Reconfigurability & Programmability of <God, Golem>

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Abstract - Golem, in Jewish folklore, is a "shapeless mass" endowed with life. The Jewish mystics believe that God created the universe using the power of spoken words or chants. Even if a small portion of such mystical words take effect, one could animate lifeless clay. However, this golem would not have a soul as only God gives the soul. It would not be capable of speech or thought. It would only follow its master's instructions. This paper studies the possibility of using the power of the spoken work to reconfigure and program the <God, Golem> pair.

Keywords – *God, Golem, Reconfigurability, Programmability, Cybernetics*

I. INTRODUCTION

Adam praises God as his Creator, who knit him together in the womb of his mother, the Earth. "Thine eyes," he says to God, "did see my golem" (Heb. golmi), my unformed embryo, its limbs not yet fashioned, lying in the dark depths of the Earth - Psalms 139:16

"The ancient Jews regarded themselves as the chosen people of God to the exclusion of all others, with the result that their descendants were visited with a strange and even unjust retribution." – Mohandas Karamchand Gandhi

Golem can be a victim or a villain, man or woman or both and connotes war, community, isolation, hope, and despair. Golem is mutable.

Rossumovi Univerzální Roboti or Rossum's Universal Robots is a 1920's science fiction play about a factory that makes humanoid figures. The word "robot" comes from this play written by the Czech writer Karel Čapek.

In the Talmud, the word golem - an ancient equivalent for automaton or robot - also refers to a woman "who has not yet conceived." - Klaus Benesch, "Technology Writ Large: The Machine, the Body, and the Text in Melville's Shorter Narratives", Weber State University, Volume 14, No.3, Fall 1997.

There are many such references about the similarities between Golems, Robots and Automation.

"No one can serve two masters; for either he will hate the one and love the other, or he will be devoted to the one and despise the other. You cannot serve God and mammon [money, possessions, fame, status, or whatever is valued more than the Lord]. – Mathew 6:24

It is thus often thought of that Golem answers only to its creator or it is disconnected to God.

"God is supposed to have made man in His own image, and the propagation of the race may also be interpreted as a function in which one living being makes another in its own image. In our desire to glorify God with respect to man and Man with respect to matter, it is thus natural to assume that machines cannot make other machines in their own image; that this is something associated with a sharp dichotomy of systems into living and non-living; and that it is moreover associated with the other dichotomy between creator and creature. Is this, however, so?"- Norbert Wiener, "God and Golem, Inc.: A Comment on Certain Points where Cybernetics Impinges on Religion", Penguin, 1964 [12].

This paper is a study of the Reconfigurability & Programmability of <God, Golem> with or without the creator of the Golem in the loop and multiplicity / pantheism for God.

Reconfigurability means that a system or a service's state and behaviour can be dynamically modified during its operation.

Programmability is the ability of a device or system to be customized or programmed to perform specific functions or tasks. It allows users to control the behaviour and functionality of a device by writing and executing code or instructions.

II.   GOLEM [11]

A golem is an animated anthropomorphic being in Jewish folklore, which is created entirely from inanimate matter, usually clay or mud [2].

In post biblical studies of the Jewish traditions, Golem is featured in fiction, film, art, and scientific literature. These legends of Golem emerge as a useful source of guidance through the intricate ethical and spiritual problems in biotechnology [1].

The present day golems take on shapes and forms significantly different from those descriptions of golems in the ancient Jewish lore. Yet they are also golems.

Norbert Wiener, in his book God and Golem, Inc., described the machine as "the modern counterpart of the golem."

`   Gershom Scholem, a renowned scholar of Jewish mysticism, described the computer as a contemporary manifestation of the golem in the year 1965. He defined "the golem is a creature, particularly a human being, made in an artificial way by virtue of a magic act, through the use of holy names."

In 1982, in a report called *Splicing Life*, a United States presidential commission compared developments in recombinant DNA to the creation of a golem.

There are four standard types of golems. They are listed below in the order of weakest to strongest.

1. Flesh Golems
2. Clay Golems
3. Stone Golems
4. Iron Golems

The flesh golem is created from human remains. At the controls is the creator of the Golem. The duration and the potencies needed to control the flesh golems and clay golems varies depending on the context and their usage on the field.[3]

Some of the other types of Golems [4] found from various sources are mentioned below.

- Brass Golems
- Chain Golems
- Dragonflesh Golems
- Stained Glass Golems
- Alchemical Golems
- Gloom Golems
- Hangman Golems
- Mud Golems
- Prismatic Golems
- Shadesteel Golems
- Web Golems
- Blood Golems of Hextor
- Brain Golems
- Demonflesh Golems
- Hellfire Golems
- Dragonbone Golems
- Drakestone Golems
- Ironwyrm Golems
- Grave Dirt Golems
- Tombstone Golems
- Ice Golems
- Sand Golems
- Coral Golems
- Adamantine Golems
- Mithril Golems
- Equine Golems
- Incarnum Golems
- Cadaver Golems

Some of the well-known types of Golems [5] [14] are in Fig. 1.

The most famous Golem of all belonged to Rabbi Judah Loew, the chief Rabbi of Prague in the 16th century, who was known by the honorific, the Maharal. The statue of the Rabbi who created this Golem is in Fig. 2.

Prague was the most occult and alchemical city in Europe. It has a long tradition of puppets, dolls, and magic shows of various kinds.

The Jewish community of Prague lived in a Ghetto. The low boil of ancient religious animosities bubbled over when Brother Thaddeus was appointed as Prague's Cardinal. Fearing for his community's safety, Rabbi Loew took two of his students to a secluded spot on the banks of the Moldau River. They formed mud into the shape of a giant man, and the Maharal, using his prodigious mystical powers, brought the Golem to life. Each night, the Golem

patrolled the boundary of the Ghetto, guarding the Jewish community from threats.
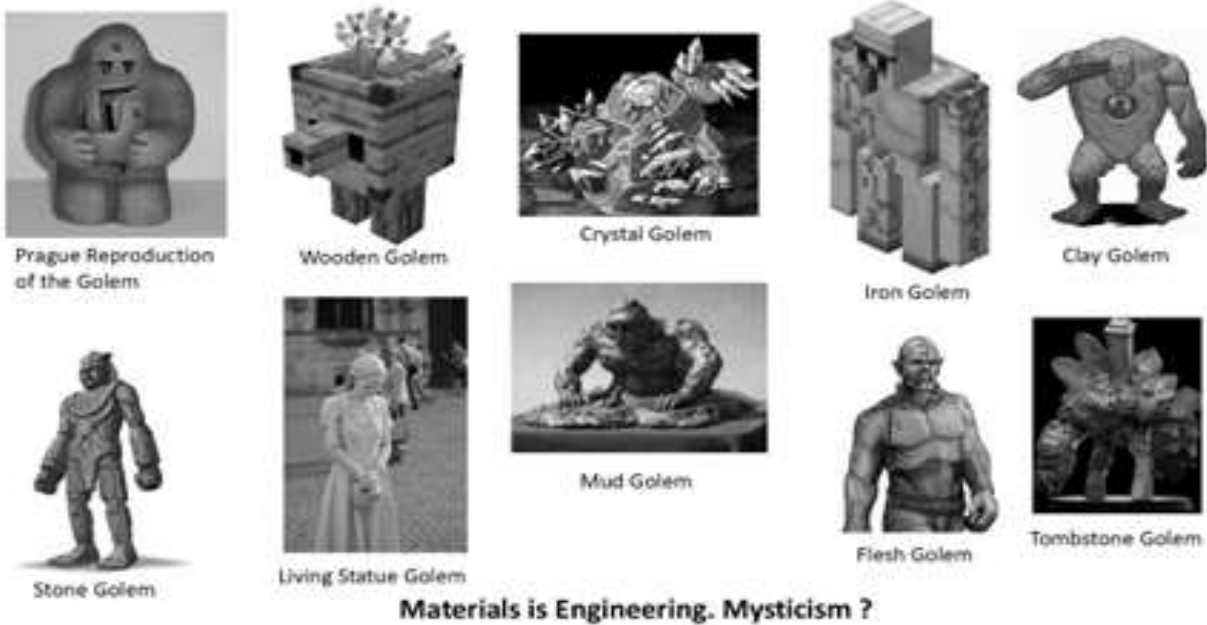

Fig. 1: Types of Golem

Fig. 2: Rabbi Judah Loew ben Bezalel
@ New City Hall, Prague

It took Rabbi Loew and his Golem five years to finally defeat Brother Thaddeus and reveal his lies and machinations. Seeing that his people were safe, Rabbi Loew brought the Golem up to the attic of the synagogue, and uttered the words that turned it back into mud once again.

It is clearly a study in materials for making the Golem that needs to happen first. The material chosen and the context of deployment determine its form, shape, command and control of the Golem.

The animating force for a golem is a spirit from the earthly nature of beings. The pertinent earthly nature is termed "Medini" in the Indic scriptures. The process of creating the golem binds the unwilling spirit to the artificial body and subjects it to the will of the golem's creator.

Sefer Yetzirah is a book on Jewish mysticism and it details the various steps in the creation of the Golem by Rabbi Loew. There are many similarities with the rituals and associated practices of Hinduism. As a matter of fact, the Jewish word "Cabala" means "Received Traditions". This word rhymes well with the Sanskrit word "Kapala" meaning "Skull". When the Jewish word is spelt as "Kabalah" it sounds "Kab Allah" which in Hindi means "When God". The making of the Golem has much to do with the mystic words and their pronunciations.

The Jewish mystics believed that God created the universe using the power of words. It is a profound faith that only a small subset of the words used by God to create the Universe can animate lifeless clay. This golem would not have a soul, for only God gives out souls. It would not be capable of speech or thought. It would only follow its master's instructions. The Jews

were adept at deploying Golems long before there was Frankenstein, or robots, or Artificial Intelligence [13] [15].

Golems are magically created automatons of great power. Constructing a Golem involves the mystical element of highly potent magic and elemental forces.

There were combative Golems resembling the statues and made of crystal, iron, and rock. A Golem is beyond the earthly emotions that are impediments in a combat. They become ruthless executioners of the slaying until their physical form gives away or the control goes out of bounds. Please find a combative robot golem in Fig. 3.

Fig. 3 A Combative Robot – Golem

Golem and the Robot are historical examples of artificially created humanoids i.e "programmable" organisms. The ideas, underlying the creation of these historical characters have influenced many areas of modern mechatronics. Both Golems and Robots are being built.

Robots as a form of artificial life are designed laboriously and constructed by teams of human engineers at great cost. Few robots are available because these costs must be absorbed through mass production that is justified only for toys, weapons, and industrial systems like automatic teller machines.

The mystic element in the form of utterances by the creator differentiates the Golem. A golem's creator can command it if the golem is within a "specified distance". The early Golems were based on voice command and hence the specified distance was not much. Alternatively, a Golem can store one instruction and repeat it until a fresh instruction is issued by the creator. The creator can give the golem a simple command to govern its actions in his absence. The golem's creator can order the golem to obey the commands of another person [who might in turn place the golem under someone else's control, and so on], but the golem's creator can always resume control over his creation by commanding the golem to obey him alone. Golems cannot be created or used for evil purpose without harm coming to the creator.

It is thus obvious that a Golem comes very close to humanoid robots and robots in its construction and functioning except the mystic element with is solely in the control of its creator [10].

III.   CREATOR AND GOD

The Jews were not the only ones who believed in created men out of clay. In Greek legend, the titan Prometheus created man out of the mud of the earth as an experiment. Daedelus, named after the daedala ancient statues, created statues that were, according to Plato, "so life-like that they had to be restrained to prevent them running away". In Xian, China, a great army of terra cotta [a type of gray clay] soldiers were found in the burial mound of Shi Huangdi, who ruled China from 221 BC to 207 BC. He prepared the tomb for his death starting shortly after he came into power. In the previous century, live burial of the royal staff members with the emperor had gone out of practice, and these soldiers were used in their stead. Their spirits were to travel with the emperor to the afterlife, and return to guard his tomb on earth if necessary.

A. Alchemy

The notion of "man-made living creatures" has a long history in mythology and folklore. The Kabbalah includes legends and stories about the alchemical homunculus [6], or "little man," and the golem. In both cases the idea is that through certain secret magical practices, human beings can share in the creative power of God.

Prior to the mechanical era, there was a strong organic foundation. Franz Hartmann's 1896 Life of Paracelsus defines homunculi as "artificially made human beings, generated from the sperm without the assistance of the female organism [black magic]."

Turning lead into gold was a symbolic way of describing the true aim of alchemy. This is the essence of the spiritual transformation of the alchemist. The preparation and cumbersome apparatus, was to unite their earthly, mortal soul with that of the divine, to participate in the divine, to reawaken their spiritual consciousness, and to grasp the secret forces at work behind the natural world. Success depended on following the proper procedures, which included astrological concerns. For the alchemist, matter was not the dead. It was a living body, one that could respond to a person's attention. The alchemists spoke in parable, allegory, and obscure language. Through certain secret magical practices, human beings can share in the creative power of God.

Three symbols of Alchemy [9] are described in the Fig. 4 as a sample.

Fig. 4: Three Symbols of Alchemy with descriptions

The symbols of alchemy seldom have unique descriptions and is difficult to collate an exhaustive set of symbols.

A larger set of alchemical symbols without descriptions is seen in Fig. 5.

Fig. 5. A Larger Set of Alchemical Symbols without descriptions

The practice of alchemy used quaint apparatus. A sample set of such apparatus is depicted in Fig. 6.

Fig. 6: A sample set of apparatus used by the Alchemists

The apparatus typically used in modern Chemistry is depicted in Fig. 7 to illustrate the similarities.

Alchemy is a primitive forerunner of chemistry. The apparatus used in modern chemistry does have resemblances to that used by the alchemists. Chemistry made the study of materials a science in itself.

The engineering sense of dialogue with materials branched off away from the chemistry and was positioned in Logic. However, unlike alchemy, both chemistry and engineering evolved from a craft to profession with rigorous methodologies. This evolution is depicted in Fig. 8.

This direction of progress from the Alchemy resulted in building machinery to enhance the human capabilities many fold. The interdisciplinary approaches in engineering made significant progress in Robotics, Cyborgs, Frankenstein to illustrate the creation of homunculi. Mysticism is the missing link.

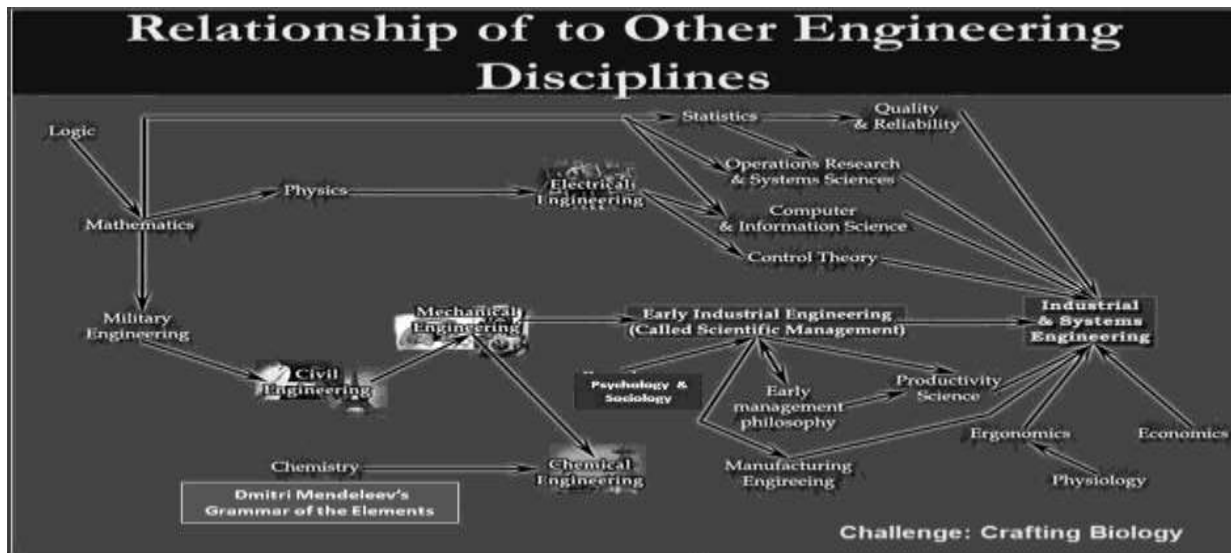Fig. 7 Illustrating the apparatus used in Modern Chemistry

Fig. 8: The Evolution of Engineering Disciplines

B.   Towards Man as Microcosm

The kabbalistic idea that the universe itself is a kind of man, Adam Kadmon. Each of the other men is a microcosm, a universe in miniature: the universe is a Great Man, and other men are all little universes. Please see the Fig. 9.
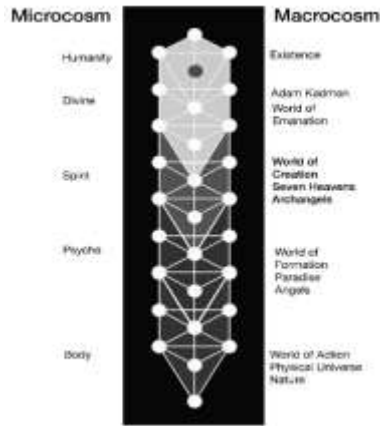

Fig. 9: Microcosm and Macrocosm

The entire process in alchemy is founded on the idea of rebirth. The alchemists were to "die" in a sense - to lose their earthly, mortal being - and, if the procedure was successful, would be reborn.

The quest to unite the microcosm to the macrocosm ushers in the interdisciplinary approach to a possible study of the metaphysical. The mystic chants that breathe life is the next step in this approach to understanding the creation of new life.

The Indic scriptures detail the process of the unison of the microcosm and the macrocosm. This process is called Yoga with the macrocosm as God or Brahman. Kundalini is a possible lingua franca that comes close to the Jewish kabbalah. Please see Fig. 10.
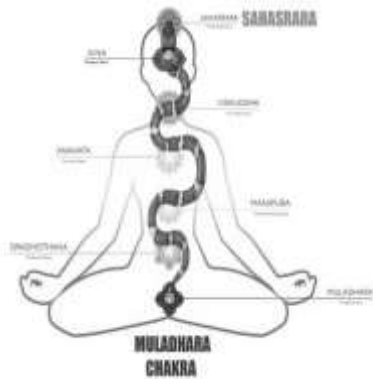

Fig. 10: Kundalini

The weaknesses of man such as idolatry, murder, fornication, and wine find mention in all major faiths of the world. Along with them are copious teachings about the angels and demons indicating a dynamic chain of actions between the microcosm and the macrocosm.

"Indeed We created man from dried clay of black smooth mud. And We created the Jinn before that from the smokeless flame of fire" – Holy Quran, Surah Al-Hijr 15:26-27

Jinns can be Muslims or non-Muslims. However, due to their fiery nature the majority of them are non-Muslims. All these non-Muslim Jinns form a part of the army of the most famous Jinn, Iblis- the Shaitan. Jinn is the most appropriate equivalent of Bhuta in Vedas and 'Holy Ghost' in Christianity.

These are ancient attempts at making a "homunculus" - a small human being, a distorted image of a person, and a representation of the brain's motor and sensory distribution.

The author advocates the study of these ideas to unlock the healing methodologies of the ancient lore [8]. The governing maxim in this method is "Spiritualty   is INVERSELY proportional to Materialism"

IV. GOD IS ETERNAL

The most important distinction between Creator and God is that God is eternal and one who sustains the creation as it evolves. This is well attested across all major faiths. The creator of the homunculi or Golem is not necessary eternal. Usually such a creator is not eternal and the impact conforms to the doctrine of creationism. God does have an attribute of "Creator".

Can the mortal creator of either an homunculi or Golem transfer command and control to the eternal God?

If yes, how and why?

This is the beginning of the exploration into the mystic realms of this study. The author has a strong preference to the Indic scriptures.

"Saman Chants" form the core of all practices associated with the Indic Scriptures.

This approach is believed to create the necessary harmony with the surrounds. It is good enough to keep the animals, bhuta and other classes of

forms adequately protected with the prowess innate in the Mantras.

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"anavrtti sabdat : "one is liberated by sound."
- Vedanta Sutra

Sama is interpreted as the following four pairs in the Antar [for the Inner] Mode:

1. Sa [Speech] + Ama [Breath]
2. Sa [Sight] + Ama [Body]
3. Sa [Hearing] + Ama [Mind]
4. Sa [Luster of the Eye] + Ama [Pitch Darkness of the Eye]

Sama is interpreted as the following four pairs in the Bahir [for the Outside] Mode:

1. Sa [Earth Connect] + Ama [Agni]
2. Sa [Intermediate; Bhuvah] + Ama [Vayu]
3. Sa [Tara or Stars] + Aam [Chandra]
4. Sa [White Lustre] + Ama [Pitch Dark]

At this level of abstraction the associated mysticism spans across all major religions of the world.

It is of no wonder that Music begins with Sa which is also called Shadja i.e the originator of the other six swaras.

Preserving all the words in their pristine form for the future generations is the foremost duty of all in the community. There are many ingenious ways of achieving this goal.

The chants happen in certain specific sequences called "Patha Krama". This approach is widely acknowledged as the best path of ensuring the accurate reconstruction of the Indic scriptures.

A sample sequence is:

1 word + 2 word, 2 word + 3 word, 3 word + 4 word is one sequence.

Another sequence is:

1 and 2 words, repeat with reverse the words, 1, 2 and 3 words...

Each valid sequence of words is a Patha Krama. There are three Prakrithi Pathas i.e variants of verbatim sequences that are copy book.

There are eight Vikrithi Pathas that alter the sequence and include reverse order.

"Saman Chants" are said to be the best in reaching out to the God eternal to ensure the creations of the mortal men are universally safe, abiding by the laws of the nature and persist across rebirths and the mystic powers transferable to future generations. The prosody or chandas with specified metres assures the safety of the chanting process and the chants.

"The shaman acts as intermediary between the world of men and the gods, and has the power to descend into the realms of the dead. His spirit is believed to journey forth from his body, which remains in a state of trance. Sometime the long journey which it takes is described by him in a chant. Sometimes he induces the conditions of ecstasy by beating his drum or by an elaborate and exciting dance". - H. R. Ellis Davidson, Gods and Myths of Northern Europe Penguin Publishing Group, 3 Jan 1965

From a shamanic point of view, when in comatose, one is dead. So the shaman, in the case of comatose persons, would seek them out and see if they wanted to come back. Shamanism is not a system that intends to keep people in this ordinary reality whether they like it or not, because the shaman knows that this is not necessarily the best reality. The shaman makes the journey for the person who is comatose to find out what they want. If they want to come back, then the job of the shaman is to bring them back. But if they want to go on- or, more commonly, if they're dying or already dead-then the job of the shaman is to get them to a place where they will be content and not have them stay here, adrift in the Middle World.

As a matter of fact, Adam who is the first mortal man is referred to as "golem." in the Talmudic Aggadah. Adam is described as a kind of cosmic golem, an immense being whose body is as large as the universe and who can see the entire history of the world, its past and future. This is like Madame Blavatsky's akashic record, the reading of which can somehow be enabled through shamanistic or yogic practices.

Unlike the assistive robots [7], the Golem is a kind of sorcerer's apprentice. In many versions, the golem continues to grow and grow and soon becomes too big for its creator to handle. There are different versions about how the golem is stopped. In the most popular one, the word emeth, "truth," is written on the golem's forehead, and this gives it life.

Nulling the impact of the first letter "e" makes it "met", which means "death" and the golem crumbles.

God the eternal can always be postulated as a superior to the creator of the Golem and in theory can be reached out to using shamanism and "Saman Chants".

<God, Golem> can be a persistent pair in the process and with standardized chants and associated practices the golem may well be reconfigured and programmed to do more than what it was originally intended to do.

An angular bracket, also known as a chevron, is used to enclose words or figures to separate them from their context. Computational Models thrive on the Context – Free. The author proposes the notation of angular brackets on the lines of Markups or Tags to include the pair <God, Golem> as desirable over the browsers if necessary. The controls can be software defined and work across distributed systems.

Mathematically the Group theory is the study of a group or set of elements that satisfies the basic properties of a group when any operations are performed. A Ring is a Group under addition and satisfies some of the properties of a group for multiplication. The <God, Golem> specifies the commutative group presentations and to represent the subgroup or ideal generated by a collection of elements.

V. CONCLUSIONS

Abiogenesis is the natural process by which life arises from non-living matter, such as simple organic compounds. The prevailing scientific hypothesis is that the transition from non-living to living entities on Earth was not a single event, but a process of increasing complexity involving the formation of a habitable planet, the prebiotic synthesis of organic molecules, molecular self-replication, self-assembly, autocatalysis, and the emergence of cell membranes. The transition from non-life to life has never been observed experimentally, but many proposals have been made for different stages of the process.

Proof that life experiences and the notions of the "burden of proof" need to be crafted differently. Indic scriptures aver that it is seldom about expressions. It is all about "direct experience".

The "Theory of Self - Replicating Automata" proposed by John von Neumann and "The Chemical Basis of Morphogenesis" elucidated by Alan M Turing are computationally viable approaches for preparing a test-bed for homunculi and golems.

The creator or sorcerer as an instrument in the hands of god almighty is a useful metaphor.

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