The Atheism of Jain Dharm

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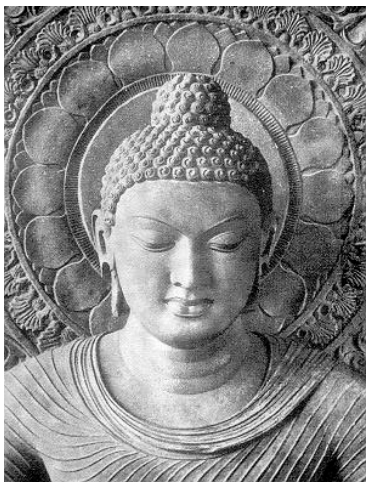
Summary: The theme of atheism permeates the ethos and logos of the Jain thought and practice to provide continuity and viability to the Jain Dharm. It is not a religion of faith or belief in omniscience, supreme, or god. Such atheistic and anti-theistic thrust of Jain Dharm is generally known, yet its followers do not call themselves *Nastik*. They emphasize action-consequence relations to guide successful behaviors with ethical conduct. This approach offers a way out of the conundrum in which the Western atheism finds itself even though its arguments are rational, logical and consistent with available evidence. Possibly, objective truth and knowledge of scientifically established generalizations *is* necessary but not sufficient for subjective search for desires of what the future *ought* to be.

Key words: Atheism, Mahaveer (Mahavira), Jainism, Jains, Omniscience, Nay, Jain Nyay, Nyaya, Tirthankar, Arhat, Arihant, conflict resolution, nonviolence, truthfulness, Buddha (Buddh), nothingness (Shoonyata), limitations of binary logic, logic of inference, Saptbhangi Syad Nay.

Introduction

Vardhman Mahaveer (Vardhamana Mahavira, Mahāvīra, 599-527 BC) revitalized the Jain Dharm (Dharma).[1, 2] Its proscriptions and prescriptions pave the way to search for the meaning and significance of world happenings accessed from sense experiences. Its path for *being to becoming* through human efforts follows from the empiricism of *see for yourself* and *learn from the experience with equanimity and without expectation*.[3-5] Such interpretations and inferences may be fallible and

subject to revision, and barren ideas do not perpetuate. However, valid inferences rooted in reality grow like a vine wherever they find space, light, support and nutrition. Successful behaviors based on valid knowledge of the reality underlying sense experience provide a footing to develop purpose with a sense of self to realize potential for perfection of identity (*atm*). This atheistic path founded on insistence on reality (truth) and nonviolence empowers individuals with courage for ethical conduct. It brings clarity to convictions, strengthens commitment to act, and addresses concerns of conscience in personal and social behaviors. On the other hand, truth and intellectual honesty are the first victims of violence, trauma, rape, secrecy, propaganda, ad hoc beliefs, fear, terror, war and subjugation. Such assaults distort sense of self and fragment identity of victims, and undermine confidence in civil society.



The human organism. The world view of Mahaveer at the foundation of the Jain Dharm is based on the assumption that each living organism (*jeev*) responds to its experiences for its needs, and bears consequences of its actions. Organisms survive and thrive by realizing their inherited potential in environmental niches. They learn from feedback to change behaviors and adapt to available resources and deal with threats. Humans as social beings have thus collectively realized potential as forager, tool maker, tinkerer, inventor and much more. Such achievements as objective measures of the past have unquestionably done more to improve human condition than any faith or ad hoc belief. Yet their potential for the future successes and failures elicit subjective fears and desires for many different reasons. We often

live in a bubble of such perceived reality that bears only passing resemblance to objective worlds. Human condition is a conundrum of objective *is* from the past pitted against subjective *ought*.[6] Paradoxically, we may be able to make an ideal human being long before we agree on what an ideal human being is like. Realizing individual potential by shaping the future requires balancing expectations (*raag*), wishes, and desires. It is like sculpting a rock that requires skills and vision. Clans and tribes use traditions to shape behaviors through idealizations of idols, models and heroes.[7] Four major world views offer ways to wade through such conundrum. The first two empirically sculpt *ought* for behaviors (Dharm) based on *is* of sense experience. The other two rely on ad hoc of omniscience to comprehend *is* and cast *ought* with tribal mores and religious morality.

The Jin Tirthankars encourage the view that all organisms have latent potential for perfection, and that they aspire to develop qualities and abilities to realize it. Sculptures of the Tirthankars express *veetraag* for equanimity. Such idols represent objectivity without expectation and judgment as a desirable human quality for *being to becoming* charted with truthfulness and nonviolence. Just as individuals are identified by external symbols, (middle) the symbol for Mahaveer is a lion. A similar worldview was promoted by Buddh (557-480 BC) born 42 years later as a prince 200 miles away.[8, 9] Statues of Buddh illustrate stages of human existence, experience and quality such as (right) *karuna* (compassion). The other two major world-views seek grace and judgment of omniscience with faith. After 2000 BC the Aryan herders and nomads from the north-west of Afghanistan brought the Vedic beliefs to India. Over the next 3000 years these beliefs morphed into the Hindu Dharm that attributes world happenings (*Sansaar*) to cosmic omniscience of the ever present Brahm and incarnates (*avatar*). The Hindu social contract is caste based, where all members are duty bound by their Dharm but a select few have birthright to improve their lot through knowledge. The Judeo-Christian-Islamic faiths also seek subservience guided by strictures, dictates and commandments of the omniscient Theo (God, Omniscience). Theo is personalized as judgmental and vindictive Moses who delivers wrath on sinners. It is benevolent Son of God in Jesus who forgives and bestows grace on believers. Both promise

salvation to the *chosen few created in the image of omniscience, endowed with unique qualities, guided by free will, and placed at the center of universe*. Throughout the history such true-believers have been empowered by blind faith and motivated by greed and grab [10, 11] or whatever else [12] that gives meaning to meaningless lives [13], including havoc of holy wars, crusades and colonialism. Not only the idea of God adds up mathematically[14], mix of aggression, deception, affection, compassion, empathy and caring is not unique to gods and humans, but also displayed by animals as traits to serve self-interest in relation tribe [15, 16].

Source material. Considerable body of ancient material has come to light since Herman Jacobi showed pre-Aryan origins of Jainism.[17] This essay is based on my interpretation of the original texts from the Jain tradition written before 800 AD. These works and their English interpretations are available on http://www.Hira-pub.org/. This source material derives from the tradition with roots. It was revitalized by Mahaveer, and organized by his gandhars (group leaders) for oral transmission. It is said that the eighth gandhar Bhadrabahu I (ca. 380 BC) was the last to understand the complete work that fragmented after his death. As suitable writing technologies became available, the fragments were written down after 30 AD. Hand-written copies-of-copies-of-copies (*pratilipis*) of this material have survived for almost 2000 years in the various collections (for example see http://www.jainpedia.org/home.html). These have served as the source for modern printed texts prepared during the last 150 years, and now available (http://www.jainlibrary.org/) at no-cost. I have also benefited from recent works by scholars who are likely to be familiar with the Jain ethos and of others who have explored secular themes of human behaviors.

The theme of Jain atheisms is widely recognized by secular scholars[18-20]. Its origins can be traced to the works of Samantbhadra in 2nd century AD [21-23] and the work of of Siddhsen Divakar in 5th century [24, 25] . Haribhadra [26, 27] in the sixth century outlined the six ancient views (darshan) that included Brahm and omniscience. These were also refuted by Akalank in 7th century [28, 29], by Hemchandra in 11th century [30] and by Gunratn in 15th century [26]. All of these authors acknowledge the origins of this way of reasoning to the Jin monks. Also,

the Digambar and Shvetambar Jain laity shuns the term *nastik* attributed to *charvak nastik* who proposed that organisms respond to sense inputs (like automatons). Its derogatory and materialistic connotations are similar to those for atheism in the West. The Jain view is that organisms respond to sense inputs however perception of the meaning and significance of such external inputs depends on the makeup and experience of each individual organism.

Jain Dharm as the Legacy of Rishabhnath

The founding ideas for the Jain worldview are attributed to Rishabhnath (ca 3000 BC).[4, 19, 31-35] He identified skills (*kala*), 72 for men and 64 for women, to improve their quality of life and create value. These include arts and crafts, agriculture, account-keeping, reading and writing, use of numbers, reasoning and logic, ethics, martial arts, gambling, painting, cooking, dancing, singing and art of making love. Traditions, incantation (mantra), contemplation, meditation and yoga are also included, but worship is not. Learning useful skills is a necessary part of upbringing of caring individuals in a settled and organized clan. Rishabhnath, as a clan leader (*kulagar*), also prescribed punishment for those who were out of line. Increasing severity of punishment as admonishment, public trial, and social exclusion matched the crime. Those who did not change behaviors were asked to leave the tribe (banished), but there was no provision for death penalty.

Skills to improve quality of life and realize potential through human efforts remained the focus of the later Jin monks who also lived in the plains of Ganga and Jamuna rivers in North India.[36-38] In Atharveda (ca.12the century BC) these monks are mentioned as *Nigghant* (*nirgranth* or without clothes and possessions) *Arhatta* (worthy of respect), *vatarashana* (clothed with air) and *vratya* (non-aryan). Buddhist works (ca. 4th century BC) refer to them as *arhat* and *nighant saman*. The monks who from time to time developed and innovated ways to revitalize the tradition were acknowledged later by their followers (ca. 4th to 1st century BC) as Tirthankar.[39] Mahaveer was anointed as a Jin Arihant (arhant, arhat), and also as the 24th and the last Tirthankar for his ideas and interpretations that remain relevant and continue to serve as milestone for the Jain Dharm.

Gifts of Mahaveer that Keep on Giving

The Jains. The followers of Jin Tirthankars are known as the Jain, a term coined ca. 1035 AD from the earlier term *jin-anugami*. This leaderless tradition is still inspired by the activist world-view of Mahaveer where y*ou are a Jain if you act and behave like one*. Its continuous presence and influence in India over the last 5000 years attests to viability of its ideas and practices. It is a tribute to those who from time to time reorganize, modify and revitalize the tradition and keep it relevant.[37, 38, 40, 41] At the end of 20th century there were about 5 million Jains among the 1100 million people in India.[42] Its ancient roots are maintained by a few hundred monks and nuns with few possessions. They move about on foot in small groups supported by the local followers who provide shelter and sustenance. As always, they do not seek patronage or official protection, nor do they form organized or centralized groups with vested powers. More often than not they preach and teach what they practice. Their influence comes from the strength of individual character and scholarship to address concerns of laity with whom they remain in touch, listen to their concerns, and advise about the Dharm. They innovate ways to overcome stasis and orthodoxy while the splinter groups explore new ideas.

Activism. Indian school textbooks credit Mahaveer (599-527 BC) as a social activist and reformer of religious and social practices of his time. He is on the list of *The 100 Most Influential Persons in History,*[43] yet very few people outside India know of Mahaveer.[44] His ideas for social change by non-violent means and conflict resolution through discourse remain universally relevant. He opposed discrimination or privilege on the basis of accident of birth (caste, creed, sex, and social order). He used empirical arguments to encourage human efforts (actions, behaviors, relations) to improve condition and quality of life for all organisms. His social contract of *live, let live, and thrive* acknowledges interdependence of all life forms. It calls for reasoned conversation to resolve conflict and arrive at a rational basis for coexistence because interest of one lies in the interest of all. He prescribed

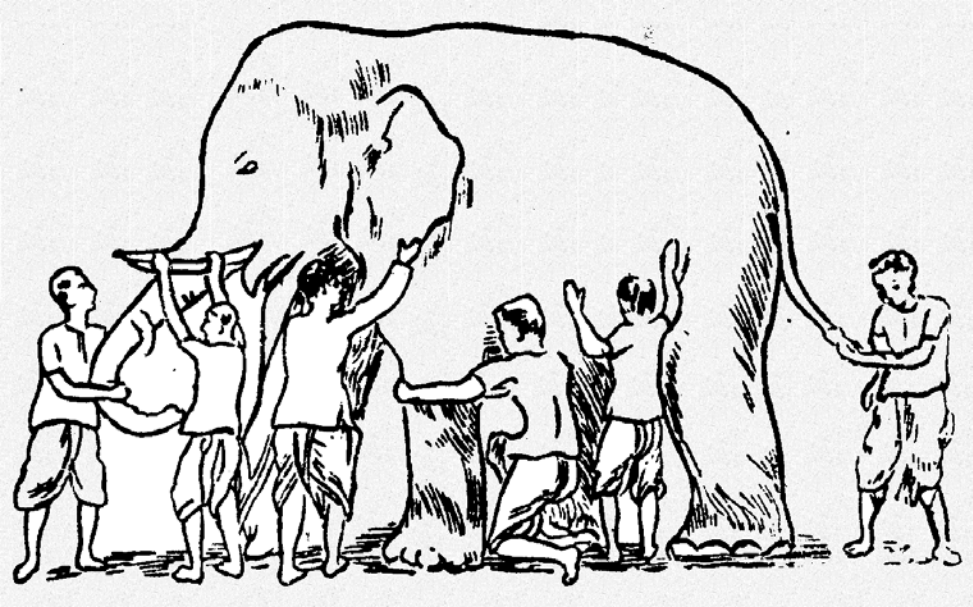
behaviors that seek congruence of actions with words and thought. He encouraged tolerance for ideas unless shown to be detrimental, not relevant, or contradictory. Such empirical reasoning with experienced (observed and measured) reality (*sat*) supported by independent evidence (*praman*) also requires insistence on truthfulness (*satya*).

Open search for viable ideas for rational behaviors is derailed by blinders of ad hoc faith. The anti-theistic arguments of Mahaveer are based on the concern that violence, fear, ignorance, indulgence, reflex response and reptilian behaviors rob ability of *senses to see* and of *mind to think*. As a social activist he argued against ritual practices and questioned their relevance as in *if sacrificing an animal is its path to heaven, why not sacrifice own relatives*. Beliefs encourage adherence to constructs and practices that may not have demonstrable value. *If disease is wreath of god or evil spirits why look for treatments and cures*. Also imagine if the politicians who declare war were asked to serve in the line of fire.

Mahaveer revitalized the ideas of prior Tirthankars and countered the newly arrived Vedic and Vedantic (post-vedic) beliefs about the role of omniscience or other-worldly Brahm. [45-47] He built his arguments with the assumption that each living organism responds to its sense experiences and bears consequences (*phal*) of its actions (*karm*). Individuals learn by trial and error from feedback for midcourse corrections. Outcomes and consequences motivate behavior changes that include not only the physical acts but also words and thought that have a common basis in the sense experiences and perceptions that guide decision-choices and responses. Such coherence of the reasoning ability to access the past experiences and evaluate potential outcomes and consequences is the empirical course of rational behaviors. Congruence of thoughts and words with actions is the basis to sculpt identity. Consequences of disconnect between thoughts, words and actions include psychoses, cognitive dissonance and fragmentation of identity.

Time Magazine at the end of the 20th century recognized Gandhi as one of the three most influential persons of the century, and the other two are Einstein and Hitler. Mahatma Gandhi credited Jain monks and laity for insights that lead to his

nonviolent activism with insistence on truth (*Satyagrah*) to expose unfairness of entrenched interests.[48] Armed with the belief that *a few good people can change the world*, Gandhi asked his Satyagrahis *to live the change they want to bring*, and *to let behaviors speak louder than words*. His methods for nonviolent political and social change are now generally adopted for human rights, social equality, civil society, openness and honesty in Government, corruption, and wherever and whenever vigilance and whistle-blowing is called for *to expose fox entrusted to protect hen house*. King and Mandela may have been at the political forefront, but many more activists, organizers, whistle blowers and ordinary citizens are guided by their conscience for struggles and movements at their grassroots.



Reality and evidence as the basis of Reasoning. Empirical search by trial and error is guided by truthfulness (*satya*) rooted in reality (*sat*) and independent evidence. A valid inference (*anuman*) from such reasoning conforms to facets of reality inherent the input assertions about the content and context of the actualities (*dravya*) and their relationship to independent evidence[24, 49] An inference remains tentative (*syad*) and in search of additional inputs (*anekant*) to resolve remaining uncertainties, doubt and liabilities. The parable of *An Elephant and Six Blind Men* illustrates the dynamics of such reasoning that underlies ethos, pathos and logos of the Jain world-view. In this parable, each person *sees* a part of the

beast and interprets it on the basis of its own experience. Of course, a better inference follows from the synthesis of such partial views, and additional inputs may lead to a better inference. Chaos of *your word against mine* may persist in search of a better inference. What if nobody has seen the beast before? What if somebody invokes omniscience?

Word reasoning is about objects that exist independent of the word. Inference evolves by trial and error in search of such information and evidence. Just as a story improves with each retelling, additional inputs continue to improve ideas, technologies and organizations. Similarly, biological evolution is about reproductive success by trial and error, and survival depends on learning from consequences of actions and behaviors. Empiricism of trial and error also holds for reasoning and learning from the observed and measured facts to develop shared knowledge of what may be 'unseen'. Word representations allows us to share concerns and infer reality from the communicated content (what, which, who), context (where, when), and their relations (how much, far, large) with independent evidence. Such scrutiny for predictable, reliable, and certain future makes the world less scary.

Successful behaviors are guided by inferences from evidence-based reasoning [50], and side-tracked by constructs of ad hoc belief and faith. Western atheism is a response to the omniscience of Theo (God) and to religiosity of tribal mores that encourage the faithful to be kind to their own and exploit others.[51, 52] Such in-box and self-referential reasoning is also inherent in spiritual, metaphysical, mystical, legal and political rationalizations. Believers of all shades and stripes have failed to find evidence for objects of their faith, yet they claim *that there is no evidence that it does not exist*. The nature of evidence is such that the burden of proof for *it exists* is on those who assert it, and until then no evidence is the evidence that *it is not*. Pascal's wager justifies *faith as a bet for being on the right side just in case if it exists*. Agony of agnostics is equivocation about such a wager. Open inquiry requires courage to break out of illogical, irrelevant and ad hoc assumptions, where the objective *ís* of the sciences stops with valid and viable generalizations. Unequivocal rejection of mores of religious morality based on faith in omniscience by atheists is neither immoral nor amoral, but logical. The activism

of anti-theists is against religious perniciousness. Such choices encourage individuals to develop a sense of self to sculpt identity with ethical behaviors.

Guide for conduct and behaviors. Organisms seek ways to survive and thrive. Mahaveer further emphasized [53] that humans can develop rational balance (*samma*, *sammyak*) of instincts, emotions, expectation in behaviors (thought, words and actions). Such discipline and self-restraint (*sanyam*) is called for because *actions are not reversed* and *consequences are not averted*. Ability to evaluate consequences and learn from experiences also places responsibility for choices, decisions and behaviors towards a fair and responsive social order.

An anecdote illustrates the path for a beginner. Mahaveer was travelling through a forest. The leader of the forest tribe heard that here is somebody who encourages nonviolent behavior. The thought resonated with him because he was well aware of the toll of violent struggles between and within the forest tribes. He paid a visit to Mahaveer and asked what he could do to bring nonviolence in his life. Mahaveer said that he should start by not eating crows. The Chief replied that of course he does not eat crow because they feast on dead animals. Mahaveer complimented and said that he is well on the path of nonviolence. Now he should decide what he wants to accomplish next? No matter what, when and where, change begins with behaviors that are sustained, and such successes empower incremental search for what more and how. Self-motivated changes to arrive at the 'aha' moment is the crux of teachings of Mahaveer and Buddh to guide *is* to *ought*.

For the beginners Mahaveer proscribed violence, lying, stealing, illicit relations and possessions. Awareness of unpleasant, undesirable and unpredictable outcomes and binding (*bandh*) consequences of such actions are likely to motivate behavior change.[54] Punishment is self-inflicted on those who do remain trapped and suffer through action-consequence cycles. As we know now the list for such slippery slopes includes instinctive, reflexive, reptilian and addictive behaviors. Consider the personal, social, economic and medical consequences of addiction to recreational drugs, alcohol, tobacco, narcotics, starvation (fasting, dieting), and of excessive consumption of foods like meat, milk, fat and sugar. Sense of self is also

distorted by rituals, fashions, gizmos, banter, chatter, sound-bites, propaganda and other forms of indulgences. Then there are the more insidious influences that encourage and sanction wars and violence that leave lifelong physical and psychological scars on individuals and societies.

Identity. The world-view (*itthivay*) of Mahaveer encourages incremental qualitative change in behaviors (*gunasthan*) to develop a sense of purpose and self to perfect identity (*atm*). Perception of self and its identity not only shapes fure behaviors to address survival and quality of life concerns. The adjective *atm* distinguishes a living organism that may assert *I am, I do, I will, I feel, I think*. Sometimes after 200 AD the term morphed it into *atma*, a noun for spirit or soul with connotation of an independent entity. *Atm* is the identity that distinguishes an individual from others, that is *how others see you* (*bahir*-, external, social), *how you see yourself* (*antar*-, internal strength of character), and *how you will be seen ever after* (*param*-, universal).[55] Such individuation begins with naming, and soon thereafter children express their goal for example to be a fire-fighter or a teacher. Personal commitment is required to develop sense of self to shape identity, and family and social influences also play a role. It often begins with the realization that *enough is enough*. Beyond that, flickers of awareness empowered by incremental successes encourage choices and decisions for desired behavior consequences. Such influences go awry in psychopaths and mass murderers.

Prescriptions of Mahaveer to sculpt identity by qualitative change begin with self-restraint on compulsive, obsessive and indulgent behaviors. According to the ancient literature [56-58] the purpose and sense of self to sculpt identity develops in 14 stages. Some animals and most human learn to respond with external (stage 4) and internal (self-) restraints (stage 5), however only humans can choose a purpose and path to sculpt identity. Mahaveer is said to have attained the last (*Ayog Kevali*) stage (14^{th}) just before his Nirvan (death). Among the estimated 40,000 inductees in next eight generations of his Original group (*Mool Sangh*), fewer than 100 reached the 13^{th} stage (*Sayog Kevali*). Bhadrabahu I (ca. 380 BC) was the last [59]. After him the Mool Sangh disintegrated for the lack of a leader of *Kevali* distinction and also lacked qualities and knowledge for the 12^{th} *veetrag*

stage. As a result the body of orally transmitted knowledge fragmented and scattered with the splinter groups. What has come down to us as the Jain Agam (knowledge from the past) was assembled from surviving fragments written down with commentaries during 100 BC to 1000 AD. Some of these works retain words and phrases and even the original fragments from which the integrity of the thought process can be guessed.

***Action-Consequence Relations*.** The Jain worldview follows from the assumption that each organism does (*karm*) its best to survive and bear consequences (*phal*) of its actions. Organisms individually and collectively also depend (*pajjata*) on their environment for food, water, air, movement, interaction, and communication with others. A cohesive and consistent code of conduct therefore takes into consideration wellbeing of all interdependent entities in a finite world.

Mahaveer in his first visit with Indrabhuti Gautam (607-515 BC), who later became his discussion leader,[60] explains that a living organism interacts with its environment for survival needs. Inputs and outputs for the action-consequence relations are rooted in the reality of the sense experience of each organism and also the actuality of the environment. Internal images of sense experiences inevitably color perceptions that guide decision-choices to address concerns and shape behaviors. A code of conduct is required to evaluate consequences and liabilities because chances of success increase with behaviors that do not contradict reality, are consistent with what is known to be valid (prior knowledge), and those that avoid actions that are irreversible or inconsistent with goals. Indulgences commit an individual to actions with undesirable consequences, and their feedback may provide for correcting mechanisms (such as avoidance). However once trapped, there is little choice but to suffer through the action-consequence cycle until it is resolved. A code of conduct guides towards an *aha* moment or a closure (*apvarg*) forever (*mukti*, *nirvan*) without divine judgment or grace for insight.

According to Gautam Sutr [61] action-consequence relations (like correlations) are rooted in the reality (*sat*), rather than caused by *Ishvar* (omniscient). Lung cancer is for example correlated to smoking. As we know now smoking is one of the

causes of lung cancer, non-smokers also develop cancer and not all smokers develop lung cancer. Uncertainties, contingencies and exceptions associated with outcomes of complex behaviors involve unknown variables. With the caveat that correlation is not causation, inferences based on correlation are useful guide for behaviors. If in doubt it is prudent to avoid irreversible actions.

Conservation of reality in reasoning

Perhaps the most significant contribution of Gautam and Mahaveer is about reasoning with multiple inputs (*anekant*) to improve certainty. They suggested that liabilities in reasoning from a single assertion (*ekant*) are resolved with additional inputs affirmed by independent evidence (*praman*). Its conceptual basis comes from Rishabhnath:

उप्पानेई वा विगमेई वा धुवेई वा

i.e. *a change in tangible reality (sat) is the net balance of inputs and outputs*. Such conservation underlies all insights and thoughts of the Jain tradition. It is not just *you harvest what you sow*, nor is it just for book-keeping and accounting. It takes stock of the underlying reality perceived from sense experience. Such reality at a conceptual level is symbolically represented and conserved during logical manipulations of inputs, outputs and evidence. It is conservation of information that is not unlike the conservation of materials and energy. As enshrined in laws of thermodynamics and chemical change it is at the foundation of all sciences and technologies. Balance of inputs and outputs as the basis of action-consequence relations also holds for fungibility of money, investments, tools, rules, accountability and responsibility for fair and equitable economic and social interactions in a civil society. In all such cases *neither something real is created from nothing, nor real things disappear into nothing*.

Mind is trained and programmed to interpret images of external actualities captured from sense inputs and experiences. Interpretation of such inputs in relation to independent evidence draws on their shared reality, where logics track their consistency and discard contradictions. A valid inference as a part of shared

knowledge grows like a vine nourished with additional inputs and open scrutiny. On the other hand, one gets only what is put in a dream description, and imaginings of faith are like a magic bag that takes in everything and gives out anything. Such contradictions and inconsistencies inherent in ad hoc omniscience of a supreme creator, potter, puppeteer (scriptwriter or judge), or designer create cognitive dissonance with constructs of other-worldly, divine, or wishful as in *god-willing* or *he works in mysterious ways*. Nay reasoning encourages practice congruent with thought and words to empirically learn from outcomes and consequences of actions and behaviors. It reality also follows from *what is done cannot be undone* and *it is insanity to expect different outcomes by repeat the same action*. Once the arrow out of the bow all one can do is to bear the consequences, learn from the experience, and modify future behaviors if there is a second chance.

It was recognized during the time of the 23rd Tirthankar Parshvanath (ca. 850 BC) that conservation is the basis for action-consequence relations as well as the role of independent evidence for Nay reasoning. Mahaveer and Gautam extended, strengthened, and formalized the reasoning to interpret word expressions and assertions about the content and context of identified and meaningful parts perceived from sense experience.[28, 29, 62-65] Reasoning with perception of the observed and measured actualities (*dravya*) builds on following assumptions: (1) External world in *front of eyes* (*pratyakch*, subject of sense inputs) is what it is and it does what it does. (2) It is neither created from nothing nor does it disappear into nothing. (3) It has always existed and will continue to exist albeit with changes in forms. (4) Its complexity may appear daunting, however it is never contradictory. (5) Images of sense inputs are formed and interpreted *behind the eyes* (*parokch*, mind). (6) An organism extracts information from awareness (*chetana*) of inputs interpreted in relation to its experiences and perceptions. (7) Most of our sense experiences may go un-cognized yet their perceptions (*itthi*) may persist. (8) Perceptions form beliefs that guide decision choices, actions and behaviors. (9) Inferences from criteria-based (*anugam*) reasoning with cognized sense experiences (*gyan*) are useful to represent, reason, interpret, assert, evaluate, share and compare experiences. (10) Each organism is a spectator,

actor, and decision maker that bears consequences of individual and collective actions that may be life altering, make it happy, anxious or regretful.

Syllogism for valid inference from orthogonal inputs. Human languages permit communication over large distances and long periods as the word constructs are interpreted to deliberate, reason, share, infer and scrutinize. Ability to communicate and reason requires bridging the gulf between beliefs, words, and practice. Narratives may build on perceptions of sense experience, however *speaking your mind* to converse and deliberate to resolve a concern require communication of inferred output from identified inputs. If common sense aligns sense inputs with perceptions, it takes uncommon sense to align outputs with perceptions of inferred and shared realities of phenomenal world. Such scrutiny begins with identified content (what, who) and context (where, when), and their relations (how) and causality (why) for output and consequences. Such open-ended search for certainty proves and improves as *some uncertainty goes away with each day*. Mahaveer in response to a query from Indrabhuti Gautam emphasized that a belief is inferred not only from the content and context of what one knows and how it came to be known, but for its fuller understanding it is also necessary to know what one does not know, what else is needed, and what may falsify and contradict it.

We assert existence of an object from the difference between its presence and versus its absence. Many of our concerns are about objects that we do not "see" because we are blind, or they are in dark, or their perceptions are illusory measures of reality. Shared exploration of an object or concern begins by naming it, but naming alone does not confer reality. Its identity is sculpted (*satprarupana*) from affirmed attributes and behaviors. It is not a yes or no affair. A valid inference follows from complementary and orthogonal inputs [66]. Explorations (*margana*) with criteria based (*anugam*) reasoning (*nay*) requires identified content (*dravya*) and context (*paryaya*) for reasoned inference (*anuman*). It remains valid within the limits of inputs and evidence (*praman*), and its liabilities may be addressed by additional (*anekant*) inputs.[24, 28, 49, 67, 68] The *only* (*keval*) and *complete* (*sakal*) knowledge (*gyan*) of an object or concern emerges in stages as the

remaining liabilities (doubt, uncertainty, or inconclusiveness) are resolved. Inference of fire from the sight of smoke at a distance may for example be strong enough to warrant further inquiry until the presence of fire is independently confirmed. Such empirical strategies to interpret incomplete knowledge are necessarily chaotic and confusing where provisional inferences remain useful guide for further search and mid-course corrections.

Saptbhangi Nay. In the elephant parable, an inference is constructed from multiple assertions, and its liabilities (*syad*) may be resolved with additional inputs, criteria, methods and evidence (*anekant*). Search for ***it is*** (for an object like omniscience or even the Sun) may begin with what we *know about it,* and then also consider *what we do not know, and whether or not we know or do not know this fact*. Each assertion is to be affirmed by independent evidence, and the nature of evidence is such that separate and independent evidence is also required to affirm converse of an assertion.

Table 1. Propositions with N, A, and U assertions affirmed (+) or not-affirmed (-) by evidence

	N (*does not exist*)	A (*exists*)	U (un-*describable*)	bit map
1	-	-	-	0 0 0
2	-	+	-	0 1 0
3	-	-	+	0 0 1
4	-	+	+	0 1 1
5	+	-	-	1 0 0
6	+	+	-	1 1 0
7	+	-	+	1 0 1
8	+	+	+	1 1 1

The Saptbhangi [66] Nay syllogism permits eight separate inference propositions from a set of three assertions, each affirmed (+) or not affirmed (-) by evidence. Here evidence for an assertion is anything ranging from information to interpretation and proof that supports it, and also all that refutes the converse and

alternatives. For example existence of an object asserted as ***Asti*** or ***it is*** (A) may be affirmed (+) by sense experience of its observable and measurable attributes. Assertion (A+) is strengthened if its converse assertion ***Nasti*** or ***it is not*** is not affirmed (N-) by independent evidence. It is a challenge to garner evidence to affirm (N-), but it is suggested if consequences of the presence and absence of the object are not distinguishable. Consider ways to establish the existence of air or Sun? Can the same criteria and methods be used for Omniscience said to be present everywhere and forever? It is conceivable that an object *present everywhere is beyond the sense experience* (A-) and also consequences of its presence or absence cannot be distinguished (N-). If so, can this object be meaningfully described that would inform deliberation? If not, it is ***a-vaktavya*** or ***it is undescribable*** (U+). In contrast, a concern like pain affirmed (A+) by sense experience is meaningfully described (U-) for further consideration.

Inference without evidence: Nothing or everything? An inference proposition is valid within bounds of its evidence. Umaswami [69] noted (प्रमाणनयैरधिगमः) *the authority of an affirmed assertion for reasoning comes from evidence* that may be about a certain aspect of the object, such as a particular or a class, a current state or as it was in the past, or a functional state. Samantbhadra [21-23, 70] emphasized that a proposition with a single assertion is necessarily incomplete. [23, 71] Siddhsen Divakar (ca. 500 AD) reiterated that reasoning is not possible unless all assertions about the content and context of an object are affirmed by evidence.[24, 68, 72] Buddhists surmised that nothingness (*shoonyata*) perceived by getting rid of chatter and clutter in sense inputs is the ultimate state of validity against which all sense experiences are transitory constructs like clouds in the blue of space. *Shoonyata* in effect is a blank template to represent and interpret sense experiences, just as a blank sheet of paper can be used to write or draw anything one wishes. Akalank [28, 73] rebutted this construct as self-referential because the *state of shoonyata is without a basis in the content and context of an object or concern, and it is also without value for reasoning*. Hemchandra further emphasized [74, 75] विना प्रमाणं परवन्न शून्यः that is *unless supported by independent evidence an assertion is no different than nothing.* Evidence based

reasoning in defense of Jain atheism was reiterated by Gunratn with the conclusion that reliance on criteria-based assertions affirmed by independent evidence is antidote against omniscience of the binary and *ad hoc* constructs.[20, 41, 76]

Incarnation of Nay as Jain Nyaya. At the time of Mahaveer some 400 different views prevailed about omniscience. Such Upnishadic (800 to 400 BC) discourses often ended up in conundrum of *your word against my word*. Bhadrabahu I (ca. 350 BC) emphasized that describable (U-) A and N assertions give four logic states: *it is* (T), or *it is not* (F), or *it is both* (D), or *it is neither* (X). These are to be resolved with independent evidence. Hiraiynna[77] noted that these four *syad* states challenge the dichotomy of true or false in the faith-based Vedic absolutism, and also identify contradiction of the undifferentiated Upnishadic reality of *it is so, and also it is not so (eti eti, neti neti)*.

The six views (Darshans) that were predominant in India in sixth century AD. [41] Atheistic Buddhist and Jain remain independent to this day. Theistic Sankhya, Jaimaniya, and Vaisheshik, and Naiyayic who invoked 'cause' are assimilated in the present form of Brahminical Hindu Dharm. Their discussions generally followed rules of debate from Gautam Sutr compiled by Ackhapad (ca. 100 BC), and popularized as Nyay Bhasya (commentary) by Vatsyayan (ca 400 AD).[78] It is not clear in what form and how the source material for Gautam Sutr came to Akchapad. It is likely it is the work of Gautam (ca 550 BC), a well-respected mediator of Upnishadic discourses who at the age of 52 joined Mahaveer and became his discussion leader.[60]. The term Nyay for justification and judgment came into use sometimes after 200 AD,[79, 80] apparently with synthesis of Nay (reasoning for an inference) with Vedantic *anvikshi* (scrutiny) and Buddhist *tark* (logical deduction). The term Nyay is not found in the Gautam Sutr, and it appears only once in the Nyay Bhasya in a rather insignificant context. The term Nay in Gautam Sutr appears as *nir-nay* (decision) and *up-nay* (additional support). The term Nyay came into the Jain works after 800 AD. Emphasis of Jain Nyay or Jain logic on independent evidence (*praman*) and scrutiny (*parikcha*) distinguishes it from the Hindu Nyay that invokes scriptures as valid evidence for reasoning. Unfortunately,

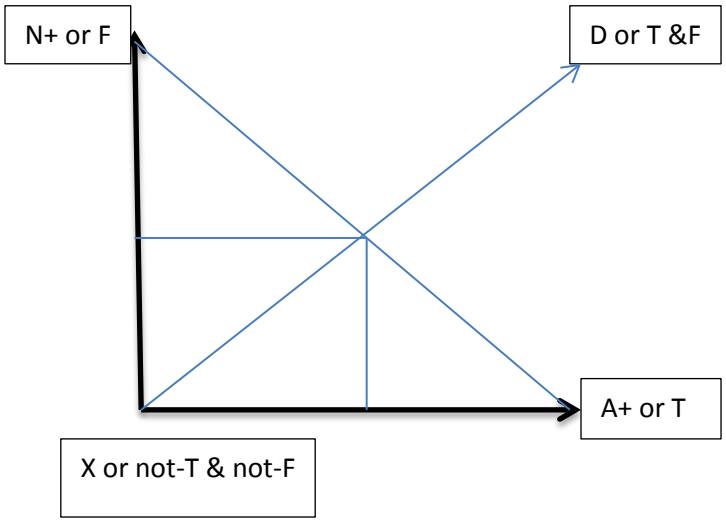
in recent years the Jain scholars in their zeal for literal interpretations of the ancient works have lost the significance of the conceptual and logical basis of the Jain Nay.

Significance of the Saptbhangi states. Of the eight (2^3) propositions in the table above with 0, 1, 2 or 3 affirmed (+) assertions, seven (saptbhnagi) have truth value of at least one affirmed assertion to provide a basis for reasoning. As mentioned above, the (A+ N- D-) state for affirmed ***it is*** (A+) is neither falsified nor undescribable. The other six states may be interpreted as propositions with inconsistency, contradiction or falsehoods. The eighth with no affirmed assertion (A-, N-, U- or 0,0,0) is for *Shoonyata* and omniscience as indeterminate.

Three assertions (A, N and U) interpreted as three orthogonal basis vectors represent a three-dimensional logic space described by vector-matrix algebra.[81-83] In such a cubic space, eight logic states are the eight distinct corners. Virtually all logics including binary, probability and Bayesian are the limiting cases of this space. A logic space can have as many dimensions as the number of orthogonal assertions, and such representations are remarkably useful to describe quantum phenomena. It is also the basis of quantum computing whose feasibility has been demonstrated. Its full potential for machine-implementation for inference and decision-making with incomplete information remains to be realized.

Syad-Saptbhangi in the limits of binary logic. Sense inputs provide information about parts of actuality, and sense organs communicate such orthogonal information interpreted for a range of inferences. Thus *Anekant* explores multidimensional logic space to arrive at the only (*keval*) valid inference. As shown above, in such multidimensional logic space orthogonal A and N vectors describe a two dimensional logic space with A+ for affirmed ***it is***, and N+ for independently affirmed ***it is not***. Several insights emerge if orthogonal A+ and N+ are approximated as T and F of the classical logic: (a) Complementation of T and F (as T = not-F, and F = not-T) is an approximation at the two ends of the T-F diagonal. (b) The T-F line also describes the classical probabilities of 1(T) and 0(F). (c) Two additional states also emerge: D for both T and F as doubtful, and the X node or null for neither T nor F as indeterminate. (d) Representation of T and F as

orthogonal vectors resolves paradoxes where self-referential deduction leads to T = not-T or *true* implies *not-true*, for example in the Liar paradox as in *All that I say is lie*. Complementation of T (1) and F (0) for binary deduction [84] has misguided Western logic into the various forms of self-reference that lead to vicious circles, riddles, paradoxes, perpetual motion machines and omniscience.



In binary reasoning a proposition is said to be True (T) if it satisfies a particular criteria, and it is false (F) if the criteria for T is not met. In effect, T and F states are inferred on the basis of one piece of evidence (say T), and F is asserted if the evidence does not hold. Other things being equal, lack of evidence for the presence (1) of an object at a given time in a given space may be used to deduce absence (0) of the object only if it is known to exist, and that it can exist only in these two states. It is machine-implemented as two-position ***on*** (1) or ***off*** (0) switch for digital computing and data processing. Such assumptions are explicitly stated to set up the Boolean algebra, and are also inherent in rules of manipulation of mathematical objects that differ on the basis of single criteria. It permits closure condition that is necessary for deductions and mathematical proofs.

Binary logic is not reversible. Another serious limitation of binary logic is that its operators (connectives) AND & OR are not reversible. In the truth-table for the proposition z = x AND y (below) the truth value for z (in the first column) is deduced from the truth values of x and y: z is 1 if both x and y are 1, and z is 0 for the other three sets of values for x AND y. However, it is not possible to re-generate the truth values of x (second column) from the values for y and z in the first column, nor is it possible to obtain values of y (third column) from the values of z and x. For example, if both z and y are 0, the value for x can be 0 or 1 interpreted as doubtful (D). Similarly, if z = 1 and y=0, x is neither 1 nor 0 interpreted as indeterminate (X). D and X states for y are also found in the third column. Output of X and D states from inputs of 0 and 1 shows that the operators OR & AND are not reversible (invertible). Such irreversibility that results in loss of information is due to binary complementation that is also not consistent with the nature of evidence and leads to paradoxes.

Table 2. Truth tables of binary connectives OR & AND are not reversible.

$x\ OR^{xy}\ y =$		***z***	→	***z*** $OR^{zy}\ y =$		x	$x\ OR^{xz}$ ***z*** $=$		y
0	0	0		0	0	0	0	0	0
0	1	1		0	1	X	0	1	1
1	0	1		1	0	1	1	0	X
1	1	1		1	1	D	1	1	D
$x\ AND^{xy}\ y =$		***z***	→	***z*** $AND^{zy}\ y = x$			$x\ AND^{xz}$ ***z*** $= y$		
0	0	0		0	0	D	0	0	D
0	1	0		0	1	0	0	1	X
1	0	0		1	0	X	1	0	0
1	1	1		1	1	1	1	1	1

***Non-existents and non-issues*.** Omniscience by self-reference has perplexed thinkers for centuries. It invariably takes the form of *your word against my word*, and even allows reasoning with string of negations. President Bush and his senior officials in support of Iraq War in 2001 argued that Saddam Hussein has Weapons of Mass Destruction (WMD) because *there is no evidence that he does not have*

such weapons! It is a template for words for mass deception (WMD) of believers. As used for existence of God: *if God did not create the world then who did*. Such illogic (*ku-tark*) to create impasse has been used in ancient times.[85] The Jain Nay rejects such *ekant* reasoning with a single assertion or criteria as *mithya*. Illogic with fallacious reasoning is now a norm of public discourse. As religions did it in the past, governments and businesses now use fear of omnipresence (spying) and omnipotence (law and security) to subjugate subjects to support the State. It is perpetuated with sound bites ritually catered by media to perpetuate ignorance in the name of news and information. A compilation of such methods and purpose would make informative and entertaining reading.

Disconnect between belief and behavior is far and wide. Being wrong is different than being ignorant.[86] There is nothing wrong about being wrong, but everything is wrong about staying wrong. Fear and faith added to the mix rob ability to reason. Use of wedge- or non-issues is part of public discourse in virtually all spheres dominated by institutional omniscience: Gloss over the mistakes as if never happened, or deny ever being wrong, keep faithful guessing with inconsistencies and contradictions backed up with words of moral high ground. Wide ranging studies show that religion or faith has no influence on behaviors even among the believers. Systematic study with suitable controls also shows that prayer has no benefit for the recovery of cardiac patients.[87] It is also interesting that about two thirds of the US population describe themselves as the believers, the same proportion as in the US prison population. Also, about two thirds of the US population describe themselves as the believers, the same proportion as in the US prison population.

***Inference as the basis for a theory of mind*.** Religious philosophers maintain that mind-as-machine *does not account for human consciousness and will*. They are right in the sense that mind is not a machine for binary deduction, and there is no meaningful theory for the diverse functions of mind that integrate functions of organs of neurosensory and neuromuscular system. A suitably developed and trained mind receives external and internal sense inputs to interpret, store and recall mental images of experiences. Such images are for example used for

decision-making, fight-or-flight response, or language communication. Such images are probably also useful for successful survival strategies because they provide for ways to deal with incomplete information and take advantage of feedback and future inputs. Such attributes are however not unique to the humans or even to primates.

As a step towards a theory of mind, the Saptbhangi syllogism could serve as a basic theorem to map the range of inferences consistent with available inputs. The 3x8 matrix is possibly the smallest unit required to implement a conditional logic gate to choose among the eight possible inference outputs.[66] It is therefore tempting to consider mind as an engine controlled by such inference gates. Neural networks with inference gates have certain attractive features: They can conditionally and reversibly process multiple and orthogonal inputs in parallel; they can output information not only as T but also wide ranging F, D and X states to be resolved with additional information; binary deduction is a limiting case in the logic space of orthogonal input but without the limitations of the classical binary gates. Such logic circuits with reversible inference gates are well suited for real time formation and interpretation of images that may persist until affirmed, confirmed, falsified, and ruled out with additional inputs, and also to reconfigure the remaining states for modified output. This is possible because parts of neural circuits remain active for seconds and minutes, where as individual signals last few milliseconds.

Algebraic manipulation of vectors and matrices is isomorphous with states in logic circuits. It allows for inference gates to assemble and dis-assemble the coded image for continuous modification and processing. It is therefore tempting to consider that orthogonal parts of the repertoires of mental images as input vectors could mediate neurosensory functions such as recognition, association, learning, memory, recall, and response. Such a system could also interpret incomplete information and judge its suitability for a response, or wait for additional inputs.

Mental chatter is hallmark of active mind, and such fleeting awareness is neither interpretable nor verifiable. Their mental images may persist and cohere as in dreams, hallucinations, visions and other states often associated with anxiety,

hunger, thirst, drugs, sickness and trauma. Only a magic bag of oracle can take in anything and dispense anything, or can make sense out of any experience. However, it cannot be denied that some fleeting experiences do provide occasional glimmer of insights. Like miracles such insights cannot be relied upon for a business model. Ancient literature from all parts of world has numerous assertions of divine insights. Writers and artists have given tantalizing accounts of spontaneous insights obtained after long periods of gestation, meditation and contemplation. Most of these remain riddles for the lack of incremental understanding that can be reliably used and reused by many.[88] Over the centuries mathematicians have jotted down conjectures without explanations or proofs. Some of these intellectual challenges have been proven to be correct. Those of Ramanujam are attributed by him to his family goddess. He lacked formal training to formulate his thoughts in a form that others could understand. Not to undermine the significance and importance of spontaneous ideas, but ideas are *dime a dozen* unless interpreted, verified, made understandable and practicable. Actuality of machines sketched in the Codex of Leonardo da Vinchi was not realized during his life time. Feasibility of some of these was shown by others with the help of technologies invented centuries later. Another remarkable feature of Leonardo's contraptions is their modular design, where the smallest parts are assembled into a functional module that is used in different machines that do different things. Such modular designs have changed the very nature of technological innovation and manufacturing. For example the user-friendly electronic gadgets have thousands of layers of such interconnected modules that work seamlessly and reliably even in the hands of novices.

Here to where?

Subjective wishes and desires mingled with perception of 'is' shape 'ought.' Human experience is that self-reference lead to paradoxes, and successful behaviors do not contradict reality. With such convictions methods and products of science have certainly changed the quality of life for most humans. Generalizations of science as such are not perceived by most as good guide for personal behaviors and judgments [89, 90], presumably because of uncertainties about what one knows in

real time, and if it is all that is needed to know about the way world works. It does not mean that one should resort to fairy tales and fictions of make-belief not constrained by the logic of reality. Another options is to let conscience guide 'ought' though remaining uncertainties of 'is' explored by trial and error. Desires and wishes may dictate choices [91, 92], and behaviors may seek actions that avoid unpleasant consequences. Individuals also cherish freedom to explore frontiers,[88] where desire for exceptionalism provides meaning, purpose and direction [10] even if it means making fool of oneself.[54] Irrelevant ideas and practices disappear in the heap of the past, yet for some reason many continue to fall prey to omniscience in moments of weakness. Is it ignorance? Or is it the limitation of 'is' that encourages subjective attempt to sculpt 'ought' even if it is irrational. No matter what, individual freedom relegates 'ought' to desires of subjective self to a chaotic marketplace for the choices one makes and bear consequences. With the caveat of buyer be beware, choices become actions, actions become habits, and habits become our character.

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