

# STUDIES ON BIOLOGY IN TATTVARTHA SUTRA (FOMULAE ON REALS)

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## Introduction

One does not know when the animistic Jain System became dualistic or pluralistic. However, *Tattvartha Sutra* (Formulae on Reals)<sup>1</sup> is the first Sanskrit Jain text propounding Jinstic pluralism of seven reals and six realities. Its author has been an area of scholarly dispute with respect to his name (*Aryadeva*, *Grddhapiçcha*, *Umasvati*, *Umasvami*), lineage, location and ideology. Overlooking the earlier tradition of modesty towards the omniscients, in not giving encomium in texts disregarding historical perspective and basing arguments on sufficiently late epigraphic (11th century onwards), literary (4th century onwards), lineage and contental evidences, many scholars<sup>2</sup> have started not only calling the *Digambara* tradition as southern tradition (only) despite the fact that Mahavira and other victors propagated it throughout north and south of India but that almost all their current canon - like texts are post fifth century C.E. This trend should be scholastically reversed with proper studies and publications for conceptual globalisation of this church. However, it is pleasing to note that *Tattvartha Sutra* is an exceptional text which is recognised as a pre- schismic text covering a period of

second to fourth century C.E. and containing the formulae of freedom or release from worldly woes leading to ultimate happiness. Its scholarly popularity can be judged from the number of its commentaries in many lauguages from fifth century onwards to date.

The text contains 10 chapters with 357 (or 344) aphorisms covering details about the basic concepts on reals and realities. The living being is the first real (and reality also) related/associated with all others. Though realitywise, it numerically forms about 15% only, but the text has 35% chapters and 40% aphorism dealing with the living. Incidentally, it is interesting to point out that the aphorisms do not contain the term '*Atma*' (Soul) at all, the term '*Jiva*' also being found in 11 places. It seems that the term 'Soul' could not have become popular in Jain system upto the age of *Tattvartha Sutra*. It entered through the same process as the terms '*Dravya*' (Reality) in place of 'Existents' and the term '*Visesa*' (Particularity) in place of 'mode'. The Jain Seers tried to establish equivalence in terminology with other philosophies and they accepted the term '*Atma*' (Soul) for '*Jiva*' or living like the terms 'Sense perception' and 'Supra-sensual perception'

(two kinds of perception) and 'ideal atom' and 'Practical or real atom' (two kinds of atoms) - thus serving dual purpose - equivalence and maintainence of their own concepts<sup>3</sup>. The commentators of the texts have mostly used the term 'Soul' for 'Jiva' (living) and many - a - times, they have been interchangeably used to create some confusion in details as - later Soul becoming supreme, pure or auspicious soul. The soul, being non-material, is out of bounds of current biology atleast now. *Hence this paper will deal with the living or impure soul which is described in Biology.*

**Soul = Living - (Karmic) body**

**Living = Soul + body = Impure Soul = Jiva.**

The living one is described in many spiritual texts *in a highly degraded way to create psychological thrust for moving towards detachmental path*<sup>4</sup>. This trend may be one of the causes of detestation of religiosity among young people. However, the description shows fine observation power of the seers. But *Tattvartha Sutra* is free from this defect and it really serves as freedom formula for the living to move towards soulhood. The text is more realistic than many others of earlier or latter dates. Chaturvedi<sup>5</sup> points out that there has been a period in the development of Indian thought when every physical system or entity (vitality, senses, mind) was spiritualised and got defined in terms of physical or psychical, real or ideal, alienable or non-alienable etc. Consequently, it became difficult to be understood by common man. This spiritualisation became instrumental in

cultivating individualism over socialism. This is the basic cause of our sad physical status today.

The biological sciences<sup>6</sup> deal with the canonical impure living beings of all types with respect to (1) the origin of life in general (2) characteristics of livingness (3) classification (4) external and internal details (5) working mechanism and (6) life cycle besides many other points. The *Tattvartha Sutra* and its commentaries also describe these points in terms of 40 disquisition doors. It is, therefore, interesting to compare and contrast the canonical and current knowledge on the basis of the data provided on both sides. It is observed, on comparison, that there is good correlation on many points in both cases on surfacial or gross level. *However, when one goes into deeper, internal or functional mechanistic points, one finds a gap involving deficiency and discrepancies in almost all points.* This contrast suggests the historical perspective and development of biological sciences between the current age and the age of T.S. *It seems that the canonical contents of early christian era serve as historical mile stone for the life sciences of today.* However, it is seen that biological sciences have added to some scriptural contents while posing some points for reconsideration or modification. They cannot, perhaps, be rejected like the astronomical contents therein.

## Data

The date used in the study are taken from the original T.S., its commentaries<sup>7,8</sup>

and other earlier or later sources along with texts of biological sciences. They have been tabulated in Table 1 and analysed for probable conclusions. The experimental data have been procured through microscopes of different fine power.

## Results : Analysis and Discussions :

### 1. Description and Definition of *Jiva*

Jains are noted for their aspectwise studies. They have described the living beings through 40 physical and psychical disquisition doors in the ratio of 3:1.<sup>9</sup> The *T.S.* has about 12 disquisition doors which contain the distillate of Biological knowledge since Mahaviran age. It seems that the doors of Investigations and Spiritual stages were not fully developed in the age of *T.S.* and that is why they do not find place in D.D's in *T.S.* The current biology also describes the living beings under 28 branches given in Table 2. *It is observed that all the Jaina D.D's fall under 11 branches. Whereas the biological sciences do not have volitional and spiritual doors (totalling 17), we do not find the same number of branches (17) in our canons – most of these branches originating within the last 200 years.* However, the canonical descriptions there are comparatively less advanced. Further, some of the subjects are discussed in psychology or ethics.

Despite too many D.D's about the living, we will discuss some important doors in this paper: (a) Differentia of the living (b) Classification with respect to mobility, physical senses, gender and mind (c) Types

of birth (d) Bodies and their possessors (e) Death and transmigratory motion. These topics have been elaborated in commentaries of *T.S.* which will also form the basis for this presentation.

### Differentia and Synonyms of the living

A two - fold definition of the living being has been described in the *T.S.* commentaries: non-alienable and alienable - a later development. The alienable differentia seems to be the effect of spiritualisation of physical entities. Looking back to some earlier or later literature, we find 10 to 23 synonyms of the living in *Acaranga* (10), *Bhagavati* (23), *Panchastikaya* (17) and *Dhavalā* (20).<sup>10</sup> The etymological meanings of these synonyms indicate many properties of the living. It is seen that while the primary canons mostly mean physical properties of the living including birth, death etc. if consciousness is also taken nearly physical as it is said to be a product of physiological mechanism of the brain - a functional brain like *upayoga* - a functional consciousness.<sup>11</sup> Even the terms '*Atma*' (movement) and '*Antaratma*' (pervasive in body) have different meanings in canons. When the non-materiality was associated with these terms, has to be investigated deeply. Some texts mention even the size, weight, reproduction characters of the living - indicating they are dealing with the current biological living.<sup>12</sup> In contrast, the *Digambara* canons mention many non-material properties like weightlessness, intangibility and volitionality etc. All these synonyms represent definitive characteristics.

**Table 1: Comparative study for Biology in T.S. and current Biology**

No.	Point	T.S. Biology	Biological Texts
1.	Disquisition doors	40	28
2.	Origin of life	eternal, Mutation	Evolutionary, Cellular
3.	Concepts of living	10	30
4.	Birth	Uterine/Non-uterine	Uterine / Non-uterine in one sensed, Uterine in 2-5 sensed.
5.	Death	Natural/continual 5 types, 17 causes	Clinical death Brain death
6.	Senses, physical	Vary with perceptibility of organs.	4 senses in primary living 5 senses in the rest
7.	Senses, psychical	vary with physical senses.	All psychical senses in cellular theory
8.	Mind, physical	No physical/psychical mind in 1-4 sensed Physical / Psychical mind in 5 - sensed.	Physical mind (Brain) in all living beings except 1- sensed
9.	Mind, psychical-	-	Psychical mind associated with physical mind.
10.	Food	Grains, pulses, Til, etc.	Carbohydrates, proteins, fats, vitamins etc.
11.	Metabolic products	Blood, fat, bones, bone marrow etc.	Cellular regeneration, hormonal secretions DNA - RNA and genes etc.
12.	Transmigration	Yes	Not agreeable
13.	Bodies	5 types	3 types agreeable
14.	Classification	2 (Botany, Zoology)	2
15.	Sub - classification		
	(a) Botany	406	48
	(b) Zoology	450	302 (17) (invertebrate vertebrates)
16.	Nomenclature	Non-universal, Ancient languages	Natural, Based on binomial system

**Table - 2 : Disquisition Doors or Branches of Studies of the living beings.**

	Canonical D.D's	Biological Branches
1.	<b>General studies:</b>	
	1. Definition/naming	-
	2. Numeration	-
	3. Destination/Destinity	-

2. **Physical disquisition doors**

(a) **Anatomy/Tectology/Osteology**

- |                 |           |
|-----------------|-----------|
| 1. Body         | Anatomy   |
| 2. Sense Organs | Tectology |
| 3. Vision       | Osteology |

4. Speech

5. Modification

6. Bone joints.

(b) **Morphology**

7. Shape/Configuration

8. Fineness (min./max.)

9. Colours

Morphology

(c) **Physiology/Endocrinology/Trophology**

10. Intake, Directions

11. Intake, Types

12. Respiration

13. Completions

14. Vitalities

15. Life Span (min./max.)

Physiology  
Endocrinology  
Trophology

(d) **Embryology/Phylogeny/Taxonomy**

16. Sex

17. Birth types

18. Birth places

19. Species

Embryology  
Phylogeny

(e) **Habitat**

20. Directions

21. Location

Habitat

3. **Doors not found in Biology - 17**

**Branches not found in canons - 17**

(f) **Volitional**

22. Mind

23. Instincts

24. Passions

25. Colourations

26. Feeling (pain/pleasure)

27. Faith

28. Activity

Cytology  
Histology  
Ecology  
Parasitology  
Pathology  
Toxicology  
Eugenics

(g) **Spiritual doors**

29. Functional consciousness

30. Ownership

31. Karmic bondage

32. Ownership

33. Extrications

34. Attachment

35. Restraint

36. Spiritual stages

37. Liberatability

38. Cognitions/Conations

Actinobiology  
Aerobiology  
Limnology  
Enzymology  
Genetics  
Paleo-ontology  
Evolution  
Ontogeny  
Euthenics  
Euphenics

It seems Umasvati has involved the five major canonical characteristics<sup>13</sup> of 'Jiva' in terms of (1) Physical forms (bodies, birth, growth) (2) Cognitive (cognition, conation, consciousness, mind, instincts etc.) (3) Volitional form (five types of *Karma*-based or inherent volitions involving passions, colourations etc.) (4) Actional form (Activity and restraint) and (5) Experiential form (Pleasure, pain, heat, coolness, sensitivity, or consciousness) in his two-fold definition :

- (a) Volitional or current psychological
- (b) Capacitative and functional consciousness (*Upayoga, Cetana*)

The commentator, Akalanka, has mentioned a third point in the definition.:

- (c) An entity with vitality (sense-organs, respiration, life-span, strength - all physical attributes).

He has described all these definitions in second and other chapters of *T.S.* However, in the days of spiritualisation, the cognitive differentia became primary, non-alienable or ideal one, others getting secondary positions. But the ideal property cannot be without its substratum and the commentators have, therefore, mentioned dual nature of difference and non-difference between an attribute and attributed, materiality and non-materiality of the living being etc. When one faces logical difficulty on one side, it could be solved from the other side.

On this trend, there could be three types of the definitions of the living beings:

- (a) Purely physical : vitality
- (b) Purely non-physical :  
Consciousness
- (c) Mixed definition : Physical-cum-non-physical (vitality and consciousness).

Umasvati has not mentioned purely physical definitions of the living - though he has 'completion' as a form of physique - making *Karma* and 'vitalities' have been mentioned by Akalanka in 2.13 - 14. However, he has mentioned two definitions as above - the other ones fall into either of these two categories. These seem not to involve non-materiality as consciousness is a faculty of brain and mind. This definition is also in tune with the extant primary canons where the terms 'Jiva' and 'Atma' connote more or less physical synonymity. Thus, the 'Jiva' may be defined as an entity which has two characteristics simultaneously- (1) Vitality and (2) Consciousness (capacitative and functional. Akalanka has proved the existence of the livingness in the body by (1) I-usage (2) doubt (3) reversal (4) exertion or resolution which apply to 'Jiva' (worldly living) also as every point is applicable to physical entities.

The biologists have also characterised the living entity on the basis of its manifold attributes shown in Table 3.

## 2. Jaina Taxonomy and current Taxonomy -

*The T.S. classifies the living beings on three important basis;*

- (1) evolution of sense organs,
- (2) mobility or otherwise and
- (3) mind as shown in Table-3. However, the earlier texts and *Gommatsara*<sup>14</sup> classify them on the basis of about thirteen physical or volitional factors like body, size, completions, libido, embodiment, passion, colouration, consciousness, destinities, gender, besides the three above. The current biology, however, classifies the living beings on not only external similarities of structure, shape etc. (like flowering and non-flowering plants or chordata and non-chordata classes of animals) but on the basis of internal compositional similarity also (like genetic relationship). But one thing is clear that *T.S.* and current biology-both have two main classes of the living beings :

- (1) Plants, non-mobilies and
- (2) *animals (mobiles, sub-humans and humans). However, Jainas will tell that human beings (hellish and celestials also) are not animals. They form a separate class in the mammalian category of biologists. Moreover, the biologists do not classify living beings on volitional or other bases as in canons.*

Table 4 indicates the almost all details under the four heads have better numeration in Jainology but the fineness seems to be better in current biology. Moreover, there is no direct basis of senses of mind in biological classification, though they become part of the structural systems of any living being. The basis of volitions or psychology is also not there in Biology but this forms the most important part of *Jainology* as it is the purity of the psyche of the living beings the leads to happiness.

## 3. Classification on the basis of senses

The *T.S.*, classifies the living beings on the basis of evolution of cognitive senses and sense-organs. *It is worthy of note that the senses of the living beings mentioned in T.S. seem to be physical only and they may represent a pre-microscopic age description.* The *T.S.* mentions five classes of 1-sensed or non-mobile beings and one class each of 2,3,4 and five sensed beings, mentioning one representative of each class. Other members of the same class are not mentioned there though the *Svetambara* canons,<sup>15</sup> *Mulacara*<sup>16</sup> and other texts have listed them.

Table 5 gives the *T.S.* description of senses and other organs among the various classes along with current biological information. It is clear that *T.S.* sense - based description represents eye-perceptible senses which goes contrary to biologically and microscopically observed senses. The botany and zoology texts.

**Table 3 : Scientific and Canonical Concepts about the Living.**

S.No.	Scientific Concepts	Canonical concepts	Agamic terms
<b>A. Characteristics</b>			
1.	Food, nutrition, metabolism, secretions	food	-
2.	Cellular structure	body, strength	mattergic
3.	Body organisation	Mattergic	multi-pradeshi
4.	Reproduction	Sex	Yoni
5.	Birth	Sex	Jantu
6.	Death	life span	Jiva
7.	Movements	senses, strength	Jagat, Atma etc.
8.	Respiration	respiration	Prani
9.	Excretion	respiration	Prani
10.	Irritability/consciousness	mind, mental strength, fear	Vijna, Veda, Cetna
11.	Adaptation	-	-
12.	Growth	-	-
13.	Life cycle	-	-
14.	Shape/form	-	-
15.	Locomotion/circulation	-	-
<b>B. Origin of Life</b>			
16.	Evolutionary, Mutation not possible	eternal, mutation possible	-
<b>C. Characteristics</b>			
17.	Irritability	capacitative and fanctional	cetna
<b>D. Classification</b>			
18.	Botany, Zoology	mobile, non-mobile Minded, non-minded	-
19.	Basis of classification : Structural similarity : (a) plants (b) animals	32 (senses, mind etc.), 9	-
20.	Classes : (a) plants 9 (b) animals 17	1 - 570 40	2 - -
21.	<b>F. Life cycle:</b> (a) Birth 2	3	-
22.	Life cycle : (b) Growth	linear / vertical	-
23.	Life cycle : (c) Birth places - not counted	9,8,4 lacs of species	-
24.	Shape of birth places 5	3	-



25.	Death Types 2	5, 17 causes	-
26.	Life spans-not mentioned	detailed mention in T.S.	-
	<b>G. Sex and heredity</b> All three sexes	Neuter - 1-4 sensed 3 Sexes - 5- sensed	-
27.	Sex basis of progeny (a) specific chromosomal Combination, XX or XY (b) genes, secretions, stimulations, volitions etc.	excess of semen/germs stray mention of some factors	-
28.	H. Volitional Character little description	five-fold volitions with their 53 kinds, karmic/inherent	-

**Table 4 : Jaina Taxonomy and Biological Taxonomy**

S.N.	Classification	Canonical		Scientific	
		<i>Plants</i>	<i>Animals</i>	<i>Plants</i>	<i>Animals</i>
1.	Basis	32	9	4	2
2.	No. of major classes	406	48	202	13
3.	No. of types	350+100	302	-	-
4.	No. of types of human beings	←————— 742-845 —————→			

**Table 5 : Senses of different classes of beings**

S.N.	Living beings	Canonical			Biological		
		<i>Senses</i>	<i>Mind</i>	<i>Gender</i>	<i>Senses</i>	<i>Mind</i>	<i>Gender</i>
1.	Earth, Fire, Air, Water	1	-	H	-	-	-
2.	Plants	1	-	H (Dormant)	1,4	-	M/F/H
3.	Worms/insects	2	-	H	5	Yes	bi-/uni sex
4.	Ants	3	-	H	5	Yes	Uni sex
5.	Bees	4	-	H	5	Yes	Uni sex
6.	Human beings (including many animals)	5	Yes	M/F/H	5	Yes	Uni sex, M/F/H

can be consulted on the point. Though it is said that every living being may possess all the senses psychically but they do not perform their functions because of physical sense organs. However, *Panca Sangraha* 1.69<sup>17</sup> indicates that the onesensed plants to perform the functions of all the senses with their one sense. This is in tune with the researches of J.C. Bose and Haldane. There is one superattainment of sensibility of all senses through one sense. It leads to the fact that whatever be the number of eye-perceptible senses, all the psychical senses could be there in the living. The work of the above scientists supports the cellular theory of the living which has sensibility towards all senses directly or indirectly. Thus, current biologists would tell almost all the physical and psychical five sense sensibility in all types of living beings except earth, fire, water and air which they do not presume as living. Per chance, they are called living in *T.S.* and canons because of substratum-substrate relationship.

#### 4. Gender or Sex organs

The 1-4-sensed living beings have been called hermaphrodites by gender in *T.S.* 2.50. However, Table 5 indicates that the livingness developed with no sex-signs at primary level, it developed to bi-sex and then uni-sex characteristics later with two-sensed beings. Even sex-characteristics are observed in plant kingdom also.<sup>18</sup> Thus, hermaphroditism is only a partial statement. These species could be female and males also by sex in addition to their hermaphrodite gender. Thus, 1-4 sensed beings may be mono-sex or bi-sex by gender. The bi-sex nature could have two

varieties - one having reproductive capacity and other having no capacity of reproduction. The biologists agree to both these types in contrast with the canons. However, the five sensed beings are said to be having all the three genders or sex organs physically and psychically.

#### 5. Mind : Physical and Psychical

The 1-4 sensed beings (as well as some 5-sensed beings) are also said to have no mind. In fact, the term mind requires proper definition. It is said to be of two kinds - physical and psychical. The physical mind could be equated with the brain of living beings while the psychical mind could be the functional part of the brain as it cannot work without physical mind. The biologists point out the existence of physical brain in the living beings with two or more senses. Lodha mentions that even plants show some brain functions.<sup>19</sup> Thus, physical mind exists in almost all living beings. How, otherwise, they could go for desirable and not for undesirable. The psychical mind is associated with the physical one, they should have also to be presumed to possess this mind also in dormant or developed form. It is also said to be mattergic because of the *Karmic* destruction-cum-subsidence in *Rajvartika* 5.19. There are some functions of mind - thinking, memory, learning, desire for food etc. Quite a number of them are found in all the living beings if not wholly but partially. That is why, biologists have observed physical mind (Brain) in almost all living beings from 2-sensed onwards at least. The psychical mind should follow it. Thus, there is some point for reconsideration of mindedness of all-sensed beings.

## 6. Bodies of the Living Beings

Ethymologically, a body is defined as that which is formed due to fruition of physique - making karma which undergoes shattering. It is made up of infinite mattergic particles. It is the instrument of senses, activity and enjoyment. It could be material and it can also be living if it is an embodiment of the living. Every living being is, in fact, found embodied in the world. The fourteen aphorisms 2.36-49 describe about the five types of bodies and their characteristics in which embodiments are observed. These move from gross form to fine form, eye-perceptible to invisible forms. Table 6 gives their details. These embodiments are produced by uterine or non-uterine processes.

The biologists also agree with different bodies of the living beings depending on their class. However, they have described the various systems and organisation under

the observable body surface, (i.e. skin etc.). *It seems that T.S. term body is a generic term covering all the current scientific descriptions, of course, which are not found there.* The finer bodies of luminous and *karmanic* type are generally not termed as bodies by biologists, but they are the forms of metabolic products like caloric energy produced therein to run the body and cells, secretions and genes etc. which are produced during intake metabolism to augur different functions properly. If they are not there, there will be difficulty. Some Jain authors have equated luminous body with caloric or electromagnetic energy in the body, but *karmanic* body is said to be finer than cells etc. However, if *karma* is taken as equivalent to these fine parts in the body, it may sound more scientific to explain many phenomena properly. The scientists do not seem to agree with protean and projectable body but they also seem unable to explain many observed phenomena based on them.

**Table 6 : Details about five bodies**

S.No.	Body	Form	Space points	Ownership	Birth-base
1.	Gross	Gross	Infinite	All living beings	Uterine/Non-uterine
2.	Protean (Transformable)	Fine	$A_s$	(Men, animals) Hellish, Celestials	Special bed birth
3.	Projectable	Finer	$A_s, A_s$	Sixth stagers	Uterine
4.	Luminous	Finer	$N, \infty,$ $(1/\infty L)$	All living beings	Uterine/Non-uterine
5.	<i>Karmanic</i>	Finest	$N, (\infty),$ $1/\infty^2 L$	All living beings	Uterine/Non-uterine

Where  $N$  = Non-liberatable;  $L$  = Liberated beings;  $A_s$  = innumerable.

## 7. Life Cycle of Living Beings :

### (a) Birth.

Every living being has a life cycle of birth, growth and death. The birth is defined as the first appearance through conception (invisible in general) or delivery of a new living embodiment in the world. The conceiving factors are not given in *T.S.* though they are given in *Sthananga* (Page 576-578, 628-29). The *T.S.* 2.31 mentions three types of birth through which new living species of different types are born (1) Non-uterine or spontaneous (2) Uterine (incubatory, placental, non-placental) and (3) Special bed. We do not have any concern here with the third type as it relates to the upper and lower world and we are dealing with middle world only. The remaining two

types of birth are important here. Table -7 indicates the types of birth which different types of living being may have as per *T.S.* and biological science. *T.S.* mentions a-sexual birth for 1-4 sensed ones and sexual birth for the 5-sensed ones. In contrast, the biologist have three types of birth mechanisms; (1) Vegetative (2) a-sexual and (3) Sexual. Many plants have vegetative reproduction but most have indirect sexual reproduction. Similarly the 2-4 sensed beings also do have sexual reproduction. It may be indirect as there is no fixed place for birth and most of the times, no internal receptors for sperms. Thus, external sexual birth takes place in many cases. Of course, there is uterine birth for 5-sensed beings in *T.S.* and biology.

**Table 7 : Different types of Birth for Living Beings.**

S.No.	Birth	T.S.	Biological Science
1.	Uterine birth (Direct sexual)	5-sensed (men, animals)	5-sensed (men, animals) 1-4 sensed have also indirect sexual birth.
2.	Spontaneous or a- sexual birth	1-4 sensed, some 5-sensed beings	Very few categories of primary living beings.

The *Digambara* Commentators of *T.S.* have defined the term '*Sammurchima*' as production of a living species from critical collection of surrounding material bodies when spontaneous generation takes place. This definition suggests that the Jains could accept the Carvaka or Aristotelean theory of materialistic origin of primary or higher life which goes against their concept of living begets living. To alleviate this, the term

should be redefined. The *Sthanangvrtti* (P.108) has defined it in terms of non-uterine birth which may also involve vegetative reproduction. It is because, the prefix 'a' could have two meanings: (1) Complete negation of sex as in vegetative reproduction or (2) Indirect (not-perceptible to eye) sex as in many cases of 1-4 sensed beings as is pointed out in *Kalp sutra* in the form of oviparous uterine births of honey-bees,

spiders and ants besides reptiles.<sup>20</sup> There is no mention of this type of explanation in *T.S.* commentaries by *Digambaras*. If '*Sammurchina*' is defined as a-sexual with two meanings of the prefix 'a', a better scientificity could be attached to the birth process of 1-4 sensed ones. All the Indian philosophies have devised theories for the livingness produced through non-living entities by assuming seminal fluid or sex-cells as non-living which does not seem to be correct in current days.

### (b) Growth :

The *T.S.* does not have details about growth. But other texts like *Dhavalā-6*,

*Gommatasara* and *Tandulveyaliya* give some details about the growth process of plants and human beings. They also give growth of foetus upto delivery. This has been omitted by *T.S.* as it does not serve any spiritual purpose. It is said that plants grow mostly vertically by assimilating sap from soil, water, air, fire and even other plants through their roots and shoots to build up their body parts. Similarly, the human beings grow by assimilating and metabolising food materials into blood, flesh, fat, bones, bone marrow and semen. During growth, it passes through ten stages of growth described in decadic years in two ways as below (Table 8).

**Table 8 : Growth stages of human beings**

S.No.	Decad	Growth-1	Growth-2
1.	0-10 yrs.	Child age	Sacraments and celebrations
2.	11-20 yrs.	Sportive age	Age of education
3.	21-30	Slow growth	Age of enjoyment
4.	31-40	Youth or strength	Age of earning experience
5.	41-50	Family breeding	Age of weakening eye sight
6.	51-60	Adulthood	Age of weakening strength
7.	61-70	Old age	Age of de-sexing
8.	71-80	Contracting stage	Age of weakening knowledge
9.	81-90	De-sexed stage	Age of bending body
10.	91-100	Sorrowful stage	Age of departure/death

The Jaina seers could think of an average worldly life of 100 years. It is clear that these are external observations and no factors responsible for different stages have been given. The biologists have tried to do that. They are also trying to lengthen the life by chilling, undereating, medication, meditation and telomer control bucklecter (cluster) etc.

in order to move towards immortality.

### (c) Death

Death is the natural process of termination of functioning of ten vitalities of cognitive senses, respiration, life-span *karma* and strength. *Akalanka* in his commentary on 7.22 points out that death

has two varieties - (1) This- worldly death (2) Continual death. This - worldly death means destruction of vitalities while continual death seems to mean everlasting process of cellular destruction and regeneration or continual loss of particles of life span *karma*. There may be natural death, there may be accidental death. There may be fool's death, there may be prudent's death or there may be holy death. The texts describe 17 causes of death including physical and psychical (fear, sorrow, pains etc). and demigod ones. The T.S. 2.53 mentions that some class of excellent persons may not have accidental death and that death may be delayed by *Ayurvedic* treatments.

The death process is also described by medical biologists. They also tell us it is a natural phenomena caused due to internal or external physical factors like accidents, failure of body parts, suicide etc. and many psychological factors as indicated in Canons. However, they do not approve of demonical death, it being taken as a form of psychological death. They point out that at normal death, there are certain changes like (1) Stoppage of cellular regeneration processes (2) Zeroing of bio-electrical charges of the living beings so that circulatory systems stop functioning and (3) Stoppage of heart beat etc., as given in the Table 9 below.

**Table 9 : Death in Canons and Biology**

S. No.	Details	Canonical	Biological
1.	Characteristics	Destruction of vitalities	(1) Stoppage of cellular regeneration (2) Zeroing of bio-electric charges. (3) Failure of body parts etc.
2.	Types	5; Natural, accidental, demonical continual, holy	Clinical death, brain death
3.	<i>Causes :</i>		
	Physical	14	10
	Psychological	2	2
	Demonical	1	-
	Euthanasia	Not mentioned	Rarely permitted
4.	Death delay	Medication, Meditation	Medication, Meditation, Chilling, Under-eating, Telomer control, reducing neurological defects etc.
5.	Full span of life	Excellent-bodied, Long- lived	No restriction
6.	Transmigration	Yes	Can't say

While the canonical concepts of continuual death represents quite a fine observation, other forms of death are factors of death rather than forms of death. In contrast, medical biologists have indicated two forms of deaths-in one heart beat, pulse beat stop functioning while the brain functions for some time, in the other the brain also stops functioning - thus all functioning mechanisms stop working. Secondly, man has always been thinking of immortality. The biologists have been successful in lengthening the life of many creatures even ten-fold. They have also been successful in increasing the longevity of life by many other physical methods shown in Table 9. The canons have a restricted view about this concept because of limitations due to life-span *karma*. Of course, austerites and meditators may have much longer life. However, it seems the biologists are moving towards overcoming control of life-span *karma* for the process of longevity.

#### (d) Transmigratory Phenomena

The T.S. 2.25-30 describe the after-death phenomenon. In fact, these aphorisms should have been placed in the end of the chapter two after describing irreducibility of life-span. These six aphorisms point out that the living beings have transmigratory motions for 1-3 (or four) *Samayas* to acquire new state of birth after their this - worldly death.

The T.S. 2 is mostly concerned with the physical aspects of living-mind, senses, bodies, birth, gender and vitalities keeping their psychic aspects underground. Nearly 70% (37/53) of this chapter deals with these aspects. The volitions are generally psycho-physical. The above aphorisms seem to indicate a new aspect of *Jiva* which seems more than physical adding to the psychic phenomena. The *Acarya* was not only reformist but a traditionalist also. He has reformed/ reframed many concepts without much deviation from tradition. He has followed the same practice through these aphorisms to maintain that though the *Jiva* is mostly physical but it is associated with some specific non-physical phenomenon too. The transmigration process exemplifies it. In fact, this concept is based on two religious postulates:

#### (1) The concept of eternal non-material soul

*The living body consists of at least three types of bodies -*

- (1) Gross, eye-perceptible bodies
- (2) Fine body (microscope-perceptible)
- (3) Superfine *Karmic* body.

Besides it has something else. At death, this something associated with these superfine bodies moves out of the gross body. What is this something? The religionists call it soul - the *karma* - free eternal non-material entity. Its nature is

not subject to scientific investigations, only it is accepted on the basis of its functioning-consciousness etc. Many scholars have discussed the indirect acceptance of this concept by the scientific community.<sup>21</sup> However, *imaginative concepts differ from realistic ones*. The equivalence of soul, mind and consciousness raises some points to call it as a fine force. At death, the finer bodies associated with this force fly away for next place of birth, through transmigratory motion.

## (2) The Concept of Rebirth and Salvation

The pure soul does not have rebirth. It is called salvated or *karmically* freed. However, the worldly being is always *karmically* associated with a strong desire for being *karmically* freed. He has to wander in the world to a cycle of spiritual upgradation - degradation until he becomes free of rebirth. Thus, the concept of rebirth is meant only for worldly beings. The forceful finder bodies of the dead worldly being take rebirth.

Both these concepts seem to be more of psychological origin like the concept of God which lead men to be always optimistic for better life, efforts and brotherhood. On the whole, the transmigratory motion is beyond the scope of science at this time. The para-psychologists are not unanimous on both of these concepts. They feel it a question of faith and self-experience.

## 8. Volitional or Psychic attributes of the living

It has been pointed out that *T.S.* and other Jaina Texts refer to more than a dozen volitional or psychic attributes of the living beings such as (i) cognitions (ii) conations (iii) faith (iv) colourations (v) passions (vi) restraints (vii) spiritual stages (viii) feelings / experiencing (ix) attachment and aversion (x) instincts (xi) mind (xii) *karmic* bondage and liberatability. Most of these attributes are the subject of psychology of today. They are subject for a new paper. However, it must be indicated that these subjects are dealt with in psychology in a more detailed and finer way than our texts. The reader is referred to the English translation of *Rajvartika* chapter 2 for details about these attributes.

## 9. Conclusion

The analysis and discussions above indicate that the living kingdom between the age of *T.S.* and tenth century have very few points consistent with the current biology. Moreover, many more disquisitions doors (17) and points of definition (11) about the living have been added over the period by biologists which represent finer peep by them. The taxonomy has also gone deeper and has universal binomial nomenclature. There seems to be a large amount of discrepancy in the *T.S.* descriptions about the (1) type of bodies (2) number of senses (3)



existence of mind (4-5) types of birth and gender (6) details of growth and (7) intricacies of death in comparison to biological ones. The question of physical and psychical nature of many descriptions is also intriguing - requiring clarification. The cellular theory does not agree with transmigrating and eternalism of the living though many cases in support are reported without any confirmed opinion. The volitional factors are a field of psychology, hence not detailed in biology.

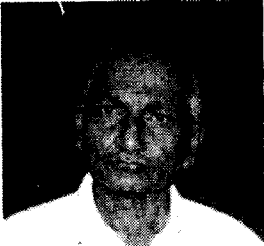
In summary, it seems clear that T.S. descriptions are pre-microscopic and form milestones in the history of development of biological science. In many cases, the biology has added finer points in details alongwith mechanisms-not found in T.S. or its commentaries. In cases of physical

descriptions, discrepancies regarding senses, mind, birth and gender etc. are observed requiring modifications for their scientificity. Despite all these points, it is to the credit of Jaina seers that they could look into the various gross aspects of the living on the basis of which new and finer biology has developed despite their main theme of spiritualism. Secondly, looking at the newer and finer facts about the living is also an indicator of the fact that ancient texts should not be taken to have tri-timal value as far as physical or biological phenomena are concerned. Their contents should be considered with historical perspective. However, their ethical, moral or happiness related contents will always have an all-time value.

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