



Programme and Events

NEW FOR 2019 - THE WOMEN IN DESIGN AWARD!

Good Design Australia is extremely proud to announce the new **Women in Design Award**, that will be presented as part of the 61st annual Good Design Awards.

The inaugural Women in Design Award seeks to recognise and celebrate women who have made significant contributions to the industry and hopes to encourage a more diverse and equal representation within the industry and leadership roles in particular within the design and creative industries.

The Selection Committee for this Award will comprise of Australian and international leaders in the design and creative industries. Confirmed Selection Committee Members include:

Liza Chong, CEO INDEX:Design to Improve Life (Denmark)
Margaret Petty, Executive Director of Innovation and Entrepreneurship UTS (NSW, Aus)
Sarah Weir, CEO Design Council (UK)
Claire Beale, Executive Director of Design Tasmania (TAS, Aus)
Eunjoo Maing, Director / Head of D-TEC at Korean Institute of Design Promotion (Korea)
Trish Hansen, Founding Principal Urban Mind (SA, Aus)
More to come...

dutch design
week eindhoven
19-27 Oct. 2019

Design for all FOUNDATION

Good Practices 2019 candidatures

Now you can submit your project, product or service as
Design for All Good Practice opting to
the International Awards Design for All Foundation 2020

Design for all FOUNDATION

Good for everybody, easy for yo

IAUD Award 2019: Call for entries

IAUD INTERNATIONAL DESIGN AWARD 2019

ALMA MATER STUDIORUM UNIVERSITÀ DI BOLOGNA

aaate
ASSOCIATION FOR THE ADVANCEMENT OF ASSISTIVE TECHNOLOGY IN EUROPE

AIAS

International conference

Global Challenges in Assistive Technology
Research, Policy & Practice

August 27-30 2019 Bologna Italy

www.aaate2019.eu

Call for Papers

Basic research & Applied research
Special thematic sessions

Deadline for submission:
28 February 2019

Call for other contributions

Educational sessions
Policy sessions
Product and Prototype presentations
See website for deadlines

Conference topics

- Assistive technology (AT) for cognitive, sensory and motor disabilities
- AT service delivery systems, practices, quality and outcomes
- AT education, training and professional development
- AT in low- and middle-income countries
- Emerging and innovative AT Alternative and Augmentative Communication
- AT and social assistive robotics
- AAL, smart environments and IoT
- eAccessibility
- Universal Design
- Mobility and seating solutions
- Ageing and technology
- AT for rehabilitation
- AT, virtual and augmented reality
- AT, digital health and innovation in care
- AT in education
- Policy and social aspects related to AT

Don't work in isolation!
Join AAATE! Join the Bologna conference

www.aaate2019.eu. #AAATE2019 aaate2019@aiasbo.it

International conference on ‘Designing for children' with focus on 'Play and Learn'

Saturday 7th to Sunday 8th of December 2019

Venue: VMCC, IIT Bombay

Spring Edition 2019 – Dateline New York

2019 Spark Design Awards Are All Underway

The Spark Awards are welcoming entries now. They include 10 general categories, with 2 student competitions and our brand new award for CleanTech Design. All of these awards have many sub-categories, so be sure to check them out at Spark:

2019 Awards

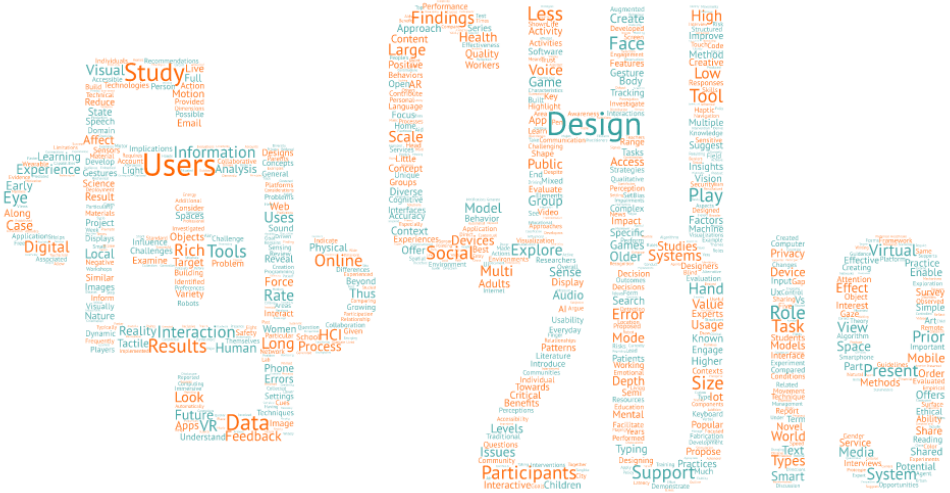
Student Design (Spring & Winter)
Product Design
Graphic Design
Health, Medical & Universal Design
Spaces & Architecture Design
Digital Design (includes UI, UX, IXO & HCII)
Mobility & Transport Design
Experience & Service Design
CleanTech Design

Note To Students & Educators

The 2019 Spring Student Awards are open and already receiving some cool designs. Standard deadline is coming up May 20th and the Late and Final Deadline is June 12. Join Us and tell your pals!


TIEMS 2019 Annual Conference
November 12 - 15, 2019
GOYANG, KOREA
Conference Host:
TIEMS Korea Chapter jointly with the
Korean Society of Disaster & Security
I have the Pleasure to Announce and Call for Papers and Posters for TIEMS 2019 Annual Conference in Goyang, Korea!
The Conference dates are 12 - 15 November 2019

CONTEST PER
2 BORSE DI STUDIO
50% E 25%
PER IL MASTER
IN VISUAL DESIGN
2019 // RAFFLES MILANO


Design
Users
Study
Findings
Information
Data
Participants
Support
Virtual
Present
Role
Task
Results
Interaction
Tools
Rich
Online
Explore
Social
Devices
Model
Scale
Large
Less
Face
Voice
Tool
Play
Hand
Value
Error
Size
Depth
Mode
Older
Systems
Studies
Privacy
Device
Effect
View
Space
Prior
Mobile
Media
Service
System
Potential
Shared
Share
Offers
Order
Evaluated
Practice
Enable
Survey
Simple
Art
Ethical
Ability
Reading
Methods
Types
Smart
World
Text
Novel
Popular
Propose
Practices
Typing
Mental
Facilitate
Years
Spot
Keyboard
Publication
Demonstrate
Designing
Touch
Levels
Critical
Benefits
Perceptions
Issues
Questions
Interactive
Children
Patterns
Literature
Introduce
Communities
Individual
Towards
Sense
Display
Audio
Multi
Adults
Groups
Interfaces
Accuracy
Context
Experiences
Cognitive
Concept
Unique
Diverse
Public
Group
Video
Evaluate
Mixed
Shape
Challenging
Communication
Learning
Experience
Gestures
Science
Result
Early
Eye
Along
Case
Digital
Local
Negative
Images
Similar
Nature
Visually
Reality
Tactile
Human
Long
Process
HCI
Women
Phone
Errors
Look
Future
Apps
VR
Feedback
Understand
Image
Techniques
Settings
Uses
Web
Sound
Spaces
Objects
Target
Problem
Challenges
Influence
Examine
Force
Rate
Thus
Beyond
Growing
Physical
Differences
Visual
Technologies
Reduce
State
Speech
Domain
Affect
Motion
Email
Live
Full
Action
Possible
Provided
Recommendations
Individuals
Implications
Develop
Account
Light
Analysis
Knowledge
Designs
Concepts
General
Platforms
Problems
Consider
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