

I-4. Representation and Abstraction

Materials are indifferent. The way we put their parts together is not a matter of indifference.

- *Epictetus* (100 CE)

Grasping Reality.

Imagine a cry for help. Desire to do something about it depends on situation as we try to distinguish cry of a baby from the war-cries (III-30). By the same token we learn to realize that although we may find money on the street, it is unlikely to be enough to make living. People are far less discriminating in matters of faith and lottery. They tend to adhere to the “just in case” scenarios. It works because most are not true to such methods or their outcomes. Schizophrenic existence or random acts do not amount to successful behavior. How long will it take a monkey on a keyboard to produce a meaningful text?

Although non-real is nothing, yet non-fiction is not necessarily a fact. Our idols and icons are mental constructs. They take forms of words, deities, literature, sciences and other cultural artifacts. All manners of representations concept space as fact and fiction between reality and nothing. Often representations have imaginary sympathy with aspect of reality as well as with the memory. This is why we speak of reality as well as the paradoxes and illusions. So what makes a representation usable is if it is not ad-hoc, if it originates in shared experience, if it is evidence-based, if it has instrumental and consequential utility, and in the transition from knowing to reason it provides for identifying contradictions, impossible and un-decidable.

Through representations we extract, touch, and share reality of experiences. It can take many forms. Actuality is how we actualize (shape, represent, imagine, think) the particular. Potential is realized the realistic and pragmatic assessment of the reality. The virtual, attenuated and augmented lead to and draw from the abstractions (generalization, universal). Three critical assumptions are inherent in reality-based representations.

(a) Multiple properties of an entity are expression of the quality of the underlying content (or matter) and its relationship to the context (environment in that space and time).

(b) Two entities do not occupy the same space at the same time.

(c) An entity does not appear from nothing, nor does it disappear into nothing. In other words, "either it exists *or* it does not exist," but it cannot "exist *and* not-exist" at the same time. It follows that an entity cannot spontaneously disappear into nothing, nor appear from nothing.

Such inherence keeps perceptions rooted in reality. It is the foundation of the reality-based reasoning that facilitates the transition between parts and the whole. The first assumption makes it clear that the state of matter is the operational basis for the representation of entities. Within this paradigm only one entity can occupy a given space at a given time. The second assumption emphasizes that the sequential characteristics of an entity are the expressions of the entity attributed to the context. The third assumption extends the first two to root reason in reality.

These assumptions also form the tangible basis for reasoning about all assertions. Anything that contradicts these assumptions is unreasonable. A particular entity and the space it occupies is the basis for the assertion that "it exists" as an entity. If the observed space does not have the entity in question, a valid assertion would be "it does not exist" in that space. An empty space does not say anything about an entity that is not there, and

at the same time lack of an entity does not attest for the existence of a non-entity. The third assumption above makes it possible to use the **or** operator to build a compound assertion such as "*it exists, or it does not exist.*" However, a compound assertion with **and** operator, as in "*it exists **and** it does not exist,*" is not valid because it contradicts reality of an entity and the space it occupies.

Appreciation of assumptions behind a representation is critical for its conception and also for reasoning with the concept. Also a set of entities may share some but not all characteristics. We speak of one mango or two oranges to assert 3 pieces of fruits. Such distinctions of the assigned class come into play as we deal with reverse implication where 3 pieces of fruit do not necessarily imply which fruit or what combinations of fruits. Thus the natural numbers as well as the words of all languages (including the electronic signals) are abstractions useful for the representation of the particulars of a class. With suitable units for classes of entities the real numbers can represent the observed universe in a manageable form infringing upon the underlying reality (See also I-7, III-5).

Zero is not a particular but an abstraction for representation.

Europeans of 13th century thought that Zero is an entity of sophistry. Since then in this tradition (mathematical) zero is ontologically perceived as a point between +1 and -1 that amounts to $+1-1 = -1+1 = 0$. The symmetry around the node of zero holds for all numbers. In the 0 and 1 binary Aristotelian or Boolean worlds zero is 0 and everything else is 1. The logical conundrum of *is not* or zero is all the more difficult to capture. A parable tries to capture the essence.

A frog lived in an old well where he was born, grew up, and continued to live out his old age. Suddenly one day, another frog from the direction of a lake leaped by and accidentally fell into the well. Old frog initiated the conversation: Where did you come from?

Visitor: I came from the lake.

Old frog: Is the lake smaller or larger than this well?

Visitor: There is no comparison.

Old frog: That is impossible. There is no place bigger and wider than this well.

To the philosophers of Ganga valley zero is not just a node. Epistemological significance of the nothingness is in the empty and non-interactive medium for representation and also beyond: It is the space in which entities exist, and it also represents all the space beyond the world (frame) of the represented entities. Thus a non-existent may be in the context of the world where there is nothing, or in the context of the whole universe where *This being, that comes to be; from the arising of this, that arises; this not being, that ceases; from the ceasing of this, that ceases.* As a paradox of representation: Non-existent form is not different from emptiness and emptiness is not different from a form that does not exist (Samyukt-Nikay). Put another way: If the existence of omniscience can not be demonstrated in the first place, its truth too becomes clouded with the non-existence and empty space.

Nothingness includes not only all that is non-existent but also that is existence-less. In other words, all that that can not be represented by criteria of tangibility is also non-existent. Significance of nothingness lies well beyond the world of *what is, is, and what is not, is not.*

For another perspective imagine a binary world where as mango (a particular) is framed with empty space. Beyond this represented space also lies the universe that may contain other worlds or nothing else. If nothing else lies outside the frame the emptiness around the mango would be indistinguishable from the boundless and virtually infinite emptiness beyond the represented space. On the other hand the "emptiness" around the mango acquires representational meaning if there are other entities

whether or not we represent these in the frame. Artists capture such influences through conventions of light and mood.

A lack of appreciation of the conception of limitless space led to the Greek dilemma where the cosmic universe was represented as an inverted bowl that made the space as a place within the bowl. Similar argument is inherent in the binary conception of god-or-nothing. If so, in this universe there will be room for the reality of one or the other but not both. On the other hand, those who have invented and contemplated the reality of nothingness as the boundless emptiness of the representational space offer a realistic world-view in terms of finite entities in multidimensional and boundless representational universe. It empowers by providing viable alternatives. Contrast the conception of multidimensional with the Tao of Te Ching "The Tao that can be expressed is not the true Tao" and with the view of Socrates "one could perceive reality by logic alone."

Nothingness, non-existence, unknown and logical doubt
Logical doubt (*syad*) follows from evidence-based affirmation and negation of possibilities (*anekant*) within the represented space. Here independent evidence sets the bounds of what is known to exist, and also for what is known not to exist. Beyond that lie the possibility that on the basis of the observed behaviors an entity may exist but one may not know what it is. This tripartite world view of existence was well developed at the time of Mahaveer in 570 BCE that is about 300 years before Aristotle. In response to the Vedic views, Mahaveer surmised that the lack of the behavior consequences of omniscience suggest that it does not exist, which is further affirmed by contradictory and paradoxical constructs used to represent such an entity. Thus not only the non-existence of such an entity is not in doubt, but it is also beyond the reality based-criteria for reasoning.

Logic alone does not do it! Recall that the goal of reasoning is to arrive at usable constructs about reality. Such constructs abstract generalizations while keeping focus on the particulars and parts rooted in the reality. Thus the knowledge that it exists or does not exist is usable. Also the knowledge of an unknown that exists makes us aware of the need to search for additional inputs. #A8 is a key precaution against making unwarranted generalizations beyond such bounds of definitions, assumptions, concepts, theory, ideals, or idols. A reminder: **The fact that you can say something, even many times over individually or collectively, does not necessarily confer a reality or validity. The attributes of an entity have to meet certain criteria before we can begin to reason in search of rational consistency.**

The word *syad* is rooted in the Prakrit word *sia* for the sense of perhaps or may be. In Jeevatthan *sia* is used to describe sustainability or independent existence of the beings of the *neraiya* (#A79) and *dev* (#A94-97) categories in terms of the attributes for *pajatta*. Humans are endowed with the six attributes (#A33): food, body, sense organs, awareness of the environment, language and sensibility to put it all together and make suitable choices for independent existence and sustainability (Chapter I-13). The animal beings have two to six of these attributes. By these criteria the *dev* and *neraiya* being of imaginary world do not have independent sustainable existence.

In short, the concept of *syad* relates to the logical state of an assertion where evidence can only support indeterminacy as in “on the basis of available evidence and criteria the entity may exist **or** may not exist.” On the other hand, the assertion that “an entity exists **and** it does not exist” is contradictory. While

indeterminacy calls for further examination of additional evidence, a contradiction calls for reexamination of the assertion or the evidence on which it is based.

From Nay reasoning also come the caution "**indications follow from the objective.**" The advice against the introduction of ad hoc, arbitrary, untested, unwarranted or unverifiable applies not only to the features, attributes and criteria, but also to the assumptions behind the validity of the tools (including the people, institutions, evidence) used for the assertion, interpretation and abstraction. For example, untested assumptions are often introduced into the representation through generalizations built into the concept (*oghen*), operational definition or axiom (*vaden*), or the particulars (*adeshen*). The warning about the built in assumptions is in stark contrast to the ad hoc assumptions introduced through the universals as the "self-evident truths" or "the divine authority." Such practices have dominated the Platonic, Judeo-Christian-Islamic, as well as other strands of the Western thought.

Thus two fundamentally different strands of world-views are at odds in "knowing that what you know *is so*" versus "believing that what you know *is truth.*" The gap can hardly be filled unless the "truth" of the believers can be defined on the basis of independent measures.

Prakrit terms for concept manipulation

Aalap: recapitulation: a generic term for explanations and elaborations by way of summary.

Nimitt: to connote causality. Usually it verges on coincidence, but it could also be interpreted as synchronicity.

Nisseso (niddeso, nirdesh): indication in the sense of inference, implication, suggestion, or hypothesis.

Niyam: a regular predictable sequence, schedule, rules of mathematics and grammar. Until recently, it was rarely applied for arbitrary rules of conduct or behavior.

Suffix **-desh** relates to realm or neighborhood.

Deshen connotes approximation.

Adesh connotes a dictum.

Anudesh connotes a specific instruction, or a point of detail.

Uddesh connotes goal or objective.

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