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Towards the Systematic Reframing of Incomprehension through Metaphor

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Annex A of *Living with Incomprehension and Uncertainty: re-cognizing the varieties of non-comprehension and misunderstanding* (2012)

Introduction

It is curious the manner in which "incomprehension" is effectively excluded as a factor in considering the challenges of society and its future governance. It is even more curious that instances of incomprehension are naively treated as the fault of the other.

Incomprehensible unknowns: A degree of recognition is however accorded to "comprehension" in that it is from those who supposedly comprehend that proposals are engendered for governance from centres of excellence. There is a sense in which it is assumed that those in positions of governance, in receipt of such insights, are themselves characterized by appropriate comprehension. The questionable nature of such assumptions has been fruitfully highlighted by the notorious "poem" of [Donald Rumsfeld](#) regarding the [unknown unknowns](#) -- as discussed separately (*Unknown Undoing: challenge of incomprehensibility of systemic neglect*, 2008):

[T]here are known knowns; there are things we know we know.

We also know there are known unknowns; that is to say we know there are some things we do not know.

But there are also unknown unknowns -- there are things we do not know we don't know.

Mapping (in)comprehension: There is then a case for recognizing a **global system characterized by zones of relative comprehension and incomprehension**. Using a meteorological metaphor (as indicated in the [main paper](#)) -- whether "temperature" and/or "pressure" is used as a template -- this offers a way of recognizing the potential variety of comprehension conditions within a global knowledge society. Such a mapping avoids the easy assumptions of those who claim to "know" and "comprehend" -- however incomprehensible (and violent) their disagreements with others sharing similar assumptions regarding the respective "truths" they each so adequately comprehend. The mapping also gives space to those who are variously obliged to recognize that there is much they themselves do not comprehend -- especially to the extent that they have to deal with this experience of incomprehension on a daily basis.

A mapping of this kind potentially offers a more fruitful context in which to reflect on the possibilities of collective intelligence and the emergence of coherent comprehension of situations (*Enabling Collective Intelligence in Response to Emergencies*, 2010; *Massive Elicitation of Psychosocial Energy: Requisite technology for collective enlightenment*, 2011). It also enables clarification of issues associated with the constraint on adequacy of collective response, as discussed above. Given the considerable development of meteorological simulations and the ongoing development of psychosocial simulations enhanced by data mining ([FuturICT Living Earth Platform](#); [Synthetic Environment for Analysis and Simulations](#), [Sentient World Simulation](#)), simulations of "(in)comprehension" dynamics should be relatively straightforward.

Astrophysical metaphor

The question is not however to fixate on a particular metaphor for such mapping, rather it is a question of enabling a continuing search

for richer metaphors. It is in this sense that **fundamental physics and cosmology offer ever-richer patterns of systemically ordered thinking as a basis for higher orders of coherence**. How then might "incomprehension" be associated with such patterns? Exploring any correspondence is advocated here in the light of the cognitive possibilities of systemic isomorphism and "technomimicry" as previously discussed (*Technomimicry as analogous to biomimicry*, 2011).

Previous speculation has considered the use of astrophysics as a way of understanding the distribution of variety in a global knowledge society (*Towards an Astrophysics of the Knowledge Universe? from astronautics to noonautics*, 2006; *Towards an Astrophysics of the Knowledge Universe? from astronautics to noonautics*, 2006). A valuable characteristic of the astrophysical pattern is that it is a much-appreciated trigger for the imagination -- as is evident by movie-enhanced speculation on space travel and extraterrestrials, notably characterized by evocative mottos such as the following:

- *Battlestar Galactica*: ... the last Battlestar, Galactica, leads a ragtag, fugitive fleet, on a lonely quest -- for a shining planet known as Earth.
- *Star Trek*: ...to explore strange new worlds, to seek out new life and new civilizations, to boldly go where no man has gone before.
- *Star Wars*: A long time ago in a galaxy far, far away....

"Worlds" and "worldviews" : The possibility can be given greater focus and coherence by specifically embodying a sense of "comprehension" and "incomprehension". The key to this is the sense in which people readily use the phrase "my world", "their world", or "world view" -- a sense of a "cognitive world" held to be comprehensible (cf. *Identity, Possessive World-making and their Transformation Dynamics*, 2012). There is necessarily little provision for "incomprehension" in such a world. Those functioning according to other norms are already readily described as "living on another planet".

Using the understanding of the "space" of astrophysics, there is then clearly the possibility of many "worlds", whether of individuals, groups, cultures, or belief systems. These can then be understood as associated with bodies in "communication space" -- in the mapping. The sense in which a belief system is associated with such a body, then enables further insight into readily recognized characteristics of any such world.

Most particularly this offers a way of understanding the sense of being "right" and of attracting information into the frame of reference that "world" provides. There is then a degree of consistency to recognizing a form of "gravity" in relation to each such "world" -- with respect to which those on that world are naturally both (up)"right", righteous and unquestionably "right". Such "gravity" even offers a natural correspondence to the "arrogance" by which the perspective of that "world" is typically characterized from other worldviews -- the manner in which communication space is distorted to privilege that perspective. A world understood in this way also offers a form of closure -- a finite but unbounded sense of understanding. Of particular interest is the manner in which an alternative worldview can then be assigned unilaterally to another "world" -- as would be expected of the constellation mapping process from different parts of the universe.

Systemic mapping: There is then the delightful opportunity to consider how belief systems, such as disciplines or religions, might be variously mapped onto such a universe:

- as a planet, possibly with moons -- to distinguish:
 - a religion and its satellite denominations and schismatic sects
 - a discipline and its sub-disciplines
- as a solar system
 - with a sun as the religion, and the planets for the satellite denominations and schismatic sects
 - with a sun as the discipline and the planets for its sub-disciplines
- as a larger complex (**local interstellar cloud, galaxy, galactic group, galactic clusters, universe**)
 - with a sun as the religion, and the planets for the satellite denominations and schismatic sects ***
 - with a sun as the discipline and the planets for its sub-disciplines

Stable patterns of meaning, from a particular worldview, are then helpfully held by "constellations" of distant places -- "scattered worlds" -- so distant and stable as to be minimally disruptive. Their meaning and labelling being the uncontested right of the viewing world.

Specific cases: Distributing perspectives arising from coherent "comprehension" into such a mapping then enables consideration of how "incomprehension" and "nonsense" might be usefully represented in that framework -- perhaps triggered by astronomical features raising imaginative questions as to what they might usefully represent:

- how might worldviews be held by such a mapping in the case of:
 - Alan Sokal and Richard Dawkins, such as to enable those sympathetic to his arguments to dissociate themselves appropriately from "nonsense"
 - the religious critics of secular atheism, especially given their recognition of anathema
- how might those upholding such "nonsense" feel themselves to be positioned appropriately:
 - as a moon, a planet, an asteroid belt -- or even a comet?
 - or as a different galaxy or universe?
- does the disposition frame the possibility of:
 - a "war of the worlds", or the various scenarios long explored by science fiction?
 - "inter-planetary" colonization to propagate a particular worldview -- cognitive "terra-forming"?
 - invasion by extra-terrestrials -- feared as an "anti-science" or "anti-faith" invasion
 - fatal impact of an "Earth-crossing" asteroid
 - the legitimacy of search for "life" on distant planets, and communication with extraterrestrials

Paradoxical templates

Multidimensional mappings: Mapped in this obvious way "incomprehension" is made merely a matter of distance. Astrophysics has however been obliged to develop frameworks of far greater complexity to provide a "comprehensive" framework necessary to a coherent understanding of the universe and the implications of its "infinite" size. Their nature is the subject of intense academic activity and imaginative science writing. It could be argued that the cognitive process of doing so constitutes **an anticipation of a cognitive need of humanity for higher orders of more coherent explanation. Arguably it is the multidimensionality of such frameworks which is required to embody the radically problematic experience of "incomprehension"** -- for which, only too evidently, no comprehensive framework has been engendered. In this sense, the question is whether "incomprehension" is more fruitfully mapped by the sense in which differences:

- **between** "science" and "religion" are best understood as characterized by different "universes", following from developing insights into the possibility of a [multiverse](#)
- **within** "worldviews":
 - "science", as between the natural sciences and the social sciences, merit consideration in this light
 - "religion", as between the Abrahamic religions, merit consideration in this light

Paradoxical templates: There is then an intuitive consistency to the sense in which a "universe" is best understood as a coherent "way of knowing". This framing then invites reflection on the cognitive implication of humanity's need to engender adequate explanations of its universe as being characterized by paradoxical phenomena -- and as such relatively "incomprehensible" and beyond normal ken -- as for example:

- **"dark matter"**: This is a currently unknown type of matter hypothesized to account for a large part of the total mass in the universe. From the arguments above, its supposed characteristics would appear to offer a potentially valuable way of holding insight into the nature of "incomprehension" -- and of thinking about it. Dark matter neither emits nor absorbs light, and so cannot be directly detected -- only inferred. This could well be considered a characteristic of "incomprehension" when, arguably, only the extent of "comprehension" can be effectively detected. That dark matter is estimated to constitute 83% of the matter in the universe and 23% of the mass-energy is also potentially consistent with the status of "incomprehension" in the universe of knowledge of a global knowledge society. This relates to issues regarding the "unsayable" and the "unsaid" in psychosocial systems (*Global Strategic Implications of the Unsaid: from myth-making towards a wisdom society*, 2003).
- **"blackholes"**: This is a region of [spacetime](#) from which nothing, not even light, can escape. Metaphorical use is occasionally made of "blackhole", notably with respect to a disastrous financial condition of major undertakings. It may also be used with reference to a personal sense of depression, and potentially to any associated sense of "incomprehension". The formation of a blackhole is predicted in astrophysics by the theory of general relativity as being associated with a sufficiently compact mass capable of deforming spacetime. Given the psychosocial significance attributed above to "world", when sufficiently "compact" it might indeed be understood as deforming communication space to constitute a form of "blackhole". For astrophysics, a black hole is surrounded by a so-called [event horizon](#) that marks a point of no return. It reflects and emits nothing. This offers a useful way of exploring certain zones of "incomprehension" -- into which no "light" can enter and from which none can emerge.
- **"nothing"**: Consideration could be given to associating "incomprehension" and/or "ignorance" with the new insights of physics into "nothing" ([Lawrence M. Krauss. *A Universe from Nothing: why there is something rather than nothing*](#), 2012). Consistent with this possibility is the occasional reference to the comprehension capacity of a particular individual as being comparable to the emptiness of a vacuum. Physics now holds the view that the implication of emptiness is misleading since the apparent "nothingness" of empty space has properties and a measurable existence as part of the [quantum-mechanical vacuum](#). Where there is supposedly empty space there are constant quantum fluctuations with particles continually popping into and out of existence. This suggests a more fruitful approach to comprehension of the "nothing" with which many are now "incomprehensibly" faced in the present or in considering their future, as separately discussed (*Configuring the Varieties of Experiential Nothingness*, 2012).
*** antimatter

Potential implications for (in)comprehension: Accompanying such speculations, with which various degrees of credibility are associated (in the light of evidence meaningful to the few), there are other insights of relevance to richer ways of thinking about (in)comprehension:

- **"light"**: The role of light is fundamental to astrophysics and especially to the theory of relativity. Appropriate to this argument, theology and spiritual disciplines have made extensive use of the metaphor of "light". With respect to (in)comprehension, it figures notably in the various uses of enlightenment, notably "[spiritual enlightenment](#)". Curiously the insights from the theory of relativity with respect to communication between frames of reference with different trajectories have not however been explored as a means of comprehending that between different worldviews "moving" in their different ways. This would follow from a mapping of such worldviews onto "bodies" in communication space. How is "light" constrained in its movement between them and what might its apparent paradoxes signify for incomprehension? Especially intriguing is the recognized role of "endarkenment" in spiritual development, as separately discussed (*Enlightening Endarkenment: selected web resources on the challenge to comprehension*, 2005).
- **"wormholes"**: These are the metaphor of choice for teaching the theory of general relativity. As a hypothetical topological feature of spacetime, for which there is no observational evidence, they predict the possibility of a "shortcut" through spacetime (Marcus Chown, *Intergalactic subway: all aboard the wormhole express*, *New Scientist*, 12 March 2012). Use of the comprehensible term "hole" inhibits recognition of the cognitive challenge of their multidimensional nature -- essentially unvisualisable and to that extent

incomprehensible. As a challenge in their own right for ontology and epistemology, even "holes", in bounding "nothingness", invite richer insight (Roberto Casati and Achille C. Varzi, *Holes and Other Superficialities*, 1994; M. Bertamini and C. J. Croucher, *The Shape of Holes. Cognition*, 2003). As a metaphor, what then might a wormhole offer as an incomprehensible "shortcut" through communication space, in the light of the forms of (in)comprehension by which this is characterized -- and the probability that the nature of that shortcut would necessarily be incomprehensible within the framework of conventional experience? As noted by Chown in the special issue of the *New Scientist* (12 March 2012): *A civilisation more advanced than ours may already be riding an extraterrestrial subway system*. However it is the cognitive correspondence to such wormhole travelling that merits consideration as a characteristic of such a civilisation.

- **"shape of the universe"**: This is a matter of continuing debate for astrophysicists, variously favouring an infinitely flat form, a **dodecahedral** form, and that of a **horn** -- to be understood as having a dimensionality greater than three. Debate on such patterns, invites reflection on the "shape" of the "universe of knowledge" which may eventually eventually lend itself to comprehension. This notably has implications for any future organization of knowledge capable of minimizing incomprehension -- namely the form underlying the possibility of a future "*Google Universe*", the knowledge analogue to "*Google Earth*".
- **Interplanetary Transport Network**: The implications of this are discussed separately (*From an "Interplanetary Transport Network" to an "Inter-other Transition Network"?* 2012) as a simplification of the conceptualization and design of space missions (*Interplanetary Superhighway Makes Space Travel Simpler*, Jet Propulsion Laboratory, 17 July 2002).
- **"many-worlds interpretation"**: is an interpretation of quantum mechanics that asserts the objective reality of the universal wave function, but denies the actuality of wave function collapse. Many-worlds implies that all possible alternative histories and futures are real, each representing an actual "world" (or "universe").
- **"metaverse"**: understood as the collective online shared space, created by the convergence of virtually enhanced physical reality and physically persistent virtual space, including the sum of all **virtual worlds**, **augmented reality**, and the internet.

Paradoxical self-reflexivity?

There is a curious sense in which the admirably creative explorations of physics are a form of cognitive mirror of requisite complexity to enable appropriate engagement with the challenges of a global knowledge-based civilization. This possibility can be variously explored, as noted separately with respect to **technomimicry** (*Engendering a Psychopter through Biomimicry and Technomimicry*, 2011). As previously discussed, it is therefore interesting to explore how the standard model of particle physics -- the epitome of emergent closure -- might be used as a template through which to suggest a cognitive modality embodying both openness and closure (*Metaphorical Insights from the Patterns of Academic Disciplines Learning from the Standard Model of Physics?* 2012). Is there scope for "new thinking" on the "standard model" of human cognition, as previously argued (*Beyond the Standard Model of Universal Awareness*, 2010)?

Can it be fruitfully suggested that science, especially physics, is a cultural product suffering from the delusion that it is not? This might follow from the controversial thesis of **Rupert Sheldrake** (*The Science Delusion: freeing the spirit of enquiry*, 2012).

To what extent can the reliance of fundamental physics on models of reality based on 10 (or more) "dimensions" be understood as essentially "incomprehensible"? On the other hand, how to reconcile such potential incomprehensibility with the argument of mathematician Ron Atkin (*Multidimensional Man; can man live in 3-dimensional space?* 1981), as separately discussed (*Social organization determined by incommunicability of insights*, 1995). Given the constraints on comprehension of 4 or more dimensions, are humans effectively constrained to live within an "incomprehensible" reality?

It is curious that the complexity of reality should currently be represented by physicists through "**string theory**", whilst the complexity of a knowledge-based society is "handled" through "**threaded discussions**" -- a remarkably similar metaphor. Unfortunately little effort has been made to order the variety of discussions through any coherent theory, despite speculation on the possibility of "interweaving" threads (*Interweaving Thematic Threads and Learning Pathways*, 2010).

Within this context, is fundamental physics to be caricatured as a "blackhole" of incomprehensibility to others, struggling desperately to make itself visible in a language which it deprecates (as "nonsensical")? More generally, is this the dilemma for any specialized mode of insight -- especially when the nature of its "comprehensive" coherence is the object of continuing development -- thereby rendering it ever more incomprehensible?

Is it in this sense that "incomprehension" is readily to be framed as "nonsense" -- especially when the "perspective" from which coherent comprehension is possible is itself highly vulnerable to incomprehension? It is curious that academia shares with freemasonry the metaphorical notion of "degree" as an indication of what is effectively a level of comprehension. As an example, the **Scottish Rite**, of freemasonry, distinguishes degrees numbering up to 33 (*Varieties of Rebirth: distinguishing ways of being born again*, 2004). Is the need for such distinctions to be considered in any way comparable to that for the 26 spacetime dimensions required to make a consistent quantum theory? A string theory living in a spacetime of the so-called "critical dimension", must have 26 spacetime dimensions for the **bosonic string** and 10 for the **superstring**. For whom are the cognitive implications comprehensible enabling a coherent sense of order?

How are the following formulations by physicists to be reconciled:

- **Stephen Hawking** (*The Dreams That Stuff Is Made Of: the most astounding papers of quantum physics -- and how they shook the scientific world*, 2011)
- **Lawrence M. Krauss** (*A Universe from Nothing: why there is something rather than nothing*, 2012)

- Alan Sokal and Jean Bricmont (*Fashionable Nonsense: postmodern intellectuals' abuse of science*, 1999)
- Peter Woit (*Not Even Wrong: The Failure of String Theory and the Search for Unity in Physical Law*, 2007)

Especially intriguing in these titles is the interplay between "dreams" and "nonsense". In one case the implication is that "stuff" is made from "dreams" -- a claim remarkably consistent with the "Dreamtime" of Australian Aborigines. In another, the "fashionable" nature of "nonsense" is deprecated -- in contrast to the claim that the "universe" is made from "nothing", but ignoring the sense offered by the first that "stuff" is in effect "fashionable" from "dreams". Perhaps more curious are the cognitive relationships between "nonsense" and being "not even wrong" -- namely the impossibility of being falsified or capable of being used to make predictions about the natural world. Given that the above titles were conceived to maximize marketing potential -- however that is understood by physicists -- is "nonsense" everything that is not sensationalist?

Given the dynamics of scientific revolutions through the passage of time -- somehow external to the propagation of definitive theories of physics valid for all time -- merit consideration in the light of the insight regarding cognitive "fashionability" offered by Charles Fort, researcher into [anomalous phenomena](#):

I conceive of nothing, in religion, science or philosophy, that is more than the proper thing to wear, for a while.

Most curiously, physics attaches more significance to the "emptiness" of the vacuum of outer space than to the worldviews of those who do not subscribe to its own -- even though they may be the primary source of its funding. It recognizes no means of reconciling that appreciation of "nothingness" with the nature of the "nonsense" from which its own worldview emerges -- as being purportedly of universal significance. The designation of "nonsense" bears a strange resemblance to that of recognition of hypothetical alternative universes with which the possibility of communication has yet to be demonstrated -- and whose nature may well be incomprehensible from conventional perspectives.

Biological metaphor

Just as the technical articulation of physics offers potential insights to the cognitive articulation of the knowledge universe -- through technomimicry -- there is a similar possibility from the perspective of biology, through the increasingly accepted insights into [biomimicry](#) (or biomimetics). This is the examination of nature, its models, systems, processes, and elements to emulate or take inspiration from in order to solve human problems. Both approaches may be understood as consistent with insights into [isomorphism](#) clarified by [general systems theory](#).

Applying the argument regarding the physical universe of astronomical bodies and their clusters, the biological ecosystem may offer a comparable "language" through which to distinguish order in the universe of knowledge and modes of knowing. There is then the delightful opportunity to consider how belief systems, such as disciplines or religions, might be variously mapped onto such a universe:

- as a [cell](#), especially given the use of "cell" to distinguished a specialized group
- as a [tissue](#), in the light of a degree of "organic" connectivity between "cells" in any research initiative performing a similar function
- as an [organ](#), notably given the common root with "organization", as a collection of tissues joined in structural unit to serve a common function
- as an [organ system](#) (or system of organs), given the manner in which several modes of knowing may be required to complement the work of each other two perform a certain task
- as an [organism](#), given the recognition of the degree of independence associated with a school of thought, able to function and survive, with inputs and outputs -- unicellular or comprising millions of cells grouped into specialized tissues and organs.
- as a [species](#), given a degree of recognition of a species of discipline with characteristics in common -- perhaps to be understood as capable of cross-fertilization with bodies of knowledge of the same species (as at a conference) in order to develop and reproduce fruitfully.
- and potentially in the light of the systemic distinctions between [genus](#), [family](#), [order](#), [class](#), [phylum](#), [kingdom](#), [domain](#), and ecosystem

The sense of "universe", containing the above, may be understood in terms of "[biosphere](#)" or "[life](#)" -- the global sum of all ecosystems. Biosphere might then be fruitfully related to what has been distinguished as [noosphere](#), namely denotes the "sphere of human thought" -- one composed of entities that have signaling and self-sustaining processes, in contrast with those that do not.

The question is then how "incomprehension" is evident within this framework. How does "antipathy" then manifest at different levels -- provoking protective reactions?

In a discussion of whether essential errors in educational books can be neglected, K.K.Gomoyunov (*Noosphere: the ecology of intellectual environment*), 1989, pp. 56-65) argues:

Two aspects of this problem may be considered. First of all the aspects of the formation of a personality. It is well known that children are eager to study in the first years of school, but after some years of learning many of them become quite passive. One of the main reasons of this phenomenon is that they do not understand the factual material which they are taught. This incomprehension is due to many factors which are well known: not adequate teaching texts, poor teachers' qualification and bad living conditions.

"Inheritance of incomprehension" as a result of errors in teaching texts is also important. This influences even those pupils who want to study. If a pupil hasn't understood something but he wants to get a good mark he just learns the material by heart - he

has no other way. As a result he gets accustomed to his incomprehension and knows that his passive activity gives good results (marks). These factors do not give the possibility to open the potential abilities of a person and this is dangerous for the development of a personality.

For [Natalya V. Maslova](#) (*Noospheric Education*, Moscow, 1999):

Incomprehension and disapproval of holistic and activity approaches often occurs because of their being non-classical against the background of quite extended tradition to restrict education to classical disciplines accepted by science. For example, the methodology of inventive activity developed and inculcated in public conscience of technicians-and-engineers... was approved neither by official science nor by high school for a very long time. (p. 88)

For [Michel Bauwens](#) (*An Introduction to the Work of Ken Wilber*, 1998):

What, then, is the role of postmodernism? On the one hand its role is to show that the observer of a certain reality is also subject to the network of realities (the puncturing of the myth of objectivity) and to account for the role and influence of the subject (this is essentially what Foucault and Derrida have done: analysing the subject as being an entity exposed to an endless series of fields of meaning). This of course is a further refinement of the objective knowledge of oneself and reality. The other role of postmodernity is to arrive at a higher integration within a higher unity (Wilber calls this 'planetary vision-logic'). The great problem of modernism is, for example, the dissociation of the biosphere by the 'noosphere', which has led amongst other things to an ecological crisis of catastrophic proportions....

Ultimately this is also the reason why [Ken Wilber](#) is relatively unknown. It is a symptom of incomprehension. In the same way that the people who thought in mythical terms were unable to understand the arguments of Reason because it did not fit within their scheme of thought - it was 'cognitively dissonant' in that it belonged to a higher phase of reality that they could not yet 'see', rationalists are unable to 'see' Wilber's arguments, or certainly large parts of the material he presents as proof based on billions of man hours of meditative experience and the wisdom literature of all cultural traditions. As long as the rationalists refuse to follow the scientific injunction to explore the inner world by means of experiments and inter-subjective tests within a community of practitioners, the work that Ken Wilber is doing will continue to be a mystery.

Conclusion

Both Maslova and Bauwens imply a further consideration, namely that elaboration of more "comprehensive" frameworks tends to fail to design into them the manner in which they will be incomprehensible -- namely the incomprehension of those who experience them as incomprehensible. In addition they fail to allow for any incomprehension on the part of those elaborating the framework -- as might be revealed by the future. Given the current challenge to comprehension of the "biosphere", it might be expected that potentially greater challenges might be expected in the case of the "noosphere".

The degree of human incomprehension is usefully to be recognized through the comparison between the following noted in a [Wikipedia entry](#):

- the estimated number of cells composing the adult human body and vital to its survival -- 10^{13}
- the estimated number of microbes and bacteria within (and on) the human body, notably vital to digestive processes -- 10^{12}
- the estimated number of neurons in the human brain, governing the operation of the body -- 10^{11}
- the estimated number of neuronal connections in the human brain -- 10^{14}
- the estimated number of atoms in an adult human body -- 7×10^{27}
- the estimated insect population of the Earth -- 10^{19}
- the estimated number of observable galaxies (10^8), and in the universe (100-200 billion)
- the estimated number of stars in the universe -- 7×10^{22}
- the estimated number of bacterial cells on Earth -- 5×10^{30}

This is the merit of the mathematical approach to (in)comprehension of Ron Atkin (1981). As with the "Theory of Everything", in process of being "grasped" by physicists, the issue of its incomprehension is neglected -- except by implication that those who fail to "grasp" it are necessarily operating out of a "lower dimensionality", namely a modality to be deprecated. This applies as much to [The Grand Design](#) (2010) of [Stephen Hawking](#) and [Leonard Mlodinow](#) as to that of Ken Wilber (*The Integral Vision: a very short introduction to the revolutionary integral approach to Life, God, the Universe, and Everything*, 2007). Any incomprehension of the comprehensive framework is then "regretted", but this process is effectively an extra-systemic "externality" of any grand design encompassing "everything". The consequence is that such frames of reference are unable to reconcile their perspectives -- in ways that might be implied by a cognitive generalization of the theory of relativity, as tentatively discussed separately ([Einstein's Implicit Theory of Relativity -- of Cognitive Property? Unexamined influence of patent office procedures](#), 2007).

An approach to [Comprehensive patterning of \(in\)comprehension and \(im\)perfection](#) is considered separately in Annex B ([Towards the Dynamic Art of Partial Comprehension](#), 2012).

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