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ON RECURSIVE FEEDBACK BETWEEN MIND AND INFORMATION

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## ABSTRACT

In this cybernetic age, there is a growing body of scientists and philosophers who have started to think that “information” is as fundamental to our understanding of the world as particles and fields. The project explores a recursive relationship between mind and feedback loops of semantic information through the careful analysis of literature from history, philosophy, and technologies of information in the vast scientific and philosophical literature. While exploring this feedback relationship, the project explores the effect of overconsumption of information on our states of consciousness in this digital age of information abundance. The overabundance of information is correlated to an inflation of the “self-referential” egoic activity in our minds. The most profound and fruitful solution to this problem lies in the meditative practices of eastern philosophical traditions such as Buddhism and Hinduism. The aspects of the eastern philosophy of mind, along with western theories of consciousness such as integrated information theory and strange loop, provide for a much more complete understanding of the consciousness than they each do separately. The project argues that the “self” or “ego” is a virtual illusion that arises due to the self-referential movement of recursive semantic information. In contrast to illusory self, consciousness is argued to be intrinsically and fundamentally real.

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## Chapter 1

### Introduction

One of the most misleading representational techniques in our language is the use of the word “I,” particularly when it is used in representing immediate experience, as in “I can see a red patch.” – Ludwig Wittgenstein, *Philosophical Remarks*

In this cybernetic age, there is a growing body of scientists and philosophers who have started to think that “information” is as fundamental to our understanding of the world as particles and fields. This exploration into the nature of information has also paved the way for a scientific understanding of consciousness. This project explores various views on the nature of consciousness and self/ego (“I”). First, computer/cognitive scientist Hofstadter’s (1999, 2008) idea of “strange loop” is favored as a robust explanation for the illusory sense of self (“I”). The strange loop shows the virtual, self-referential, imperfect, and incomplete nature of thinking itself. This project uniquely breaks down the concept of “strange loop” in more fundamental terms of recursive semantic information. The essence of strange loops lies in the recursive rearrangement of *symbolic information*, such that the incoming *sensory information* becomes *semantic information* in the brain during the highly recursive and parallel process of mapping of quasi-isomorphic virtual chunks of information. In other words, the essence of strange loops lies in *recursive semantic information*. When this active, continuous process of *recursive semantic information* becomes sufficiently self-referential, a sense of self or “I” surfaces. Hofstadter (2008) ends up equating consciousness and self as one. While he concludes the two phenomena to be one phenomenon: self-referential thinking, the project points out that consciousness and

self are distinct. While self is an illusion, consciousness is as real as it gets. While self is about thinking, consciousness (in its primordial nature) is about pure experience devoid of any thought or sensory perception: *consciousness-without-a-self is, or experience-without-any-phenomenal-object is*. This is an objective claim regarding the subjective experience that can be tested in first-person science of meditative phenomenology. One needs to pay attention to one's experience of the present moment in a meditative way. Beyond any sense-perception, intellect, thought, and self/ego, pure consciousness exists.

As per eastern meditative philosophy, the illusory sense of "self" is a source of one's mental suffering and agony. Being an overgrown cluster of symbolic semantic information, "self" eats one's attention: *information consumes attention*. An overgrown sense of self is the central reason for many mental and attention disorders. Moreover, the inability to attend to the present moment while being caught up in self-referential thought is the key reason for unhappiness. The project recommends the meditative practices of Hinduism (esp. Advaita) and Tibetan Buddhism (esp. Dzogchen) to dissolve self, that is, *to eat the strange loop that eats awareness*.

Based on Francisco Varela's (1996) work, the project argues that a complete study of consciousness requires both neuroscience and phenomenology: neurophenomenology. One cannot simply dismiss experience, as experience is the condition for knowing the world and oneself. Consciousness is prior to logic, math, philosophy, physics, phenomenology, etc. We are conscious at the level of the first-person experience. Consciousness is a natural fact of sentient life. The phenomenology additionally should be a meditative one, because some truths of consciousness can only be (directly) *experientially realized* in consciousness itself. For that to happen clearly and profoundly, the western *only-intellectual* phenomenology must be updated by

the *intellectual-plus-meditative* eastern one. There is a big difference in 1) theoretically deducing that “self” is virtual and 2) experientially being free from the illusion of self. Continuous meditative application of eastern phenomenology is necessary to stabilize the most profound egoless and thoughtless states of consciousness in the waking state. Throughout the thesis, the phrase “deeper states of consciousness” would be used. The depth of conscious experience of the present moment is determined by the degree of attentive focus. The more the degree of one-pointed attention one can maintain, the more crystallized becomes one’s consciousness.

Additional to “strange loops,” the project would briefly explore other western views in the study of consciousness like dualism, biological naturalism, computationalism, and integrated information theory (IIT). Based on strange loops, IIT, and the relationship between recursion and information, the project would emphasize a strong and direct relation between consciousness and feedback loops of integrated information. Exploring many similarities and differences between various views, the following insights would be supported: 1) Consciousness is *ontologically irreducible* to physical. 2) Consciousness may not necessarily be *causally reducible* to physical reality. If consciousness is an activity of intrinsic, causal powers (of a system with non-zero integrated information<sup>1</sup>) acting upon itself (as suggested by IIT), then causal powers themselves are not reducible to physical substrates. In such a view, consciousness is a potential immanent in the matter from the very start that essentially and not accidentally requires feedback loops. Feedback loops cannot themselves be physical as they are an unfolding process. Feedback loops, in other words, are events rather than things.

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<sup>1</sup> IIT defines non-zero integrated information as “information that is generated by a mechanism above and beyond the information generated by its (minimal) parts” (Oizumi, Albantakis, & Tononi, 2014, Glossary).



Both consciousness and matter, therefore, are fundamental aspects of each other. Matter is a gross aspect of existence, and mind is a subtle aspect of that very same existence. The notion of “fundamental” is itself virtual, incomplete, imperfect, and dualistic: a product of emergent, virtual self-referential paradoxical thinking. Along the same line of reason, the project would argue against the absolute reality of “intrinsic integrated information.” Like Einstein (1963) famously said, “Time and space are modes by which we think, not conditions under which we live” (p. 81). Similarly, “intrinsic integrated information” is a useful, virtual mode by which we think about the inner, subjective experience; it is not an absolute reality in itself (which integrated information theorists seem to believe). The very concept of “intrinsic integrated information” is itself largely extrinsic as it relies on symbolic thinking extrinsically shaped by bio, society, culture, and technology. The map is not the territory.

Regardless of whether consciousness is a fundamental or an emergent property, its *fundamental value* lies in the fact that it is that unique aspect of reality that has direct access to itself. *Consciousness-without-a-self* is more real or less virtual than our virtual-metaphysical concept of “reality” itself or any theory/model of reality. Thoughtless *consciousness-without-a-self* is an *experiential* reality that can be directly accessed by itself. In contrast, the intellectual notion of “reality” is *virtual* and *metaphysical*: a product of virtual thinking. As demonstrated by strange loops, thinking itself is inherently virtual, self-referential, incomplete, and imperfect. Therefore, consciousness is more real than any theory of reality/consciousness itself. The western intellectual culture and the way of living need to exploit this eastern meditative insight.

All theories, maps, and models of reality or truth rely on 1) imperfect and incomplete self-referential, dualistic logic and thought, and 2) indirect, virtual symbolic reference and representation by the brain. These are both fundamentally representational strategies. On the

other hand, thoughtless and selfless consciousness accesses itself in its bare-naked state, free from any virtual reference, perception, representation, and any other phenomenal object. As mathematician-philosopher Franklin Merrell-Wolff (1994) declared, “*Consciousness-without-an-object is*” (p. 309).

## Chapter 2

### Self or Ego is not Consciousness itself

Norbert Wiener (1961), one of the founders of the field of cybernetics, was one of the first to formally theorize that intelligent behavior was the result of intricate feedback mechanisms. Cognitive scientist Douglas Hofstadter (2008), who specializes in “thinking about thinking” (p. xv), built upon this process to argue how what we call “self” arises due to certain tangled feedback patterns called “strange loops.” The self does not merely occur due to strange loops but is itself one strange loop recursively made of many strange loops nested within strange loops, and so on. Many thinkers, since ancient times, intuited and observed these strange loops. But Hofstadter really did these loops justice, made them tangible and clear, and elaborated on the specifics, perhaps like no other.

In the end, we self-perceiving, self-inventing, locked-in mirages are little miracles of self-reference. . . Our very nature is such as to prevent us from fully understanding its very nature. Poised midway between the unvisualizable cosmic vastness of curved spacetime and the dubious, shadowy flickerings of charged quanta, we human beings, more like rainbows and mirages than like raindrops or boulders, are unpredictable self-writing poems — vague, metaphorical, ambiguous, and sometimes exceedingly beautiful.

(Hofstadter, 2008, p. 363)

Hofstadter rightly concludes that in our usual states of consciousness-with-objects, we are “self-perceiving, self-inventing, locked-in mirages.” We, the “little miracles of self-reference,” literally get trapped in our own strange loops. We get hacked by our own mirages when we fail

to perceive their virtuality and live as if these mirages were concrete and real. However, Hofstadter, influenced by Daniel Dennett (1991), makes one very significant mistake: he confuses the “self,” “ego,” “identity,” or “I” with awareness itself. Thus, he ends up declaring consciousness to be an illusion too. Indeed “self” is an illusion, in the sense that sense of self is only a sense, but consciousness is not, for consciousness is *experience*, and experience (without-an-object(self)) is.

Hofstadter is not entirely right to claim that our nature prevents us from understanding our nature. Indeed, one may never understand one’s nature at the gross level of physicality and higher orders of virtuality, as our finite nature is being actualized on the fly, hence there is no getting ahead of the curve. We cannot, for example, grow our bones on with conscious awareness. On the gross physical level of finite, we are continually changing—evolving and degrading—hence understanding approaches an asymptote. But one can surely access one’s primordial nature by unfolding into deeper dimensions of thoughtless and selfless/egoless consciousness. The realization of our true primordial nature doesn’t happen in the manner of theoretical, symbolic, and abstract thinking or virtually representational model-mapping. It is a purely experiential realization. One can become aware of awareness.

You are not aware of the electrochemical events occurring at each of the trillion synapses in your brain at this moment. But you are aware, however dimly, of sights, sounds, sensations, thoughts, and moods. At the level of your experience, you are not a body of cells, organelles, and atoms; you are consciousness and its ever-changing contents, passing through various stages of wakefulness and sleep, and from cradle to grave. (Harris, 2011, para. 1)

As the neuroscientist-philosopher Sam Harris says, at the level of experience, one is consciousness, for consciousness is experience. But one is always stuck in “ever-changing contents” and misses out on the “unchanging” itself, which is consciousness. As we would see, these “ever-changing contents” unfold in a strange loopy manner due to self-reference. Being virtual, they are merely appearances. But consciousness-without-an-object is not merely an appearance, but the screen upon which an appearance appears. We may not ever fully understand our gross physical nature like the brain and all of its computational programs or electrochemical events. We may also not fully understand the mechanics of illusory self at the symbolic phenomenological level of appearances. But, we can surely realize the true and primordial nature of consciousness at the level of our experience. We need to turn inward and silently deepen our experience by paying no attention to any thoughts or other mental/physical sensations. As we would continue to do so, these illusory thoughts and sensations would start to fade away slowly. With practice, one day, they would be gone. Consciousness-without-an-object would still be. In fact, it would be *still*.

To put it more abstractly, “*consciousness-without-an-object* is that part of reality which has direct access to itself.” So, surely primordial consciousness can realize itself. It just needs to access itself. The case of ego is otherwise. In the usual waking state of consciousness, our busy brains—when caught up in self-referential narration of parallel thoughts—hastily and mistakenly equate that narration (because of its self-referential nature) to a separate ID—identity card—ego. We think we are the voice in our heads. The famous Buddhist trope makes this understanding clear: The sun is always there, clouds block it. Similarly, primordial consciousness is always there; thoughts and ego block it. Once the ego is dissolved, primordial consciousness realizes itself in its bare-naked state.

Take another simple analogy. When one watches a movie on the screen, the movie that is being displayed is merely a projection. What is real and more concrete is the screen itself. Similarly, self, ego, or “I” is a movie. Consciousness is the screen. A screen is there whether a movie is running or not. Hence, “Consciousness-without-an-object is.” Consciousness is less of virtual reality or more of reality than self. Likewise, consciousness is also more real than any theory, model, or system of “reality.” If one seeks reality, one needs to look nowhere else but within. One needs to turn the light of consciousness upon itself.

The mind is a bundle of thoughts. The thoughts arise because there is the thinker. The thinker is the ego. The ego, if sought, will automatically vanish. (Maharshi, 1984, p. 314)

Phenomenologically speaking, the narration—in and due to its restless state—seems to ground itself by pointing to an autonomous inner kernel called “self,” but actually, what it is really pointing to is itself. “He who says ego is ‘ego’” (Benveniste 1971, p. 224). And, we take this ego or self to be real—the kernel and driver of our being—when it is not. We can observe: there are thoughts, but no thinker. These thoughts themselves are virtually real. And, what is thought to be a thinker is merely a loopy tangled nest of thoughts self-referentially thinking itself to be a separate autonomous thinker, when it is merely a nest of virtually real thoughts.

Many ancient spiritual traditions (especially Eastern ones) have pointed out this ego to be a sensory illusion, far from being an autonomous real entity. In Western philosophy, David Hume famously made the case against the reality of self or ego, labeling it as a mere “bundle of different sensations or perceptions” (Searle, 2004, p. 200). By turning one’s attention inward, one would find a variety of perceptions and sensations, but no mental entity that experiences these sensations and perceptions. Any sense of such a mental entity is itself only a sensation or

perception. Through meditative techniques of direct reflection, one can clearly perceive the virtuality and impermanence of ego.

In the natural primordial state of consciousness, the ego is dissolved as thoughts come to rest. With this dissolution of ego, comes the realization of the “virtualness” of the subject-object duality, that we impose on reality through our linguistic means of embodied reference and representation; especially when we falsely make an ontic<sup>2</sup> separation (when it is actually virtual) between “self” and “the other” through the language of “I” and “you” or “this” and “that.” The symbolic or representational subject-object duality is a useful necessity for communication and spatial navigation in an environment distributed with various kinds of apparently separate entities and agents. Moreover, it is necessary to continuously conduct recursive linguistic slicing (through signs and symbolic reference) to carve out virtually discrete chunks of abstract concepts of objects and phenomena for the essential purposes of logic-math, thereby philosophy and science. But, we take this sleight of bio-symbolic, cultural-social mediated language too literally, when it is clearly a convenient virtual reality. In this sense, Wittgenstein (1980) was right to assert:

One of the most misleading representational techniques in our language is the use of the word “I,” particularly when it is used in representing immediate experience, as in “I can see red a patch.”

It would be instructive to replace this way of speaking by another in which immediate experience would be represented without using the personal pronoun; for then

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<sup>2</sup> In philosophy, the word “ontic” refers to “real or factual substance rather than a virtual or a phenomenal one.” Here the thinkers need to perceive the recursive, self-referential, and loopy nature of thinking itself to realize that the very notion of “real” or “ontic” is virtual. Even the idea of “virtual” is virtual.

we'd be able to see that the previous representation wasn't essential to the facts. Not that the representation would be in any sense more correct than the old one, but it would serve to show clearly what was logically essential in the representation. (p. 88)

There is no subject-object duality in the realm of egoless consciousness. This subject-object duality, via the virtual injection of ego as the self-referential narration of thoughts, is superficially postulated by the mind of an organism in its process of recursive, repetitive, patterned, and parallel thinking. One can fully engage in virtual reality and carry out the usual embodied dualistic reference in daily activity, yet be entirely devoid of any such duality, within. For example, one can use the language of "I" and "you" to talk to someone else, but still, experience no virtual separation between each other.

If consciousness turns out to be an emergent property, then Hofstadter's strange loops may not only play a role in giving rise to a sense of self but in consciousness itself: for Hofstadter, both self and consciousness are one. However, through the experiential realization of meditation, one can clearly see that they are distinct. There are more than a few logicians, philosophers, and scientists who do not agree with Hofstadter's idea of a strange loop as an explanation for the "self." As far as the "self" is concerned, his strange loops are robust. Indeed Hofstadter mapped the symbolic emergence of strange loops by diving deep into—logic, geometry, fractals, particle physics, language, DNA, genes, computers, artificial intelligence, syntactic-semantic duality, brain, mind, creativity, music, art, ant colonies, Zen Buddhism—to make a very convincing argument in his famous book *Gödel, Escher, Bach: an Eternal Golden Braid*. Given so, this project would only investigate his loops in the context of the "self" or "I."

It is true that the exact neural, symbolic, mathematical, and computational details remain to be figured out beneath the virtual phenomenon of self. Still, the concept of "strange



loops” does serve as a solid phenomenological explanation from an essential theoretical perspective. In principle, therefore, this virtual layer of self is mappable and, therefore, hackable. Though, to hack the strange loops, we don’t need the exact neural and computational details underlying them. We just need to first logically experiment that the “self” is not real, and can be experientially emptied or dethroned.

In western cognitive science and philosophy, many scholars have deduced the virtuality of self, but only a few may have attempted its meditative dissolution through experiment. It is not enough to theoretically conclude that the “self” is virtual. For this phenomenological experiment, we need to know the necessary meditative practices. Then we need to do those practices to achieve an experiential hacking and dethroning of the “self.” Neuroscientist John C. Lilly (2014) called such hacking of loops that hacks us: *programming and metaprogramming of the human biocomputer*. Indeed, we would be “re-engineering” ourselves by engaging in such practices. Further down the road, if we practice with rigor, we would find ourselves completely “re-ontologized,” that is, cleansed and healed of our “selves.”

This hacking has almost become a psychological and ecological necessity to happily navigate our information-overloaded age that is fogged by scattered attention.

## Chapter 3

### The Nature of Information

Before looking into how the sense of self arises due to recursive semantic information processing in the brain, it is important to analyze the concept of “information” itself. The word “information” is notoriously difficult to define. We don’t really know for sure what information *is*, say in the same way, we know that energy is the capacity to do work. What we do know is that information is a unique concept or entity. As Norbert Wiener (1961) said, “Information is information, not matter or energy” (p. 132). It is a polysemantic concept that can be associated with various meanings, ideas, and phenomena. Floridi (2010) notes that information can be used to refer to communication, knowledge, reference, representation, meaning, and truth.

Claude Shannon (1993), who worked on the technical problems concerned with the quantification of information in *The Mathematical Theory of Communication* (leaving aside the semantic concerns for future), noted, “It is hardly to be expected that a single concept of information would satisfactorily account for the numerous possible applications of this general field” (p. 180). As per the General Definition of Information (GDI), information is defined in terms of 1) (well-formed) data and 2) meaning—two words which are themselves semantically informative (Floridi, 2010, p. 20). To emphasize this “semantic” aspect of information, the information philosophy formulated the concept of semantic information (Floridi, 2010). This semantic information is related with “notions such as reference, meaning, and representation: semantic information has intentionality —“aboutness”—, it is directed to other things” (Lombardi et al., 2014, p. 1). Building upon this idea of semantic information, Floridi (2010) suggests that

information, as semantic content, can also be described as data + queries, where “meaning” is replaced with “queries,” given that meaning is already implicit in observer’s questions or queries.

In *The Mathematical Theory of Information*, information is tied with uncertainty, unpredictability, and possibility. More specifically, it is quantified in terms of a decrease in data deficit or uncertainty. While entropy ( $S$ ) is regarded as a measure of ignorance, information ( $I$ ) is the “flipside” of ignorance. Shannon put this relationship in a mathematical form:  $S = -I$ . “One may think of the entropy of a gas as the information concerning the positions and motions of its molecules over which we have lost cognizance” (Davies, 2014, p. 100). Simply put, there is a reduction in some uncertainty as we acquire related information. As long as we don’t know whether the coin landed on heads or tails, there are two possibilities (one bit of information) for us. In this sense, “information is a measure of one’s freedom of choice when one selects a message” (Shannon & Weaver, 1964, p. 9). Warren Weaver (1964) pointed out this relationship between information, possibility, and uncertainty in the introduction to The Mathematical Theory of Communication with his famous remark: “This word information in communication theory relates not so much to what you *do* say, as to what you *could* say” (p. 8). Given what one can say is sure to make a “difference,” Gregory Bateson (1987) gave the following definition of a “bit” of information:

In fact, what we mean by information—the elementary unit of information—is *a difference which makes a difference...* (p. 460)

It seems that Bateson was influenced by Donald MacCrimmon MacKay’s (1969) slogan, “information is a distinction that makes a difference.” Physicist David Bohm (1989) refined both MacKay’s and Bateson’s definition by pointing out that information is specifically “a difference

of *form* that makes a difference of *content*, i.e., meaning” (p. 1). Despite this precise definition, we do not have a clear universal understanding of information, given its multiple applications, especially those in fundamental physics. But, as the Russian physicist, Lev Okun (2006) said, “The more basic is a physical notion, the more difficult to define it in words” (p. 2). The fact that we lack a universal and concrete conception of information might very well allude to the fundamental nature of it. Nonetheless, one aspect that seems to be clear is that for information to make a difference, it needs to be physically instantiated and run:

The Operative notion here is that information has to do with form. Literally ‘to inform’ means ‘to put form into’ something. First of all, information has to be held in some form, which is carried either in a material system (e.g. a printed page) or in some energy (e.g. a radio wave). We find that in general a pure form cannot exist by itself, but has to have its subsistence in some kind of material or energetic basis; and this is why information has to be carried on such a basis. Thus, even the information in our sense impressions and in our thought processes has been found to be carried by physical and chemical processes taking place in the nervous system and the brain. (Bohm, 1989, p. 1)

Physicists David Deutsch and Chiara Marletto (2015) have also argued against treating information as *a priori* mathematical or logical concept, that is, more primary than matter. According to them, the nature of information, even when it is an abstract concept, is determined by the laws of physics alone. However, as Paul Davies (2014) points out, it is important to be mindful of the fact that “the laws of physics *are* informational statements: they tell us something about the way the physical world operates” (p. 96). There is a feedback relationship between physical and information. There is a self-referential loop between the “laws of physics” and information. Physicist John Wheeler (1999) also argued for a self-referential loop when it came

to our virtually real map or model of the universe: “physics gives rise to observer-participancy; observer-participancy gives rise to information; and information gives rise to physics” (p. 313-314). In such a circular relationship, no concept or entity is more fundamental than the other. Information scientist-philosopher Richard Doyle (2011), in an interview with Jason Silva, elaborates further on the necessary physical instantiation of information:

First: It is important to remember that the history of the concept and tools of “information” is full of blind spots — we seem to be constantly tempted to underestimate the complexity of any given system needed to make any bit of information meaningful or useful. Caitlin, Kolmogorov, Stephen Wolfram and John Von Neumann each came independently to the conclusion that information is only meaningful when it is “run” — you can’t predict the outcome of even many trivial programs without running the program. So to say that “information may be more primary than matter” we have to remember that “information” does not mean “free from constraints.” Thermodynamics — including entropy — remains...

We can treat a sequence of information as abstraction and take it out of its context — like a quotation or a jellyfish gene spliced into a rabbit to enable it to glow. We can compress information, dwindling the resources it takes to store or process it. But “Information, words, instructions” all require physical instantiation to even be “information, words, instructions. (para. 38-42)

With regards to an information-overloaded digital age, the most important insight is that of Herbert Simon (1971): “What information consumes is rather obvious: it consumes the attention of its recipients. Hence a wealth of information creates a poverty of attention...” (p. 40). The inability to attend to the present moment is strongly related to unhappiness. As we

would see, “I” is an overgrown cluster of symbolic information. Carelessly consuming information contributes to the growth of “I.” The stronger this “I,” the lesser one’s attentiveness and happiness. Hence the overabundance of information in our 21<sup>st</sup> century digital age has caused an inflation of the self-referential egoic activity and restlessness in our minds. It results in an overall decrease in the well-being of an individual on many levels of mind and body. The most profound and fruitful solution to this problem lies in the meditative practices of eastern philosophical traditions such as Buddhism and Hinduism. At this point, science and spirituality inevitably intersect.

## Chapter 4

### Recursive Semantic Information Gone Too Strange

A “strange loop” is a highly intricate, subtle, and active heterarchical constellation of meaningful symbolic movement that is able to refer itself by crossing its own levels of movement due to its recursively tangled nature. Hofstadter also refers to it as a tangled hierarchy due to its heterarchical nature. It is heterarchical because there is no clearly defined lowest or highest level. Moving through the various levels both upwards and downwards, this loop returns to its original level. It just chatters about itself.

In a strange loop, for example, language, or a formal system, meaning comes-to-be when the symbols (or symbolic movements) tend to be isomorphic (equivalent in *form*) to one another. In fact, as Hofstadter (1999) argues, “meaning cannot be kept out of formal systems when sufficiently complex isomorphisms arise” (p. P-3). The various symbols (or symbolic movements) get interlocked, intertwined, and entangled with each other and nested within each other due to isomorphism. The problem is not that there is no meaning in our minds, but rather the opposite: there is too much meaning. Too much *virtual* meaning. Too much semantic information.

Notice that every type of “copy” preserves all the information in the original theme, in the sense that the theme is fully recoverable from any of the copies. Such an information-preserving transformation is often called an *isomorphism*... (Hofstadter, 1999, p. 9)

What role does information play? Well, first, it is primarily the sensory information that, during and upon processing, gets transformed into that semantic, symbolic movement which we

call thought. In turn, this symbolic movement takes a “swirly, tangled pattern” upon appropriate iterations of recursive nesting. Second, as Hofstadter (1999) argues, isomorphism is essentially “information-preserving transformation” (p. 49). There would be no isomorphism if there were no information.

The word “isomorphism” applies when two complex structures can be mapped onto each other, in such a way that to each part of one structure there is a corresponding part in the other structure, where “corresponding” means that the two parts play similar roles in their respective structures. (p. 49)

Hofstadter provides a more precise and technical definition of “isomorphism” as used in mathematics. In simple words, isomorphism is a bijective<sup>3</sup> mapping that preserves—sets and relations—structure between two objects or even processes. This process of mapping itself serves as meaning when symbolic-virtual chunks of information recursively mirror each other. To make this clearer, let us look at a few statements that are isomorphic to one another:

- Consciousness-without-an-object is
- Consciousness-without-a-self is
- Experience-without-a-self is
- Experience-without-a-thought is
- Experience-without-any-phenomenal-object is

In the above example, the first four statements are perfectly isomorphic. The structure and meaning mirror perfectly, such that if one understands even one of the statements, one also

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<sup>3</sup> In mathematics, a bijective function is a function between the elements of two sets, where each element of one set is paired with exactly one element of the other set, and each element of the other set is paired with exactly one element of the first set. There are no unpaired elements. In mathematical terms, a bijective function  $f: X \rightarrow Y$  is a one-to-one (injective) and onto (surjective) mapping of a set  $X$  to a set  $Y$ .



understands the remaining three. They are massively redundant. Each statement is fully recoverable from the other. The fifth and last statement is almost or quasi-isomorphic to the other four. It differs in structure with “phenomenal” as the extra word being used as an adjective to specify the quality of “object.” Despite this, meaning (semantic information) remains entirely preserved. Phenomenal objects are self, thoughts, images, sounds, smells, bodily sensations, sense of time, sense of space, memories, fear, anxiety, desires, etc.

We hypostatize information into objects. (Dick, 2011, p. 262)

It is important to remember that we receive the physical world in the form of information. We never receive the physical world as it is. “The information fed to us we hypostatize into the phenomenal world” (Dick, 2011, p. 258). This phenomenal world is quasi-isomorphic to the physical world as it is a rearrangement of core information. Nonetheless, it is virtual. During processing or rearranging the sensory information, the brain leaves its additional imprint of information along with noise from its structure and processing mechanism. Even the so-called logical-mathematical objects (dualistic in nature) that apparently lie at the foundation of human knowledge are rearrangements of information. Moreover, the notion of “information” itself arises due to the rearrangement of information, given that our loopy thinking and language allow a stream of information to virtually divide itself into chunks and let those chunks to virtually refer to each other.

When a system of “meaningless” symbols has patterns in it that accurately track, or mirror, various phenomena in the world, then that tracking or mirroring imbues the symbols with some degree of meaning — indeed, such tracking or mirroring is no less and no more than what meaning is. (Hofstadter, 1999, p. P-3)

The “Strange Loop” phenomenon occurs whenever, by moving upwards (or downwards) through the levels of some hierarchical system, we unexpectedly find ourselves right back where we started. (Hofstadter, 1999, p. 10)

Meaning (which is itself an activity of information) floods when a piece of information mirrors some other “piece” of information, given that the essential information between the two virtual pieces remains preserved. The loop is virtual all the way down. Even though it may give an impression to move beyond itself, at last, it comes back to itself because it never essentially moved to begin with. It was always at “I.” The core information just got rearranged. Hence, even though your sense of self may give an impression to be real, it is a mirage. Neither “self” nor the phenomenal world actually exists. Indeed, “self” is nothing but the phenomenal world gone too self-referential. Both are hypostases of the information processed by the brain (Dick, 2011, p. 262).

#### **4.1 Thinkodynamics**

Thus a heart is made of many billions of cells. But concentrating on a heart at that microscopic scale, though obviously important, risks missing the big picture, which is that *a heart is a pump*. Analogously, *a brain is a thinking machine*, and if we’re interested in understanding what thinking is, we don’t want to focus on the trees (or their leaves!) at the expense of forest. The big picture will become clear only when we focus on the brain’s large-scale architecture, rather than doing ever more fine-grained analyses of its building blocks. (Hofstadter, 2008, p. 27)

One may notice that this project has largely ignored the mechanics of the human brain in its overall discussion. Hofstadter (2008) nicely argued: *Statistical mentalics* (the level of brain) can be bypassed by talking at the level of *thinkodynamics* (first-person thinking, symbolic movement, abstract activity) even when *statistical mentalics* underlies *thinkodynamics* (p. 34). To make this argument convincing, he made an analogy to how mostly statistical mechanics is bypassed to talk about thermodynamics at its own level of description even when statistical mechanics underlies thermodynamics in the pyramid of explanation. If one distanced oneself and observed from a higher-level, one would realize this system of knowledge to be a self-referential loop instead of a pyramid. “Gödel’s proof offers the notion that a high-level view of a system may contain explanatory power which simply is absent on the lower levels” (Hofstadter 1999, p. 707). There is simply more explanatory power to thinking at this higher level of abstraction than the sub-organ level of the brain if one wants to crack thinking. The brain mapping would only give a virtual representation (imperfect and incomplete) of the brain itself. This representation is itself symbolic thought in the mind of the perceiver. As long as one is thinking, there is no escaping from the *thinkodynamics*. It’s better to understand how thinking happens at its own level, its consequences, and the meditative ways to allow for it to dissolve.

One can understand thinking by merely reflecting on the movement of all disciplines: philosophy, math, logic, science, literature, poetry, scripture, etc. One would find the recursive, self-referential, and paradoxical level-crossing strange loop at the crux of all these endeavors of thought. One can go deeper into sub-disciplines and super-focused specializations of all systems of knowledge, and one would still find this strange loop. Why? Because thinking, reasoning, signaling, languaging, virtual mapping-modeling, calculating, and stimulating are all strange loops within one strange loop. One would also find all these specializations are only apparently

distinct. They all follow the same movement of thought. They are virtual chunks of one stream of information. There is an apparent difference in their objects of inquiry, which themselves are divided, classified, and labeled on a highly virtual level. All these forms of thinking are virtual, self-referential, incomplete, and imperfect.

Thought is constantly creating problems that way and then trying to solve them. But as it tries to solve them it makes it worse because it doesn't notice that it's creating them, and the more it thinks, the more problems it creates – because it's not proprioceptive of what it's doing. (Bohm, 2005, p. 319)

No matter how upper-broader-view or lower-focused-view one goes in thinking, one never gets beyond this strange loop. As David Bohm (1994) says, “Thought is creating divisions out of itself and then saying that they are there naturally” (p. 6). In this process of creating divisions, thought itself gets stuck in its own loop. In the attempt to resolve the dualistic problems that thought gave rise to, it further ends up creating more virtual divisions, thereby problems. At some point, a thinking mind may make a coherent fabric of macro-thought by weaving together the micros-thoughts through finding regularities, but thought never goes beyond itself. For example, in the writing of this project, the author's mind found a coherent map of thought through sticking together the regularities in various perceptions in a well-structured manner. Still, the thought ultimately never went beyond itself. It became large, unified, deep, broad, and highly structured, but remain stuck in its own recursive movement. That is why Hofstadter calls it strange. He realizes that even while writing the whole 800 pages of GEB, he never got beyond the strange loop. The same goes for the author of this project. But, the strange loop completely dissolves when the author is meditating or anytime not thinking about himself or his future.

The sense of self is a phenomenological deceit (or disease) that can be talked about at the level of its first-person subjective experience: “mental properties of the brain reside not on the level of a single tiny constituent but on the level of *vast abstract patterns* involving those constituents” (Hofstadter, 2008, p. 30). Indeed, it has neural correlations like the default mode network (DMN), which recursively has its own constituents, and so on. However, one understands this illness of subjective “self” better at that level, where it uniquely makes one suffer. So far, the most efficient and effective solution—yogic meditation—is also practiced at the level of first-person experience itself. In turn, this practice of meditation “programs and metaprograms” the entire brain itself.

Isomorphism was explored not on the neural or the macroscopic sub-organ level, but on the symbolic level, where symbols map onto other symbols and the triggering patterns of symbols map onto other triggering patterns.

it is not accurate to think of a symbol as simply “on” or “off”. While this is true of neurons, it does not carry upwards, to collections of them. In this respect, symbols are quite a bit more complicated than neurons—as you might expect, since they are made up of many neurons. The messages that are exchanged between symbols are more complex than the mere fact, “I am now activated.” That is more like the neuron-level messages. Each symbol can be activated in many different ways, and the type of activation will be influential in determining which other symbols it tries to activate. (Hofstadter, 1999, p. 371)

This isomorphism need not be perfect; a rough isomorphism is sufficient. Such meaningful isomorphic mapping and triggering essentially is and happens due to the recursive rearrangement of semantic information. The sense of “self” arises when this highly active, dynamic, and

continuous recursive movement of semantic information develops self-reference to the degree where it is phenomenologically perceivable by itself.

But this is the essence of recursion—something being defined in terms of simpler versions of itself, instead of explicitly. (Hofstadter, 1999, p.152)

Isomorphism occurs as information is recursively rearranged in other versions of itself, hence making chunks of information mappable onto each other, even as it feels itself to be “the only one.” The notion of “chunk” is itself virtual. Once this isomorphism surfaces, it further triggers recursion and rearranges information. This process goes on, and “sameness-in-difference” among chunks of information becomes perceivable.

Recursion is based on the “same” thing happening on several different levels at once. But the events on different levels aren’t exactly the same—rather, we find some invariant feature in them, despite many ways in which they differ. (Hofstadter, 1999, p. 148-149)

Due to the difference in the movement of recursive processing of information from human to human, our phenomenal worlds differ in language, picture, and outlook. Every phenomenal world is a product of recursive rearrangement and processing of information. The difference lies in the processing device (brain), degree of attention (receptivity), and the movement or the specific algorithm of the recursive rearrangement. However, every algorithm of information processing is somewhat recursive. This recursive element itself majorly contributes to the “sameness” in difference. Moreover, all sentient beings receive quasi-isomorphic information. The core, foundational information (the unified elementary fabric) of the natural world remains preserved despite the infinite iterations that it undergoes. Even during the moment of the feeding of the same sensory information for multiple beings, the difference lies only in—

“set and setting”—the event-context under which the sensory information is fed and the degree of attention/receptivity of the receiver.

#### 4.2 “Self” is an Informatic Tumor

In fact, the symbol for the self is probably the most complex of all the symbols in the brain. For this reason, I choose to put it on a new level of the hierarchy and call it a *subsystem*, rather than a symbol. To be precise, by “subsystem”, I mean a constellation of symbols, each of which can be separately activated under the control of the subsystem itself. (Hofstadter, 1999, p. 385)

The “self” is like a mental, information-rich tumor. It is “an overgrown symbol, one which has gotten so complicated that it has many subsymbols which interact among themselves” (Hofstadter, 1999, p. 385). No wonder, it is the root cause of mental suffering. It blocks one’s natural flow of awareness. It is “the penny that blots out the sun” (Alfred Pulyan, 1959). In today’s world, consuming (or, rather, being consumed by) too much information becomes dangerous if one doesn’t know the art of meditation, careful reflection, or even attentive intellectual discernment. When more information is recklessly consumed, more “symbols for symbols, and symbols for the actions of symbols” (Hofstadter, 1999, p. 387) are generated via recursive rearrangement of information. All these symbols get entangled due to isomorphism, and restless tides of mental egoic activity go berserk. The sense of self or ego grows at the cost of attention, occupies the primordial empty space of mind, and blocks awareness.

In short, an “I” comes about — in my view, at least — via a kind of vortex whereby patterns in a brain mirror the brain’s mirroring of the world, and eventually mirror themselves... (Hofstadter, 1999, p. P-6)

Indeed, this “I” is a vortex that storms one’s purity of experience and bliss. “Moreover, the more self-referentially rich such a loop is, the more conscious is the self to which it gives rise” (Hofstadter, 1999, p. P-6). The denser this self is, the more blocked is one’s space of awareness. It is important for this space of awareness to be empty to experience inner peace and fulfillment. The natural state of awareness is the richest in experience. The self is rich only in thought and agony.

John Lilly (2017) also writes of the “center of the cyclone” when navigating the deepest layers of consciousness. At the center of this vortex of thoughts, lies this virtual “I.” Despite the journey to this “I” being difficult, “I” itself is feeble. One ecstatically bursts into laughter when one realizes this absolutely small, virtual, non-existent thorn or knot was the cause of lifetimes of mental drama. Even though this “I” is “an overgrown symbol” or “probably the most complex of all symbols,” it is a speck of dust compared to the enormous space of awareness available for exploration. It is quite simple to unknot it. In fact, once one has reached the center through meditative practices, one need not do anything but patiently wait and enjoy. “I” created itself, virtually. It would also unknot itself. Once it gently vanishes, the vast empty space of pure experience gracefully cherishes itself.

Animate entities are those that, at some level of description, manifest a certain type of loopy pattern, which inevitably starts to take form if a system with the inherent capacity of perceptually filtering the world into discrete categories vigorously expands its repertoire of categories ever more towards the abstract. (Hofstadter, 2008, p. 359-360)



It is precisely the 100 trillion neural pathways and “the ever-growing repertoire of symbols in each human being’s brain” (Hofstadter, 2008, p. 361) that allows for such an intricate strange loop to surface virtually and refer to itself as “real” when it is actually not. This strange loop is paradoxical. Our inherent capacity to meaningfully rearrange information in an infinite variety of ways via recursion allows us to extend our symbol repertoire indefinitely, and virtually refer to anything at all. This virtual character of symbolic reference is both powerful and risky. It allows us to develop ever deeper, broader, and unified virtual maps of the world for increasingly improving navigation and understanding. But when it gets too self-referential (as we have seen in this project and experienced in first-person), it backfires in a very strange way.

We are not born with an ‘I’ – the ego emerges only gradually as experience shapes our dense web of active symbols into a tapestry rich and complex enough to begin twisting back upon itself. According to this view the psychological ‘I’ is a narrative fiction – a point that Wittgenstein made when he argued that the ‘I’ is not an object in the world... (O’Reilly, 2010, para. 10)

The sense of self gradually emerges as we grow up. And, at our level of experience, it is precisely the continuous “symbolic reference” that feeds this “self.” As mentioned repetitively, it is essentially the recursive rearrangement of sensory information into virtual chunks, and then isomorphic mapping between those virtual chunks of information, and then further recursive rearrangement, and so on that allows for deeply nested “self-reference” to emerge, such that the core sensory information keeps looping back to itself while recursively rearranging itself.

Neuroanthropologist Terence Deacon (1997) has also argued that it is the ability to make symbolic reference (or do symbolic thinking) that majorly distinguishes humans from other

anthropoids. Drawing upon their work, mathematician Brian Rotman also recognizes the virtual character of symbolic reference:

For both Rotman and Deacon symbolic reference is virtual, unreal, and carries with the ghostly... It is this virtual character of symbolic reference that is the source of its power and of its interest for our concerns with subject formation. (Lenoir, 2008, p. xx)

When one engages in serious phenomenology, one can perceive ideas giving rise to other ideas, or symbolic events triggering other symbolic events, and symbolic events getting nested within each other to form larger symbolic patterns like analogies at their own isolated symbolic level (Hofstadter, 2008, p. 50). The brain “only ever handles representations of events and not events themselves” (Rotman, 2008, p. 114-115). Recursively, the virtual character of symbolic reference and isomorphism among chunks of information lets the strange loop drive itself into “representations of representations” or higher orders of virtual reality.

The power of symbolic reference is due to its *virtual* character; its *shared* deployment; and its exteriority, the fact that it is largely *external* to the individual mind, being located in cultural systems and artifacts. (Lenoir, 2008, p. xxi)

If there is no duality between one and the other, there is no “self.” A “self” exists in relation to other “selves.” “One cannot conceive of oneself *as* oneself without also conceiving others as self-directed, egocentric agents” (Corazza 2004, p. 348). Likewise, instead of being limited to precisely one brain, a virtual idea of each self is distributed over numerous brains. “Symbolic reference is at once a function of the whole web of referential relationships and of the whole network of users extended in space and time” (Lenoir, 2008, p. xxii). For example, the author has an idea of his “self.” People who know of his existence have different ideas of his “self.” The idea of his “self” within his head mirrors the ideas of his “self” within the heads of

others. However, he is not his idea of “self” or others’ ideas of his “self.” All these ideas are virtual and far from reality. “But the step of forming an independent mental representation of the subjective experience of another requires an abstraction only possible with symbolic reference” (Lenoir, 2008, xxii).

Consciousness of self in this way implicitly includes consciousness of other selves, and other consciousness can only be represented through virtual reference created by symbols. The self that is the source of one’s experience and intentionality, the self that is judged by itself as well as by others for its moral choices, the self that worries about its impending departure from the world, this self is symbolic self. It is a final irony that is the virtual not actual reference that symbols provide, which gives rise to this experience of self. This most undeniably real experience is a virtual reality. (Deacon, 1997, p. 452)

A human being carries multiple representations of “selves,” referencing other people. In relation to those selves, one recursively develops one’s sense of self too. This process happens parallelly as one unwittingly creates a virtual split between oneself and others when engaged in symbolic information processing. Indeed, a sense of self surfaces at all due to such a virtual split. In reality, there is no “oneself” and “others.” As one withdraws one’s mind from senses, turns attention onto itself, and undergoes meditative states of awareness, this strange symbolic thinking comes to rest. The virtual split gets effortlessly dissolved. One realizes the “non-existence” of this split, thereby the “non-existence” of “self” or “other.”

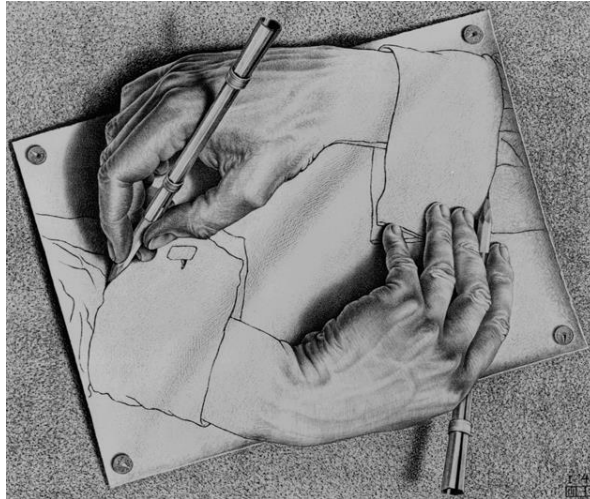
### 4.3 The Brain is talking to Itself

And yet when I say "strange loop", I have something else in mind — a less concrete, more elusive notion. What I mean by "strange loop" is — here goes a first stab, anyway — not a physical circuit but an abstract loop in which, in the series of stages that constitute the cycling-around, there is a shift from one level of abstraction (or structure) to another, which feels like an upwards movement in a hierarchy, and yet somehow the successive "upward" shifts turn out to give rise to a closed cycle. That is, despite one's sense of departing ever further from one's origin, one winds up, to one's shock, exactly where one had started out. In short, a strange loop is a paradoxical level-crossing feedback loop. (Hofstadter, 2008, p. 101-102)

This “strange loop” is different from an ordinary feedback loop as it is a “level-crossing feedback loop.” In an ordinary feedback-loop, there are clearly defined upper and lower levels that mark the input and output, such that the output is routed back as the input, and so on. There is a systematic hierarchy. Nonetheless, this hierarchy is overall circular in nature; hence it is required to analyze the system as a whole. The input and output serve as convenient checkers. The examples of ordinary feedback-loop include audio and video feedback loops.

In a strange loop, there are no such precise lower/higher levels or input/output checkers. It is a tangled hierarchy or a heterarchy. The loop moving through various levels of thought returns to its original level, thereby paradoxical. Despite going through long symbolic growth and movement, it ends up symbolically referring to itself, repeatedly. It returns to “I.” One begins with “I,” and one comes back to “I.” One reaches nowhere when one thinks of “I.” One is always stuck with “I.” It is a fiction narrating itself. Indeed, Wittgenstein (1980) was right to

warn us of this “I” being one of the most misleading representational techniques in our language. The only solution to this “I” is its dissolution.



**Figure 1. *Drawing Hands* by M.C. Escher**

Some examples of Strange Loop include: 1) Escher’s “Drawing Hands” painting in which both the hands are paradoxically drawing each other with no defined beginning/input or end/output. This gives rise to an illusory effect. 2) Self-referential Gödelian statements in axiomatic formal systems. Gödel’s incompleteness theorems were the main inspiration for Hofstadter’s idea of “strange loop” as an explanation for self on the symbolic level.

These statements assert their own unprovability within the system but are nevertheless provably true, akin to the paradoxical “this statement is false”. And the way Gödel’s proof works is by showing that certain very large numbers also have another meaning, *as statements about numbers*; and so a proof about numbers – which is itself just a number – turns into a proof about proofs, and in particular about itself. (Deutsch, 2007, p. 46)

The first theorem proved that any consistent formal system, carrying out certain elementary arithmetic, is incomplete. There are provably true statements (outside the given formal system)

with regards to that elementary arithmetic (within the given formal system), but they remain unprovable within the given system itself. The second theorem is an extension of the first. It proved that a formal system cannot provide proof of its own consistency. If such a formal system claims to prove its own consistency, then it is, in fact, paradoxically inconsistent: “this statement is false.” This paradox arises precisely because of the self-referential nature of these statements. The arithmetic statements refer to themselves while referring to the whole formal system (which in itself is an arithmetic statement) expressing these arithmetic statements.

And let me repeat: such twisting-back, such looping-around, such self-enfolding, far from being an eliminable defect, was an inevitable by-product of the system’s vast power.

(Hofstadter 1999, p. P-5)

One cannot have a complete and consistent set of axioms for all mathematics that can prove its own completeness and consistency—a dream that many logicians and mathematicians envisioned. Nonetheless, it is very important to realize that Gödel’s theorems also show the strength of formal systems as much as they show weakness. A poor formal system would never develop a rich enough self-reference needed to prove its own incompleteness in a paradoxical manner. It means that a poor formal system would never really have anything meaningful to say about itself, to begin with. A poor formal system is poor in isomorphism, thereby meaning. Self-reference grants logic meaning on a meta-level as much as it shows the incompleteness of it. Paradoxically, it is only a strong formal system that is provably weak. A truly weak formal system is so weak that it cannot even prove its weakness.

Hofstadter gave the idea of the “strange loop” as an explanation for one’s sense of “self.” This chapter rearranged Hofstadter’s information of “strange loop” in more fundamental terms of “recursive semantic information.” A strange loop is a “paradoxical level-crossing loop”

(Hofstadter, 2008, p. 102). It means that a strange loop is a highly intricate, subtle, and active heterarchical constellation of meaningful symbolic movement (of information) that ends up referring to itself in its original/core state of information by crossing its own levels of movement due to its recursively tangled nature. In other words, it ends up looping back to its original position of “I.” Symbols/symbolic activity is virtual in nature, and it is this very virtual character of symbolic information that allows referring to anything at all. The brain only handles “representations of events” (Rotman, 2008, p. 115). Hence a virtual chunk of information only refers to another virtual chunk of information, given that the two chunks are sufficiently isomorphic. Plus, humans have the inherent capacity to extend our symbol-repertoire indefinitely as the brain can recursively rearrange information in a countless variety of ways.

In Summary: thoughts of the brain are experienced by us as arrangements and rearrangements — change — in a physical universe, but in fact it is really information and information-processing which we substantialize. We do not merely see its thoughts as objects, but rather as the movement, or, more precisely, the placement of objects: how they become linked to one another. But we cannot read the patterns of arrangement; we cannot extract the information in it — i.e., it as information, which is what it is. The linking and relinking of objects by the Brain is actually a language, but not a language like ours (since it is addressing itself and not someone or something outside itself). (Dick, 2011, p. 263)

The human brain is continuously-recursively arranging and rearranging the core sensory information into virtual chunks of semantic information that are isomorphic/mappable onto each other. These virtual chunks encode the potential to be isomorphic (to begin with) because they are tributaries of one stream of information that branched out as multiple virtual symbols in the

process of arrangement and rearrangement. Once a rough isomorphism is recognized between symbols by the brain, further recursive rearrangement is triggered, and these symbols interlock again. This process recursively goes on, and the symbol of “I” overgrows to the point where it develops such rich self-reference that it becomes phenomenologically perceivable by itself. At this point of symbolic information processing or thinking, a sense of self, virtually referring to itself, surfaces.

Such a rich self-reference is bound to happen during continuous symbolic thinking as “the linking and relinking of objects by the Brain is actually a language” that is “addressing itself and not someone or something outside itself” (Dick, 2011, p. 263). Semantic information is getting rearranged recursively in other versions of itself since its very inception by the brain as the sensory input gets past the sensory mechanism. This processing is self-referential from the very start. It is just that there comes the point when it gets so deeply self-referential that it can perceive itself at the phenomenological-symbolic level. Therefore, during this recursive, active, dynamic, parallel, and continuous rearranging of information, a point is bound to emerge at the level of the first-person experience when the whole of “semantic information” (or the symbol “I”) in question would end up continuously referring to itself in a repetitive loop. The strange loop gets stuck in its own recursive self-reference.



## Chapter 5

### The Problem of Para-Self in the Digital Age

Virtuality is ancient. Far from being tied to contemporary electronic technologies, its lineage long antedates its current technological matrix. Its present manifestation, the ubiquitous virtual X inundating contemporary life, is the third great wave of phenomenon. The second wave came with the writing of speech. The first cannot be separated from the advent of human language itself. (Rotman, 2008, p.112)

This project has referred to many phenomena and ideas as “virtual.” Many consider “virtuality” to be a relatively new notion. However, as Rotman reminds us, countless mystics, philosophers, sages, yogis, and meditators since the very ancient times were well aware of the virtual reality projected by our brains. For example, the Hindu sages had a Sanskrit word for it—*maya*—that was popularized by the great saying of the philosopher-sage Adi Shankaracharya: “Everything is *maya*” (Vasudev, 2018, para. 3). He pointed out how we do not perceive the world (including ourselves) as it is. Indeed, virtuality has benefited and plagued sentient minds since the very advent of language and gesture. Likely, it lurked even before the advent of language in some form of primitive/proto symbolic reference.

In both Hinduism and Buddhism, the “ordinary experience” in the waking state of consciousness is also treated as dream-like: a mirage or hallucination. The entire goal is to withdraw attention and attachment from the phenomenal world by unfolding into the least virtual (possible) state of consciousness: “Consciousness-without-an-object.” We can also refer to this state as “experience-without-any-phenomenal-object.” By phenomenal objects, we mean mental

or virtual sensations of any shape or form: thoughts, ideas, abstractions, symbols, representations, images, sounds, etc.

A vast number of virtual symbolic self-referential thoughts are *parallelly* carried out inside the head. The “currently activated” thoughts trigger other neighbor thoughts. Thoughts are neighbors to each other when they are isomorphic, analogous, or identical. We say “isomorphism” when the virtual chunks of information are quasi-bijective, identical on levels deeper than the upper strata of thought. Despite being self-referential, these virtual chunks have not yet become twisted enough to the point of being explicitly perceivable at the ordinary phenomenological level of waking state. They are isomorphic more subtly and implicitly. By stepping up on a broader- and higher-level, one needs to dig deeper into the act of thinking itself to perceive such subtle isomorphism.

And we say “analogous” when vast constellations of symbolic thought or patterns of abstractions are identical to each other at our ordinary waking level of perception. As per Hofstadter (2008), “analogy” is what fuels thinking by flooding it with meaning. As soon as two or more patterns of abstractions, being analogous, map onto each other, meaning happens. Such mapping is itself meaning. But we forget that “a map is not the territory” (Korzybski, 1996, p. 58). We forget that our phenomenal world is virtual, i.e., far from reality. Most of us perceive restless overgrown virtual thoughts. By zooming out into a bird’s-eye view or meta-level, we can perceive the loopy movement of these overgrown symbolic thoughts, i.e., the flow of thought rather than the content. At this level, the picture becomes deeper, broader, and clearer. One perceives the unified fabric of thought activity rather than a few of the many scattered parallel configurations of symbolic-thoughts. It is precisely at this level where one perceives the strange loop.

But there is more to the act of experiencing that unfortunately remains foreign to the western and modern way of living. By very intensely and single-pointedly focusing on our attention onto consciousness itself, we can reach a point of experience without any thoughts. We just experience, without any phenomenal quality. At this meditative level of profound, intense, and alert experience, the strange loop dissolves. It gets replaced or rather hacked by a strange energy. This energy is of a totally different kind: alive, vibrant, fierce, and graceful like none other. In yoga, it is called the kundalini energy (Saraswati, 2012). Strangely enough, it is also represented by a snake. But if a strange loop is a snake eating its own tail, the kundalini serpent is an uncoiled snake that moves upwards and towards liberation. The snake finally uncoils itself, stops eating its tail, and ascends to transcend. The ascension can be experienced as a rapid torrent of powerful thriving energy pulsating from the lower end of the spine to the absolute top of the head. This thunderous bolt of energy only comes about when there is absolutely no sense of self and thought. Perhaps, it is better to say that this serpent energy ferociously devours the “self” in its upward journey of attaining or realizing a union with the cosmos.

Following is the entire goal of yoga: to sharpen and enhance perception to such a refined point of crystalline awareness that one gets liberated from all the perceptions. The strange loop of abstractions dissolves. One realizes a perfect union with the entire cosmos. In this very act of realizing, one achieves a perfectly flowing synch with the whole universe. There exists absolutely no conflict in one’s experience.

## 5.1 Virtual Intensification of Para-Self

Human beings are “natural born cyborgs”; the ‘human’ has from the beginning of the species been a three-way hybrid, a bio-cultural-technological amalgam: the ‘human mind’—its subjectivities, affects, agency, and forms of consciousness—having been put into form by a succession of physical and cognitive technologies at its disposal. (Rotman, 2008, p. 1)

Coming back to the parallelism in the brain and symbolic-thought, cognitive scientist Marvin Minsky (1988) has argued that there is no “single trick” or “perfect principle” to human-level intelligence. Rather, such complex, sophisticated intelligence stems from a vast and diverse society of parallelly occurring and much simpler “non-intelligent” cognitive processes of the brain. In this view, the brain is not reduced to one simple formal system but a constellation of many formal systems. Each system has its own algorithmic way of performing virtual representation for different purposes, uses, and results. He used the phrase “society of mind” to *virtually* refer to such “inside-the-head cognitive parallelism.” This shows that even while thinking about thinking, we are engaged in a recursive virtual reference, i.e., stuck in a strange loop. Why? Because we are thinking.

Furthermore, as Rotman (2008) claims, “not only is thinking always social, culturally situated, and technologically mediated, but that only by being these things can it happen in the first place” (p. 91). So is evident in Minsky’s phrase itself as he draws an analogy between the human brain and society. His usage of this phrase is the perfect example of the kind of recursively algorithmic isomorphism running on the brain that Hofstadter argued for. Minsky’s virtual mental representation of a society mapped his virtual mental representation of that very brain, which allowed him to have any virtual mental representation of the society in the first

place. The first mirror is mirroring the second mirror mirroring the first mirror, and so on. Our virtual mental reality is recursively conditioned by our bio, society, culture, and technology as it conditions all of them—in loopy feedback—through symbolic reference and application of ever-increasing abstractions. This loopy feedback leads to ever-increasingly higher orders of virtuality. A great many layers of virtual reality pile and twist upon one another as one gets brutally entangled in *maya*. The parallelism is already running wild inside the head. Our digital age has intensified it and made it more apparent on a higher virtual level. In doing so, even though it may give an impression to free us, it has actually further enslaved most of us in our illusory appearances.

Lastly, such an ‘I’ is plural and distributed, as against the contained, centralized singularity of its lettered predecessor; it is internally heterogeneous and multiple, and, like the computational and imaging technologies mediating it, its right behavior is governed by parallel protocols and rhythms—performing and forming itself through many actions and perceptions at once—as against doing or being one thing at a time on a sequential, predominantly endogenous, itinerary. In short, a self becoming beside itself, plural, trans-alphabetic, derived from and spread over multiple sites of agency, a self going parallel: a para-self. (Rotman, 2008, p. 8-9)

Rotman’s thesis is that the distributed, ubiquitous, interactive, and networked digital media and infrastructure of our contemporary period has altered an individual’s sense of self by dissolving its monoidal narrative into a collective, plural, and parallel dimension of higher-order virtuality. Media such as multidimensional visual imaging, distributed computing, social media, electronic networks, and simulation software have induced a parallel, dispersive, expansive, and

multiplicative character-dimension-narrative to one's sense of self. He calls this updated sense of self: "para-self."

Rotman is well aware that all media alter consciousness. He argues that alphabetic-writing was one of the developments in human bio-cultural-social evolution that noticeably altered one's sense of self by imbuing it with a serial, singular, monolithic, isolated, and linear nature. Contrary to that, the distributed, ubiquitous, interactive, and networked environment of contemporary digital and electronic media has now induced plurality to one's psyche, such that "the 'I' bleeds outward into collective, and the collective introjects, insinuates, and internalizes itself within" (Rotman, 2008, p. 99). To put it simply, initially, an egoic individual lived as if their self was isolated and singular. Now people are feeling "other selves" invade their "self" as they invade those "other selves." It is an age of transparency. The self's virtual privacy is being compromised. The ego is at unease.

From the perspective here the antibody to the illusions of the post-human is the recognition of the 'para-human,' since the condition in question is one of horizontal movement, not upwards or forwards but sideways; not linear or sequential but dispersive and parallel; not going beyond but an expansion, a multiplication, and intensification of what was always there; a new realization of the past and its futures, and with this a recognition of the incipient plurality of a psyche in the process of becoming beside itself. (Rotman, 2008, p. 103)

As argued in the previous section, it is crucial to remember that the illusion of "self" recursively and parallelly nested illusion of "other selves" within it from the very start. In one's head, there would be no sense of "my self" if there was no sense of "other self." The (dualistic) split inducing virtual character of symbolic reference fuels this recursive, parallel, self-

referential, and loopy development of the mirage of self. The “trans-alphabetic ecology of ubiquitous and interactive, networked media” (Rotman, 2008, p. 5) has merely but greatly intensified the multiplication of “what was always there.” This great intensification, expansion, and multiplication can be both beneficial and detrimental.

One can lose one’s sense of self if one’s “‘I’ bleeds outward into collective” (Rotman, 2008, p. 99). Rotman is arguing and hoping for this kind of “becoming beside oneself.” However, one can even develop an intensified sense of self if too many other selves “introject, insinuate, and internalize” within one’s sense of self. People, now more than ever, have access to more mental representations through the digital interface of social media. More access to mental representations (and that too on virtual platforms, i.e., higher orders of virtuality) leads to a greater number of (dualistic) mental representations encoded as “others” in one’s head. So, if there is a lack of awareness of the basic virtual nature of “self,” or if one lacks the necessary distance from one’s sense of self, then one would naturally consume more “selves” in the form of symbolic information. This is the opposite of meditatively, “sitting beside oneself to attain a state of mindful un-self” (Rotman, 2008, p. 103). Multiple symbolic representations of “other selves” would parallelly contribute to the growth of one’s sense of self, which is already an “overgrown symbol.” This self-referential activity of symbolic information comes at the cost of attention, which is not healthy for one’s internal well-being. As one’s sense of self intensifies, one gets further away from the primordial state of consciousness, therefore peace and fulfillment.

There is surely no longer any doubt that something large and unquantifiable is happening across the planet on the outside of our skins and inside our heads. A technologically mediated transformation of the ‘human’—global, all encompassing, and seemingly

inescapable—is being made by us to happen. Within this upheaval we are going parallel and starting to become beside ourselves... (Rotman, 2008, p. 105)

This kind of “becoming beside oneself” is highly virtual and informational in nature. This digital ecology of ubiquitous and interactive media multiplies and intensifies the parallel and recursive distribution of semantic information. However, this intensification is happening in the higher orders of virtuality. It multiplies and intensifies that recursive and parallel mirroring that was already happening among distributed and apparently separate “selves” both inside and outside their heads through the loopy tangled process of symbolic or virtual reference, recursive rearrangement of information, the isomorphism between virtual chunks of information, and so on. Hence, the essence of this kind of “becoming beside ourselves” also lies in the parallel and distributed flow of recursive semantic information. But, this flow is projected more towards the outer and virtual layers of sentience. Plus, given the intensified “informational” nature of this becoming, it comes at the cost of attention. Compromised attention means compromised internal well-being. The ever-increasing stats of psychological issues in this age of digital and social media support this insight. Richard Doyle and Trey Conner (2020), while pitying the situation, claim that the planet is suffering from a “Global Attention Deficit Disorder.”

While this digital, distributed, and parallel networking has made “the noosphere” (the thinking stratum of the planet) more visible, perceivable, and tangible—through intensified externalization and virtualization—to the agents involved in it, it has also eaten their attention and internal well-being and exaggerated their “selves.” This kind of “becoming” is unfolding on the more digital, virtual, gross, and outer layers of the noosphere instead of the more subtle and primordial levels of the human consciousness itself. For one to truly become “beside oneself,” the dissolution of self should also happen at the more profound and primordial level of



consciousness itself and not only at the higher orders of virtual reality. But if not anything else, this virtual “becoming beside oneself” does point to a deeper and actual “becoming beside oneself.” The increasing psychological issues accompanied by this externalization and virtualization have made it strikingly apparent that some more significant change is possible and needs to happen within the deepest levels of human consciousness itself. The self needs to be dissolved at its root level, not at its virtual surface level. In the next section, while exploring the possibility of transcending one’s illusion of self, we shall see how turning inwards (through practices such as meditation) is the only real way out.

## Chapter 6

### **Self-Transcendence: A Virtual Myth or a Real Possibility?**

Perhaps the most concise summary of enlightenment would be: transcending dualism.

Now what is dualism? Dualism is the conceptual division of the world into categories. Is it possible to transcend this very natural tendency? By prefixing the word “division” by the word “conceptual”, I may have made it seem that this is an intellectual or conscious effort, and perhaps thereby given the impression that dualism could be overcome simply by suppressing thought (as if to suppress thinking actually were simple!). But the breaking of the world into categories takes place far below the upper strata of thought; in fact, dualism is just as much a perceptual division of the world into categories as it is a conceptual division. In other words, human perception is by nature a dualistic phenomenon—which makes the quest for enlightenment an uphill struggle, to say the least. (Hofstadter, 1999, p. 251)

Hofstadter’s understanding of enlightenment is right. There is a division between one and the world as long as there is a sense of self, ego, or “I”. As discussed throughout this chapter, “I” is a self-referential loop of symbolic thought activity. All symbolic activity is virtual in nature; therefore, “I” is also virtual. This mirage is a consequence of “the breaking of the world into categories” that “takes place far below the upper strata of thought.” When this “breaking of categories” or “rearranging of information into virtual chunks” grows too self-referential (like a loop) from the macroscopic sub-organ cognitive level to the abstract level of symbolic thought, a virtual split surfaces between one and the world.

As soon as you perceive an object, you draw a line between it and the rest of the world; you divide the world, artificially, into parts, and you thereby miss the Way. (Hofstadter, 1999, p. 251)

The sense of self or strange loop is the perceptual division between one and the world. The dissolution of “self” is the dissolution of separation between one and the world. “Human perception is by nature a dualistic phenomenon,” but it rides on information consumption. It also cannot be our primordial nature as it is “virtual” or “artificial.” Herbert Simon’s (1971) simple or obvious observation—“What information consumes is rather obvious: it consumes the attention of its recipients” (p. 40)—has profound implications for the fundamental aspects of human cognition, perception, and psyche.

My brain (and yours, too, dear reader) is constantly seeking to label, to categorize, to find precedents and analogues — in other words, *to simplify while not letting essence slip away*. It carries on this activity relentlessly, not only in response to freshly arriving sensory input but also in response to its own internal dance, and there really is not much of a difference between these two cases, for once sensory input has gotten beyond the retina or the tympani or the skin, it enters the realm of the *internal*, and from that point on, perception is solely an internal affair. (Hofstadter, 2008, p. 279)

The consumption of information through senses is the precondition for the rearrangement of information into virtual chunks at the neural and the sub-organ cognitive levels. It is the precondition for the perceptual separation between one and the world that occurs “far below the upper strata of thought.” More precisely, it is the lack of attention that leads to a sense of separation. If one is attentive enough, the sense of separation dissolves. This can be further

verified, strengthened, and stabilized by single-pointedly meditating on some object. As one's attention flickers, this continuous virtual division of information into chunks, through recursive slicing, eventually leads to the illusory perception of separation. There is a reason why John Lilly invented the "sensory deprivation tank." He was blocking his continual stimulus of new information and allowing the existing process of division of information to come to rest. He (2014) was "programming and metaprogramming the human biocomputer" by allowing the various parallel metaprograms at the sub-organ level (that conduct recursive slicing of information into chunks) to stop. He was allowing his awareness to expand endlessly. The "relentless" activity of the brain "to label, to categorize, to find precedents and analogues" comes to rest as one turns one's attention inwards upon consciousness itself. Once the natural state of the brain becomes such that it no longer divides, labels, and categorizes, one is called enlightened. There is no sense of self, thereby no separation between one and the existence.

In such a state of expansive awareness, there is no sub-organ level division of information into virtual chunks, no sub-organ and symbol level isomorphism between those virtual chunks, no loop-like symbolic self-referential thought, no sense of self, no perceptual separation between one and the world. If one would simply turn inward, deprive oneself of sensory information, and focus attention on consciousness itself, this first-experience would feedback to the brain and rewire it on the sub-organ level, such that the rearranging of information into virtual chunks would begin to dissolve. This sub-organ level, in turn, would feedback to the symbolic phenomenological level, such that the self-referential thought or "I" would begin to dissolve. This recursive process goes on as one holds one's attention onto the consciousness itself.

Neuroscientists have discovered a region of the brain called the default mode network (Garrison et al., 2015). This network recursively nests other nodes and hubs like the posterior cingulate cortex, the medial prefrontal cortex, the angular gyrus, middle temporal gyrus, among others. This region is primarily correlated with the kind of self-referential narrative thought that Hofstadter refers to as the “strange loop.” In other words, it is connected to thought thinking about itself and thinking itself to be “self.” It is correlated with—mind-wandering, day-dreaming, *thought* about “others,” judgmental *thought* that categorizes and labels, *thought* dwelling in the past, and *thought* imagining or worrying about the future—any kind of unfocused *thought* not attending to the present moment or the immediate experience. These thoughts are associated with attention deficit, unhappiness, depression, and many other mental disorders. They follow when one is under the illusion of self. In long-term meditators, this region is less or almost not active at all (Garrison et al., 2015). These are the meditators who feel very feeble to no sense of self, or only feel it for a few moments throughout the day. This sense of self often feels like a contraction or blockage, and is not pleasant and therefore not convincing as the fundamental attribute of a human being. When one lets go of “self,” one suffers less, and that begins to feedback as one becomes aware of one’s increased well-being and clarity.

While it is good to know about this default mode network of the brain, one cannot do anything directly at this sub-organ level to make it less active in the long-term. The meditative practice to dissolve the default mode network and the strange loop must happen at the level of first-person experience itself. There is a tremendous healing power of the first-person experience if one can maintain attention on the present moment. Fundamentally speaking, living to the fullest is more about experiencing and less about thinking. And mediation happens to be just a great way to do so.

## 6.1 Meditation and the Four States of Consciousness

The undisciplined have no wisdom,  
no one-pointed concentration;  
with no concentration, no peace;  
with no peace, where can joy be? (Mitchell, 2002, *Bhagavad Gita* p. 58)

In meditation, one withdraws one's attention from senses and thoughts. In doing so, one turns that attention onto itself, and then simply maintains it. There is a loop-like movement in this twisting of attention onto itself. However, it is of a different kind than that of a strange loop. In a strange loop, an overgrown symbolic thought is thinking about itself. In meditation, primordial or minimum baseline awareness is at a distance from thought; it is simply attending to itself in "one-pointed concentration." The strange loop gets dissolved. Through continuous and rigorous practice, both bodily and mental functions drastically change. At the physical level, one's energy levels rise, appearance glows, and hunger and sleep take a big dip. At the phenomenological level, thoughts eventually come to rest. At the macroscopic sub-organ level of the brain, the recursive rearrangement of information into virtual chunks comes to rest. One stream of information flows as it is. Overall, one perceives the world without any division or labeling into categories. One still uses the dualistic language of labeling to refer but doesn't experience (in first-person) any division or labeling. One simply and one-pointedly attends to the present moment without any flickering in awareness. The flame of consciousness fiercely burns, without wavering whatsoever. This is the essence of an unfettered mind.

Apparently the master wants to get across the idea that an enlightened state is one where the borderlines between the self and the rest of the universe are dissolved. This would truly be the end of dualism, for as he says, there is no system left which has any desire for

perception. But what is that state, if not death? How can a live human being dissolve the borderlines between himself and the outside world? (Hofstadter 1999, p. 255)

As per Hinduism (Easwaran, 2007, *Mandukya Upanishad* p. 200), there are four states of consciousness: waking, dreaming sleep, dreamless deep sleep, and superconscious called *turiya*. During our ordinary waking state of consciousness, the sense of self is stronger. In the dreaming state, it gets a bit weaker. In deep sleep, it is totally lost, but so is our awareness. In Hindu systems of yoga, in this fourth state of consciousness called *turiya*, one experiences no “self” but is subtly and intensely aware at the same time. In meditation, it is a deep sleep like experience with awareness. This state is unknown to most western minds. But all paths of meditation are designed to reach this state of awareness. In Hinduism, this state, in its most intensified deep sleep or death-like form of hibernation, is called *nirvikalpa samadhi* (Saraswati, 2009). It is the most subtle state of consciousness, in which the vast unconscious layer of the mind also becomes conscious to an extent that varies from person to person. The sense of self, time, and space is completely transcended. One is dead to both mental and physical sensations. The metabolism and other bodily activity are very low, enough to keep one gently breathing. The breath rate drops to three breaths a minute or less. The pulse rate drops below forty. Despite all this, unlike deep sleep, one has very subtle but absolutely intensified awareness of existence. There is indeed a risk that the one in this state may not be able to come back to the waking state and eventually die. That is why these stunts are usually pulled under the guidance of a teacher.

*Turiya* is immanent within all the states: waking, dreaming, and deep sleep. Once the self of self, time, and space has been completely dissolved while having awareness, it doesn't surface again as long as one is doing some minimum essential practice. So, to answer Hofstadter, one can be perfectly alive and experience no boundary between oneself and the outside world in any

state of consciousness, if one can entirely attend to the present moment. In this natural, primordial, and pure state of consciousness, one is naturally and serenely content with oneself and needs nothing beyond or outside oneself for one's own fulfillment. One simply enjoys being.

Mind is in essence empty. However, it has a cognizant nature of clearly knowing whatever is at any moment. These two aspects, being empty and being cognizant, are a primordial unity. (Rinpoche et al., 1999, p. 56)

This knowing/enjoyment of *turiya* in the waking state is referred to as *rigpa* (experiential knowing of original wakefulness or empty cognizance) in the Dzogchen tradition of Tibetan Buddhism. *Turiya* itself is referred to as the “Mind of Clear Light” that perceives emptiness and interconnectivity of all phenomena. This “Mind of Clear Light” is empty cognizance. Empty of all perceptions and thoughts, it aware, that is, cognizant of everything. It is like a transparent ocean that reflects all phenomena but does not contain those phenomena. It is both void and light at the same time.

This is what we actually are: empty in essence, cognizant by nature, able to perceive, with no barrier between these two aspects. This empty quality is called dharmakaya. But we are not only empty — unlike space, we possess a knowing quality. This is what is described as cognizant nature, sambhogakaya. The capacity is the unity of these two, suffused with awareness... The minds of all sentient beings are the unity of empty cognizance, but because they are not suffused with awareness, they don't know this. (Rinpoche et al., 1999, p. 58)

Dzogchen master Tulku Ugyen Rinpoche teaches us that *emptiness* is the absence of mental constructs or perceptions, and *cognizance* is the quality of being aware of the absence of



mental constructs while being aware of the present moment. “It is original wakefulness that is empty in essence, cognizant by nature, and all-pervasive in its capacity” (Rinpoche et al., 1999, p. 52). Simply put, virtual appearances and thoughts that come and go within our minds lack intrinsic existence. They can be dissolved, extinguished, or destroyed. Mind, by its nature, lacks these appearances. It is empty of these appearances as these appearances are themselves empty. “Mind is also ultimately empty, but its way of being empty is not the same as that of appearances” (p. 53). While mind is empty of these appearances, mind is itself not empty like these appearances. Mind is experience; hence it is cognizant. There is awareness without appearances. Appearances can be dissolved; mind cannot be dissolved. Appearances are virtual. Mind is primordial.

Simply let mind recognize itself, like cutting through the thinking. That is called the view of Trekchö, the “thorough cut”... There is no need to merely think it is empty. Simply remain, without imagining or thinking anything. The moment you think, “Now it is empty,” a thought has already snuck in. This is unnecessary. This continual process of forming concepts and being attached is itself the root of samsara... Be free from even a hair-tip of conceptual thought. This is called recognizing present wakefulness. (Rinpoche et al., 1999, p. 55)

The whole purpose of Tibetan Buddhist meditative practice is to mimic the process of dying in their waking and dreaming states (Cozort, 2005). “In terms of training in this practice, there are three steps: recognizing, developing the strength and attaining stability” (Rinpoche et al., 1999, p. 66). Their highest formless meditation is called non-meditation (in Dzogchen and Mahamudra), as they realize *turiya* is already present and can be accessed throughout the waking state without needing to do anything. “It is simply allowing the state of unconfined empty

cognizance, which by itself is undistracted, to continue” (Rinpoche et al., 1999, p. 67). One is trained to abide in the “Mind of Clear Light” within and without meditation.

Simply allow the instants of nondistraction to naturally take place and unfold. To recognize mind essence doesn’t mean to sit and meditate upon mind essence. It means simply allowing, simply, experiencing, our empty and cognizant nature to be as it already is. (Rinpoche et al., 1999, p. 58)

All meditation is non-meditation. All non-meditation is meditation. Through this non-meditation meditation, Tibetan Buddhists make the best of the insight that there is no self to begin with that needs to be transcended. In realizing that there is no self to transcend, they realize self-transcendence.

When we forget mind essence, we become distracted, confusion arises. Meditating is conceptual, being distracted is confusion. Instead, be naturally stable in the state of undistracted nonmeditation. This undistracted nonmeditation is not something you have to create. You don’t have to hold onto the idea of that. Simply allow present wakefulness to be naturally stable by being free of thought. Be stable not in keeping a thought, but in the absence of thought. (Rinpoche et al., 1999, p. 60)

The stabilization of the absence of thought naturally happens when one learns to remain still. The whole practice of meditation and yoga is meant to still one’s mind, energy, and body for the natural unfolding of wakefulness. Stillness in mind, body, and energy is the condition for the unfolding of wakefulness. Strictly speaking, one cannot do meditation. Meditativeness is a primordial quality. It is about *being* and not about *doing*. Meditation naturally, automatically happens when the conditions are right. This is like how one cannot grow a plant. One only provides the right conditions, such as soil, water, and sunlight. The plant grows by itself.

Similarly, the original wakefulness (free of thoughts and sensory perceptions) unfolds by itself once there are stillness and harmony in mind, body, and energy. This non-meditation meditative stillness is not passive. It is the most alert state of a human being. In such stillness and wakefulness, joyful rest and intense alertness abide together.

In Hinduism, the quality and imagery of *Shiva* and *Shakti* are used to point to *empty cognizance*. *Shiva*, which means *nothingness* or void, refers to an intensified actualization of *shunyata*, emptiness. *Shakti*, which is dynamic energy, implies  *jyoti* (light and clarity). In *empty cognizance*, emptiness is *Shiva/Shunyata/Void*, and cognizance is *Shakti/Jyoti/Light*.

Only when this *turiya* is practiced in its most intensified form, it is called *nirvikalpa samadhi*. During this, one's body and brain approach a death-like state. However, it is not necessary to practice *turiya* in its most intensified form to become enlightened. The sense of self can be dissolved in the waking state. Most long-term meditators experience the complete dissolution of "self" in their waking states only when they are not meditating. Much to their surprise and joy, this happens unexpectedly. The whole inner world suddenly opens up and never closes down again. Buddha himself refrained his students from practicing *nirvikalpa samadhi*, as there is a bigger risk to it than death. The risk is that people who practice *nirvikalpa samadhi* for more extended periods when they come back to ordinary sense, they may lose all their so-called enlightenment too. It is because they never lost their sense of self in the waking state, the least conducive state for enlightenment. Their mind-body union has so strictly tied itself to *nirvikalpa samadhi*, that the ordinary waking state feels alien. Amidst this mental confusion, ego very quickly takes charge again. If one achieves the complete dissolution of "self" in the waking state, that is the most secure form of enlightenment, for it is most difficult to dissolve "self" in the

waking state. Hence most Buddhist meditations are tended to attain awakening in the waking or dreaming states, but not in a deep sleep state of hibernation.

## 6.2 In is the only way out

It is still of great interest to ponder whether we humans ever can jump out of ourselves—or whether computer programs can jump out of themselves. Certainly it is possible for a program to modify itself—but such modifiability has to be inherent in the program to start with, so that cannot be counted as an example of “jumping out of the system”.

(Hofstadter, 1999, p. 477)

While pondering whether Artificial Intelligence can ever make itself more intelligent and be conscious, Hofstadter also questions if a human being can ever get beyond the illusion of self by itself. Hofstadter is well aware of this philosophy of eastern traditions—Zen in particular—but doesn't seem to know about the practices. For sure, he doesn't practice even if he superficially knows about their existence. Throughout arguing for strange loops as an explanation for self, Hofstadter is engaging in metacognition or “thinking about thinking” (as he says it). He needs to go a step beyond. He needs to unfold into what Philip K. Dick (2011) called ultra-meta-cognition in *The Exegesis*. Doyle and Conner (2020) clarify that ultra-meta-cognition is inquiring: Who is this thinker that is thinking about thinking? Where is this thinker? What is this thinker? In the beginning, Hofstadter could engage in an internal dialogue of introspective thinking, but with practice, he should move beyond abstract thought. Otherwise, he would again get stuck in his strange illusory loop. In the higher stages of practicing, Hofstadter shouldn't ask or think about this question. By turning inward, he should simply look for the thinker thinking about thinking.

He should simply focus on the feeling of “I.” He should do so silently and one-pointedly. In doing so, his sense of self would automatically start to fade away. We have already discussed the mechanics behind this phenomenon: reduction in the default mode network, sensory deprivation, halting of the division of information into virtual chunks, ceasing of virtual symbolic reference, unknotting of self-referential thought, dissolution of perceptual separation, etc.

This quest for self-transcendence is not about “jumping out of ourselves.” There is no “self” out of which one can get outside. The more one would try to jump out of “self,” the more one would get tangled in the strange loop. As many yogis, mystics, and meditators claim, “the only way out is in” (Carlisi, 2014). One can only go in, deeper and deeper. The space of awareness is vast—a bottomless pit—vaster than any possible system of symbolic thought by any possible intelligent species. One cannot even begin to map its vastness, as it has no start or end. Such is the greatness of this primordial vastness at the level of one’s experience. Hofstadter needs to turn inward, not in the manner of thinking, but simply in the way of silently looking and observing. He should not impose, follow, resist, or react to any abstractions (and sensations) as he looks within. He should just look. The dissolution of self (self-transcendence) will follow, slowly but surely.

## Chapter 7

### Consciousness is Primordial: The Most Real As It Is

We explored Hofstadter's "strange loops" as an explanation for "self" on the symbolic level rather than the neural level. We broke down the essence of "strange loop" in terms of "recursive semantic information." By engaging in such self-inquiry, we observed how "self" is an illusion. For Hofstadter, both "self" and "consciousness" are labels for the same phenomenon: thinking. He (2008) asserts, "Consciousness is the dance of symbols inside the cranium. Or, to make it even more pithy, consciousness is *thinking*. As Descartes said, *Cogito ergo sum*" (p. 276). Here, we disagree with Hofstadter.

Given the influence in shaping the Western understanding of the mind, let's analyze this popular saying by Descartes: "I think, therefore I am." This conclusion is a big blunder by Descartes. It is nonetheless totally expected from a restless self-referential mind caught up in a dualistic logic thinking spiral. First, as Sadhguru (2019) suggests: *you are, therefore you may think* (para. 2). Our existence is intrinsically validated by ourselves with the fact that we experience it. More precisely, our ability to experience itself is validated by our experience. It is as simple as that. Whether we think or not comes second. By entering in meditative states of experience, we can have no "sense of self" and no "thought," but that doesn't mean that we cease to exist. We still *experience*, and we can experience without thought. Entities that do not experience also exist. But to be aware of the existence, the minimal degree of experience is sufficient, and thought is not additionally required. As Descartes was not a practiced meditator, he couldn't ultimately go beyond the experience of thoughts. He, therefore, concluded that the

“I” or “self” was the crux of his existence. But, as we have seen, this “I” is an illusion. If Descartes had gone beyond thought, he might have asserted something simpler like: “I am.” Notice, in this “I am,” the “I” is not identifying with anyone or anything. It is not even identifying with itself. Through this mystic hacking of language, one is simply pointing to the fact that one exists and experiences without identifying with anyone, anything, or even oneself. There is no self-reference, thereby no strange loop, thus no “I.” I, simply, am! But, I am not I, as there is no “I.”

### **7.1 Neurophenomenology: First-Person Inspection is Crucial**

While we agree that strange loops are a robust explanation for the mirage-like appearance or the virtual arising of the self, we do not think that self and consciousness are one phenomenon. While self is rooted in thinking (virtual symbolic reference), consciousness is simply experience. One can have experiences without any thoughts or active virtual symbolic references at the phenomenological level. This can be directly experienced in first-person: *consciousness-without-thoughts is directly experienced in consciousness-without-thoughts*. Starting from ancient India, the whole science/art of yoga and meditation is about seeing through the illusion of self, burning that illusion, and abiding in the “self-less” stream of experience. An ideally enlightened person is someone who doesn’t have any sense of “self” at all throughout day and night. That person simply experiences. This is first-person science. One merely needs to perform an experiment on oneself, in the laboratory of one’s own mind, by paying attention to one’s experience of the present moment, meditatively (Harris, 2015, p. 82).

Long-time meditator and neuroscientist Gary Weber (2007) refers to such “self-less” and “thoughtless” experience as “happiness beyond thought.” His brain has been scanned, and it has been found that there is no default mode network activity, except, by his own self-report, when he has low blood sugar. Now, there is much more to exploring the depths of consciousness than just shutting down the default mode network. But, at the very least, this contemporary understanding of neuroscience objectively points to “experience/consciousness without self/thoughts.” This is a third-person epistemology that skeptics like Hofstadter and Dennet may embrace. However, this project would additionally recommend the practice of meditation instead of merely “thinking” about consciousness. Their peer Sam Harris (2011), who has a meditative practice in Dzogchen tradition of Tibetan Buddhism, has greater clarity when it comes to realizing the primordial reality of consciousness:

The only thing in this universe that attests to the existence of consciousness is consciousness itself; the only clue to subjectivity, as such, is subjectivity. Absolutely nothing about a brain, when surveyed as a physical system, suggests that it is a locus of experience. Were we not already brimming with consciousness ourselves, we would find no evidence of it in the physical universe—nor would we have any notion of the many experiential states that it gives rise to. (para. 9)

Some academics think that consciousness or experience can be reduced to neural substrates. Others believe the opposite. So far, as Harris claims, there is no evidence to support that experience is reducible to the physical. The evidence of consciousness is found in consciousness itself. Consciousness validates the existence of consciousness. *Consciousness is a unique element of reality that has direct access to itself.* From the standpoint of conscious beings,



consciousness is the least virtual reality that has access to itself. To realize and stabilize this insight, one needs to turn inwards.

Since the scanning of the brain doesn't tell much about the experience itself, neuroscientists can't dispense with phenomenology. This union of first-person (subjective) phenomenology and third-person (objective) science is called neurophenomenology. Philosophers Edmund Husserl and Maurice Merleau-Ponty are widely regarded as shaping the roots of this field. Francisco Varela (1996), who also had a practice in Tibetan Buddhism, passionately advocated for this balanced discipline:

My claim is that the so-called hard problem that animates these Special Issues of the *Journal of Consciousness Studies* can only be addressed productively by gathering a research community armed with new pragmatic tools enabling them to develop a science of consciousness. I will claim that no piecemeal empirical correlates, nor purely theoretical principles, will really help us at this stage. We need to turn to a systematic exploration of the only link between mind and consciousness that seems both obvious and natural: the *structure of human experience itself*. (p. 330)

Varela (1996) sees the problematic nature of dualities that western philosophy and science seem to take for granted. It is only because of intellectually feeding these dualities in an effort to resolve them, one gets further entangled in the strange loop of their minds. This is due to the recursive and self-referential nature of thinking: the repetitive rearrangement of information into mappable virtual chunks whose very mapping is semantic in nature. The only real solution is the total dissolution of dualities—the goal of self-transcendence in mystical traditions. But since the majority of us would like some intellectual progress, clarification, and satisfaction, neurophenomenology seems the optimum way to 1) representationally study the brain-mind and

2) actively examine the flow, movement, and structure of experience itself. Knowing the pitfalls of a dualistic *representational*<sup>4</sup> approach—where the central “inside-outside” duality is itself imperfect and insufficient—Varela (1996) argued for an active embodied approach:

This orientation differs from representationalism by treating mind and world as mutually overlapping, hence the qualifying terms *embodied*, situated or *enactive* cognitive science. (p. 346)

Both Varela and Hofstadter realize that only the study of neural correlates is insufficient in studying the act of experiencing. Experience is active. Models and maps of experience are dead and inert. All modeling-mapping is itself a part of experiencing. So, studying “experiencing” includes studying “virtual modeling and mapping.” Hofstadter realized the same when he carefully, with discipline, performed a phenomenological examination of his experience. It turned out to be strange and loopy. Not only was the “self” self-referential, but the active examination of the “self” was itself self-referentially loopy. Since Hofstadter ultimately never got beyond the virtual loop of thinking, he wrongly concluded the self and consciousness to be the same: “thinking.”

In the study of cognitive science, one cannot eliminate the subject who experiences, because after all, it is that subject who experiences and studies the experience, and whose very experience is always the object of study, to begin with. We can never step outside our subjectivity through any rational or logical means. Such means are inherently self-referential, dualistic, and imperfect because they involve loopy thinking, symbolic reference, and virtual mapping-modeling. Any attempt to ideally step outside of subjectivity would only further tangle

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<sup>4</sup> In this approach, we are merely representing the “outside feature-full” world through our perceptual apparatus instead of actively engaging in a disciplined phenomenological examination of the movement of the act of representing itself.

one into the strange loop. Even the duality of “objective-subjective” is a subjective one. We can only dissolve all our subjective perceptions and rest in a state of consciousness that lacks any subjective and sensory content. Such a state of consciousness is the least virtual objective reality with direct access to itself.

In our book (*Varela et al.*, 1991) we first highlighted the intrinsic circularity in cognitive science wherein the study of mental phenomena is always that of an experiencing person. We claimed that cognitive science cannot escape this circulation, and must cultivate it instead. We explicitly draw from Asian traditions, Buddhism in particular, as living manifestations of an active, disciplined phenomenology. It was not the intention of that book to dwell on Asian traditions *per se* but to use them as a distant mirror of what we needed to cultivate in our science and the western tradition. (Varela, 1996, p. 346)

Varela argues that a student of cognitive science who also wishes to examine “issues” of mental experience (at its own level) must have a refined Buddhist-like mastery in the phenomenological examination of the movement and structure of experience. It is true. Otherwise, one would not go beyond the loop of intellectual thought. The very act of engaging in a “phenomenological examination of the mental realm” is loopy. For this reason, western *intellectual* phenomenology has not really given rise to any fruitful progress and enlightened masters. They have shifted the problem on a higher level but are nonetheless stuck in the loop of thinking.

The ancient *meditative experiential* phenomenology goes deeper into the experience itself, beyond thinking. This is done through many kinds of highly refined practices to dissolve thought and raise one’s energy: chanting, posture, breathing, visualization, self-inquiry, concentration, etc. Such examination not only reveals fruitful insights about the nature of mind

but heals the mind and transforms the very act of experiencing life itself. Life is naturally enhanced if one can enhance one's way of experiencing it. A true master of meditation not only recognizes the issues of mind but literally becomes issue-less as they burn all the virtual perceptions and thoughts. In this sense, the western phenomenology is incomparable to the eastern meditative one. *Merely uniting phenomenology with neuroscience is not enough. The phenomenology must be a meditative one.*

Everyone should cultivate a meditative phenomenology that not only allows one to examine and introspect one's ongoing lived experience but also refine and transform that experience. There is an element of healing involved in such phenomenological practice, which is not to be overlooked. All the major psychological issues of the post-modern digital age will dissolve in the early phase of practicing a meditative phenomenology. There is a huge gap between 1) one with a sense of self and 2) who realizes no self. It is as big as an ocean. In that oceanic space, utter bliss and profound clarity rest. An intense rest characterized by exuberating zest.

## **7.2 Consciousness and Reality**

To say that consciousness may only seem to exist is to admit its existence in full—for if things seem any way at all, *that* is consciousness. Even if I happen to be a brain in a vat at this moment—all my memories are false; all my perceptions are of a world that does not exist—the fact that I am having an experience is indisputable (to me, at least). This is all that is required for me (or any other conscious being) to fully establish the reality of

consciousness. Consciousness is the one thing in this universe that cannot be an illusion.

(Harris, 2011, para. 3)

Harris is absolutely correct to assert, “Consciousness is the one thing in this universe that cannot be an illusion.” All our perceptions of the world and ourselves are virtual, distorted, and imperfect. The same goes for all the models, maps, and theories of the universe and reality. Both the phenomenal world and “self” are—rearrangements of the unitive stream of the freshly incoming sensory information and the already dancing symbolic information—by the brain, thereby virtual. They do not exist. Indeed, “self” is nothing but the phenomenal world gone too self-referential. Anything that we ever access in the “external world,” there is always some degree of virtuality involved. There is always some sensory twist or symbolic reference in the process of accessing the world. We never have direct access to anything other than our consciousness. It is more right to say that “consciousness-without-an-object” has direct access to itself. At the level of experience, we can go beyond our virtual perceptions and into the primordial level. The primordial experience is “consciousness-without-an-object.” From the standpoint of “consciousness-without-an-object,” only “consciousness-without-an-object is.”

One may be tempted to say one is “consciousness-without-an-object.” However, this statement is incorrect. There is no “I” or identification process in “consciousness-without-an-object.” “Consciousness-without-an-object” does not identify itself with anyone, anything, or even itself. It only abides in direct access with itself. As soon as it starts identifying with anything or even itself, it clouds its direct access to itself. Everything else has indirect access to everything else. Only “self” identifies with itself, thereby with anything else that makes up “self” in the form of phenomenal symbolic information. Every perception that one has ever had regarding anything or anyone has contributed to the growth of self. During those intense

meditative states, when the sense of self is absolutely dissolved, all the perceptions that one has ever had are dissolved too. It is only the “consciousness-without-an-object” that persists, hence truly real. Even if it is virtual, it is the least virtual. In “consciousness-without-an-object,” there is no map, no model, no self, no symbolic reference, no perception, and no phenomenal quality whatsoever. Again, as Franklin Merrell-Wolff (1994) beautifully declared, *Consciousness-without-an-object is*. Sri Ramana Maharshi stated the same:

Reality is simply the loss of ego. Destroy the ego by seeking its identity. Because ego is no entity it will automatically vanish and reality will shine forth by itself. This is the direct method...

There is no greater mystery than this that being the reality we seek to gain reality. We think that there is something hiding our reality and that it must be destroyed before the reality is gained. It is ridiculous. A day will dawn when you will yourself laugh at your past efforts. That which will be on the day you laugh is also here and now.

(Godman, 1985, p. 55)

Experience is the condition for knowing. There would be no metaphysical concept of “reality” or a desire for such knowledge of reality if there were no experience. The concept of “reality” is itself virtual. Experience without any sensory, virtual, and phenomenal perception/quality does exist; it is real, unlike any concept, theory, or model of reality. One must unfold into the pure experience itself to *experientially realize* the reality of primordial experience. Once one realizes that there is no ego to transcend but only a sense of *ahankara* or separation to release, reality shows itself to itself. Through rigorous practice in meditation, the primordial reality of consciousness (without thoughts and “self”) becomes unshakably stabilized.

Hofstadter is wrong to equate consciousness with thinking. Unfortunately, he hasn't experienced the primordial nature of experience in its uttermost clarity. He is stuck in his strange loop of thought. Under the guidance of legendary Dzogchen master Tulku Urgyen Rinpoche, Sam Harris has experienced pure consciousness. Hence, he (2015) realizes the reality of "pure consciousness" independent of "seeing, hearing, smelling, tasting, and touching" (p. 127). He realizes: *consciousness-without-a-self is*. Neuroscientists-philosophers Christof Koch (2019) and Giulio Tononi (2012) also equate consciousness with experience. In integrated information theory (IIT), they treat consciousness as an irreducible substance and a fundamental aspect of reality. Consciousness is not about *doing*: behavior, thinking, and intelligence. It is more fundamental than behavior or *doing*: it is about *experience*, thereby *being* itself (Koch, 2019, p. 36). The true nature of consciousness without thought can be verified in first-person through direct meditations like Dzogchen, Mahamudra, Zazen, and Shunyata, among many others.

## Chapter 8

### Consciousness validates its own Fundamental Value

There are many views on consciousness: panpsychism, dualism, materialism, idealism, behaviorism, functionalism, computationalism, eliminativism, epiphenomenalism, biological naturalism, etc. Instead of going into details of each view, this section would provide an overall picture of the scene in the philosophy of mind<sup>5</sup>. According to some views, consciousness does not exist; it is an illusion. There is only physical matter; there is no experiential phenomenon. Among the views that declare the existence of consciousness, some treat consciousness as a fundamental substance, and others treat it as an emergent property/product of unconscious information processing. In certain views of emergence, the composition or material of the substrate of the algorithms does not matter. In other words, it is all about the patterns, organization, or arrangements of the matter and not the matter itself. As long as there is the right software, the material of hardware does not matter. In this view, the brain is essentially a computer, and consciousness is an attribute of certain programs. If the right algorithms or patterns of information processing exist, silicon chips can be as much conscious as our wet brains: strange loops fall under such a category.

In many of these views, consciousness is treated as an epiphenomenon, that is, not having any causal powers over matter. On the other hand, in panpsychism, everything is conscious to some degree. Philosopher David Chalmers (1996), who framed the “hard-problem,” supports

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<sup>5</sup> To anyone who wishes to look more in-depth into these various views, philosopher John Searle’s (2004) book *Mind: A Brief Introduction* is recommended.



panpsychism. More into his view later. Finally, in most forms of western monism, either everything is matter (materialism), or everything is mental (idealism). It is different from the eastern nondual monism, where everything—matter (gross) and mind (subtle)—is one. This difference makes a big difference. It is subtle but very important.

### **8.1 Thinking/Intelligence is about *doing*, Consciousness is about *being***

In behaviorism, the mind is the behavior of the body; there is nothing other than the body that constitutes the mental. Critics of behaviorism argue that sentient behavior is evidence for the existence and features of the mind, but is not itself the mind. Hofstadter's strange loops can be considered a form of behaviorism, for he wrongly equates consciousness to thinking. Thinking is more or less a behavior: an activity. Consciousness is more fundamental than thinking. One can be continuously fully conscious of the present moment without any thought. This proposition can be readily experimented and confirmed through first-person meditation. Consciousness is about the experience itself. If intelligence and thinking are about behavior or more precisely *doing*, consciousness is about our very *being* itself. In this sense, consciousness is more fundamental than thinking and intelligence. Moreover, consciousness is fundamentally more real than our notion and any theory-model of "reality" itself. If one seeks reality in the truest sense, one merely needs to turn the light of consciousness upon itself. The reality of consciousness is fully separable from any behavior. As Sam Harris (2011) states, we have examples of both behavior-

without-consciousness (a primitive robot) and consciousness-without-behavior (locked-in syndrome<sup>6</sup>).

## 8.2 Biological Naturalism and Naturalistic Dualism

Among all these views, there is a more thought-provoking view on consciousness. In Searle's *biological naturalism*, consciousness is not *ontologically reducible* to any neurobiological terms but is *causally reducible* to the brain processes (Searle, 2004, p. 79). Consciousness is a real subjective experience caused by the physical processes of the brain. The first-person experience cannot be reduced to the third-person ontology as a third-person ontology by itself cannot account for the first-person experience. There is simply a difference in kind between the two that we appreciate in our experience of every moment. We always experience in first-person. However, it doesn't mean that there is a first-person "self." There is only a first-person experience. Notions such as "first-person experience" and "third-person ontology" are only possible because there is something such as *experience* to begin with. For this difference in kind, Searle argues that consciousness is real and fundamentally irreducible to the brain processes as far as ontology is considered.

Yet, in Searle's view, conscious states are caused by lower-level neurobiological processes in the brain. "Causally speaking, they are not something "over and above" neurobiological processes" (Searle, 2014, p. 79). But as they are features or states of the brain

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<sup>6</sup> Locked-in syndrome is a condition in which a patient is aware but cannot move or communicate verbally due to complete paralysis of nearly all voluntary muscles in the body except for vertical eye movements and blinking. A famous case includes Jean Dominique-Bauby. He provided an account of his "locked-in syndrome" experience in the famous book *The Diving Bell and the Butterfly*, which he dictated by signing with his left eyelid.

system, they exist at a higher level than neurons like in Hofstadter's view. Consciousness is both a cause of events and response to events in our neurobiology. Micro-level events cause consciousness, and macro-level changes/events constitute consciousness, such that changes in macro-level also impact micro-level: there is feedback. For Searle, mental causation is real as his conscious first-person thirst causes him to drink water.

The fact that conscious states are ontologically subjective, in the sense that they exist only as experienced by a human or animal subject, does not imply that there cannot be a scientifically objective study of conscious states... The mode of existence of conscious states is indeed ontologically subjective, but *ontological subjectivity of the subject matter does not preclude an epistemically objective science of that very subject matter...*

Whenever I hear philosophers and neurobiologists say that science cannot deal with subjective experiences I always want to show them textbooks in neurology where the scientists and doctors who write and use the books have no choice but to try to give a scientific account of people's subjective feelings, because they are trying to help actual patients who are suffering. (Searle, 2004, p. 95)

Searle sleekly aims to transcend *property dualism* by arguing that mental properties are a species of physical properties, i.e., first-person physical properties. They are first-person as we directly access them in the first-person. For him, the only reason the mental states cannot be ontologically reduced to lower-level physical properties is that both are categorically different and not different in substance or even property itself. In other words, mental properties are a kind of physical properties with first-person ontology or flavor. To support this insight, Searle also criticizes Daniel Dennett's view that discussing subjectivity is unscientific. He argues that the

goal of science is to establish and validate statements that are *epistemically objective* (whose truth is evaluable by others) and not necessarily *ontologically objective*.

The object of inquiry of science can be *ontologically subjective* as long as we can make some *epistemically objective* statements about it. For example, all conscious experiences are *ontologically subjective*. And, when one says that a sentient being has no “self,” one is making an *epistemically objective* statement that can be tested by anyone in first-person. So, this is a first-person science that the likes of Daniel Dennett cannot dismiss. Their very dismissal (before actually and properly experimenting) is the proof of their subjectivity at play. For another example, take a person suffering from back pain. While the pain is itself *ontologically subjective* (only experienced by the person having it), the doctor’s diagnosis of the back pain is an *epistemically objective* statement that can be evaluated, verified, or falsified by the patient himself or by some other doctor. As a reminder, one can unfold into an oceanic state of consciousness that is deprived of all subjective thoughts, perceptions, and sensory information.

By “consciousness,” I mean simply “sentience,” in the most unadorned sense. To use the philosopher Thomas Nagel’s construction: A creature is conscious if there is “something that it is like” to be this creature; an event is consciously perceived if there is “something that it is like” to perceive it. Whatever else consciousness may or may not be in physical terms, the difference between it and unconsciousness is first and foremost a matter of subjective experience. (Harris, 2011, para. 2)

Consciousness—the sheer fact that this universe is illuminated by sentience—is precisely what unconsciousness is not. And I believe that no description of unconscious complexity will fully account for it... an analysis of purely physical processes will never yield a picture of consciousness. (Harris, 2011, para. 15)

Searle is right to claim that consciousness is not ontologically reducible to matter. It is also true that conscious states are real features of the world with the power of causality. But his claim that consciousness is causally reducible to matter, such that consciousness is merely matter gone first-person, is certainly suggestive, but it cannot be taken as definite. In fact, this is precisely where the hard problem lies. We have not achieved phenomenology from the neural substrates. There is a wide explanatory gap.

Chalmers (1996) made a distinction between the “easy problems” and the “hard problem” that Searle seems quite convenient to overlook. The easy problems are cognitive in nature, and the hard problem is phenomenological in nature. The easy problems are hard too, but we at least have a theoretical strategy: studying and modeling the physical brain. The hard problem is simply about the experience: Why is there any awareness or experience accompanying sensory information and cognitive function at all? Why can't all be unconscious information processing? The very difference between consciousness and unconsciousness is that of the subjective experience. Like Harris states, one cannot reduce the entire explanation for consciousness in terms of unconscious information processing or unconscious physical processes, as that would be overlooking the experiential aspect altogether. In addition to the understanding of the physical processes, there must be experiential revelations about *experience* in a language of experience itself. The fact that we need to talk about the experiential aspect is why we have the word consciousness at all. If we could speak of consciousness entirely in terms of *experience-less* physical processes, then we would not need a distinct word like consciousness at all.

Chalmers (1996) himself is property dualist and calls his view *naturalistic dualism*. Like Searle, for him, consciousness is ontologically distinct from matter. It is also not reducible to matter. However, unlike Searle, the difference is not only in first-person ontology (subjective

properties) and third-person ontology (objective properties). For Chalmers, consciousness is an altogether different property. It is not physical. Through his notion of philosophical zombie, he (2013) has also suggested that consciousness might be *correlated to* but *autonomous of* any known or unknown physical properties. There might be separate psychophysical laws determining the association between the physical and the mental.

Chalmers is not conclusive about these insights. He is merely speculative. As a result, he thinks panpsychism might be true given that we have conclusive evidence to neither support it nor reject it. In practice, he is not a strong panpsychist: he doesn't argue that everything has a mind. He (2013) only argues that some fundamental entities might have mental properties, that is, "there is something it is like to be a quark or a photon or a member of some other fundamental physical type" (p. 1). Even if one is wrong, one can at least speculate so, given that we never know if some rudimentary substance is conscious but only lacks the proper sensory and behavioral apparatus to display or convey it explicitly. Chalmers (2013, 2017) has both argued for and against (the *combination* problem) panpsychism. In favor of panpsychism, he (2013) has argued specifically for panprotopsychism:

roughly, the view that fundamental entities are *proto-conscious*, that is, that they have certain special properties that are precursors to consciousness and that can collectively constitute consciousness in larger systems. (p. 2)

Like Chalmers, this project doesn't offer any conclusive insights either in favor or in opposition of panpsychism. However, given that we have not been able to achieve phenomenological properties from the neural substrates at all, it would be wrong to dismiss the possibility of panpsychism entirely. The hard-problem is quite hard. Through the discussion of panpsychism,

the project only wanted to provide different views when it comes to the philosophical and scientific understanding of consciousness.

### 8.3 Computationalism

Before finally looking into IIT—the leading and most well-framed theory of consciousness—the project would briefly look into computationalism: the view that the brain is the hardware and the mind is the software. More precisely, the mind is an informational processing system realized by the brain; cognition and consciousness are forms of computation. While there is a difference in the understanding of the term “computer” among the proponents of the theory itself, a computer is generally understood as a Turing machine that manipulates symbols according to a rule or a set of rules, in combination with the internal state of the machine. In this theory, the brain does not compute an actual object but a representation of a given object. So was quite clear by understanding the powerful capacity of the brain to make *virtual symbolic references*. In this view, the physicality of the machine does not matter as long as we have got the right inputs, outputs, rules, relations, and internal states needed for the mind to be realized as functioning computation. If the right algorithms are present, both the brain and silicon chips can be conscious.

IIT also deals with the processing of integrated information but does not equate consciousness to computation. Instead, it (Koch, 2019) argues that consciousness is more fundamental than computation, thereby cannot be computed. Chalmers (1996) also speculates that a “certain kind” of all information-bearing systems might be conscious or proto-conscious but doesn’t necessarily equate consciousness with computation. Searle also rejects a

computational or digital view of the mind. First, he (2004) argues that computers only manipulate symbols and cannot attach meaning to those symbols, unlike the human brain, “and symbol manipulation by itself is neither constitutive of nor sufficient for meaning” (p. 70). It is true that a mere computational account of consciousness will never give a correct and complete picture and is only a useful way to think about brain activity. However, Searle’s reasoning does not seem to be entirely correct. Experience can be devoid of meaning. Computers can fully produce meaning and yet lack any experience.

Searle (2004) concludes computational activity to be inherently and purely syntactical: there is no semantic. Following Hofstadter’s insights, it is not that computers fundamentally or in principle lack any potential to attach meaning, it is more so that the algorithmic process of parallel, recursive, and integrated symbolic manipulation has not become self-referentially rich enough, such that mapping or analogy-making happening between symbols or chunks of symbols. Such mapping is itself meaning, and meaning is itself a symbolic activity. There is a lack of rich reflexive circularity. The computational algorithms have just not become recursively strange enough. For example, if someday computers become intelligent enough to create entirely new concepts, definitions, languages, maps, and models without any large data added as input through human-aid<sup>7</sup>, many may very well consider those computers as being able to convert sensory information into semantic information. But this doesn’t necessarily mean consciousness. Meaning is separable from consciousness. AI can be capable of producing semantic information and faking experience but lack actual intrinsic experience.

With regard to human experience, Searle considers the human ability to attach meaning to be fundamental to the first-person experience. While it is true that humans differ from other

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<sup>7</sup> Modern AI requires a large amount of data to learn. One must feed it.



sentient beings in our capability to near-infinitely extend our symbol repertoire and make meaningful mapping between symbols, humans can also unfold into such pure meditative experience that there is no meaning but only awareness and zest. One can be totally devoid of meaning but full of awareness, clarity, and bliss. Of course, one may find this awareness-without-meaning to be experientially meaningful itself. But this sense of meaningfulness does not depend on any symbolic activity but rather on the inherently fulfilling nature of the thoughtless experience of the present moment itself. Similarly, if one is one-pointedly paying attention to someone speaking, there would come the point when spoken words would become meaningless powerful throbbing vibrations. The experience of pure vibrations without actively attaching any meaning to them is far more pure, real, and meaningful. Indeed, this is the whole purpose of popular mantra chanting and *japa yoga*: to dissolve “self” and realize union by harnessing the vibrations of sound through attention and repetition. Again, consciousness is simpler than meaning. It is just experience.

Second, for Searle, one can attach computational interpretation to anything. While it is true that this is somewhat problematic and misleading, Deutsch (1998), Wolfram (2002), and Doyle (1997) also see this very possible languaging of anything in terms of computers to be the very fact supporting the universality of computation. Human brains can literally rearrange any information in terms of computation. As a result, humans can talk about anything—the universe, mind, life, language, society, and knowledge—in terms of computation. It is precisely the concepts of “recursion” and “information” that contribute to the universality of computation. Moreover, looking from a meta-level, it is precisely the recursive rearrangement of symbolic information of any concept or idea in terms of computation that gives rise to the universality of computation. The idea of translating anything in the language of computation is not bad unless

taken too literally and too extreme. Thinkers/researchers need to be aware that “a map is not the territory.” The notion of “computer” happens to be a universal map that can map other maps. It is a nice universal model, but not reality itself. This means that characterizing consciousness as a consequence of some algorithm running on the brain is not absolutely correct or the full-picture. As the integrated information theory (IIT) posits, one also needs to account for the intrinsic causal powers of the brain. More on this when IIT is discussed in detail.

But, why is “computer” such a universal model? Why can our brains recursively rearrange or translate any phenomenon in the language of computation? Because such recursive rearrangement or computation is what they are themselves doing in the very process of thinking itself. For contentless experience, there may not be such computational rearrangement at the levels of symbolic thought and virtual perception. But for thinking, there definitely is. However, the idea of “recursive rearrangement of information” is itself virtual and merely a map for the actual doing of the brain. Thus, we should be careful. The notion of computation centrally deals with the phenomenon of recursive rearrangement of information—something that the brain does in the process of thinking itself. When imposing a computational interpretation on anything, the brain is essentially describing something analogous to the nature of its own doing; it can describe anything in that language that best maps its own doing as it is carrying out that doing. It can describe anything in the language of computation (recursive rearrangement and manipulation of symbolic information) because that is what it itself does all the time during thinking. So, when it thinks, it can universally describe phenomena in a language which maps its own activity of thinking. This is precisely why the whole activity or human endeavor of thinking-experimenting-modeling is itself self-referentially loopy, virtual, imperfect, incomplete, and never-ending. Truth-seeking thinkers (logicians, mathematicians, philosophers, scientists, coders, etc.) are

bound to remain stuck in the strange loop repetitively unless they become meditative and go beyond thought.

#### **8.4 The Integrated Information Theory: Consciousness is simpler than Computation**

Neuroscience has made great progress in explaining how brain mechanisms perform cognitive functions such as perceptual categorization, attention allocation, decision making, motor control, memory acquisition, language parsing, and so on. However, there seems to be an explanatory gap (Levine 1983) or “hard” problem (Chalmers 1996) if one tries to explain, even in principle, why a particular set of neural elements in a state (say, some neurons within my brain firing and some not) should give rise to experience, that is, “feel like something.”[1] Integrated information theory acknowledges that one cannot infer the existence of consciousness starting from physical systems (“from matter, never mind”). Instead, IIT takes the opposite approach: it starts from experience itself, by identifying its essential properties (*axioms*), and then infers what kind of properties physical systems must have to account for its essential properties (*postulates*). Then IIT employs the postulates to derive, for any particular system of elements in a state, whether it has consciousness, how much, and of which kind. From these premises, IIT offers a parsimonious explanation for empirical evidence, makes testable predictions, and permits inferences and extrapolations. (Giulio Tononi, 2015, p. 4164)

IIT is one of the leading theories of consciousness. It rightly defines consciousness as experience. It also rightly considers its reality or existence to be self-evident. Accepting the immediacy of experience, it treats consciousness as intrinsically fundamental. This is a great

start. All these conclusions can be reached from a simple turning of attention onto consciousness itself. IIT recognizes the problematic nature of the hard problem. One of the earlier proposed solutions to the hard problem was the study of neural correlates of consciousness (NCCs). Chalmers (2000) defined the term precisely: *the minimal neuronal mechanisms jointly sufficient for any one specific conscious precept*. For example, as per neurobiological findings, cortex (especially neocortex) is most closely associated with consciousness. Inventor, tech enthusiast, and singularity proponent Ray Kurzweil (2013) has also argued the primacy of hierarchical pattern recognizers (in the neocortex) when it comes to many aspects of thought and subjective experience. The robust neurobiological finding supports Kurzweil's argument: the neural correlate of consciousness resembles a grid-like structure.

While NCCs answer the question of *which* neurobiological mechanisms are related or linked to consciousness, the research area studying them does not explain *why* they should have consciousness at all. There is a deep conceptual gap. Why does some neuronal mechanism go hand in hand with experience, and the other does not? Most importantly, where is consciousness? Yes, we can find neuronal areas associated with the brain, but we find no consciousness itself. "That is a gauntlet thrown down to materialism and its modern variant, physicalism. Zooming into the posterior hot zone with an electron microscope, we can see only membranes, synapses, mitochondria and other organelles. Were we to go even deeper with an atomic force microscope, individual molecules and atoms would come into focus. But never any experience" (Koch, 2019, p. 72). As this project has repeatedly emphasized, the evidence of consciousness is found in consciousness itself. Why? Because consciousness is that unique aspect of reality that has direct access to itself. Additionally, NCCs research also doesn't explain if consciousness can be computed or not. As IIT theorists (Oizumi et al., 2014) remark, "it is hard to see how it could

ever lead to a satisfactory explanation of what consciousness is and how it comes about”

(Introduction, para. 3).

It is important to recognize that one of the integrated information theorists—Christof Koch—who pioneered the study of NCCs along with Nobel laureate Francis Crick argued—for a long time—consciousness to be an emergent product of unconscious neural mechanisms of the brain. Upon reflecting and contributing to IIT, he (2017) changed his stance to consciousness being a simple fundamental substance that cannot be derived from anything else. More precisely, as per IIT, consciousness is a simple property of networked entities with some degree of irreducible intrinsic cause-effect power. Hence IIT (Koch, 2019) claims a form of panpsychism: it posits consciousness, not to the simplest elements of existence but certain complex structures with irreducible intrinsic cause-effect power. A cause-effect repertoire in IIT is defined as “The probability distribution of potential past and future states of a system as constrained by a mechanism in its current state” (Oizumi et al., 2014, Box 1. Glossary).

Finally, consider a rare class of conscious states: mystical experiences common to many religious traditions, whether Christian, Jewish, Buddhist, or Hindu. These are characterized as having no content: no sounds, no images, no bodily feelings, no memories, no fear, no desire, no ego, no distinction between the experiencer and the experience, the apprehender and the apprehended (nondual). (Koch, 2019, p. 7)

Koch also had a deeply impactful spiritual experience in the sensory deprivation tank. It seems that this experience further strengthened Koch’s (2019) realization of the primordial reality of consciousness:

I sank deeper into a bottomless, dark pool, suspended in a sightless, soundless, odorless, bodiless, timeless, egoless, and mindless space. (p. 115)

It seems Koch owes one to the fellow neuroscientist and psychonaut John Lilly<sup>8</sup>. Koch (2019), through this experience and his neurobiological work, has realized that experience can be divorced from the following: thought, language, and intelligence (p. 38). All these insights were realized more than ten-thousand years ago by the ancient philosophers and meditators of India. He (2019) also differentiates between attention and consciousness: “selective attention is neither necessary nor sufficient to experience something” (p. 38). There is a difference between the two. Consciousness is pure experience: *being*. Attention is about directing, concentrating, focusing, and channelizing: there is some *doing*. The act of turning the attention onto consciousness itself and maintaining it one-pointedly is one key to strengthening and stabilizing the mystical nondual experiences. Other is the act of completely surrendering one’s attention (not attending to anything at all) and dissolving into pure consciousness. Strangely, the latter is more efficient but hard to execute. According to Koch (2019), the reality of pure consciousness “constitutes a striking challenge to any computational account of consciousness” (p. 7).

Earlier, based on eastern philosophy and Varela’s (1996) work, the importance of phenomenology was emphasized in the study of consciousness. IIT takes this need very seriously and attempts to do away with the hard problem by reversing the entire approach, i.e., starting from the experience itself, finding its properties, finding the properties needed for physical systems to support experience with its properties. IIT, like every other theory, has its strengths and weaknesses. One of the shortcomings in IIT would be that even though it starts with phenomenology, it too quickly moves to the third-person analysis of the intrinsic experience. At the core of IIT (Koch, 2019; Oizumi et al., 2014) lies intrinsic, irreducible cause-effect power,

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<sup>8</sup> Lilly was the one to invent the sensory deprivation tank. It is also called an isolation or flotation tank.

yet it spends too little of time on the *intrinsic examination* of the movement of *intrinsic experience* and more on the *extrinsic analysis* of a basic *extrinsic* template of any *intrinsic experience*. IIT does not define the relationship between its epistemology (of studying and explaining phenomenology) and phenomenology very clearly or profoundly.

While IIT lays down the properties of experience and their associated substrates, it doesn't give anything regarding the flow of consciousness—one of its bigger weaknesses. Examination of a flow of consciousness is necessary for the study of experience. IIT also doesn't give a description of various meditative states of consciousness that meditative sages and monks would consider being most intrinsic and subtle states<sup>9</sup>. In this sense, the phenomenological side of IIT is impoverished. The theorists probably don't even know that there are various permutations of pure consciousness with their own subtle qualities. Nonetheless, all these holes regarding the nature of various states of consciousness can be overlooked as IIT has a different main goal: characterizing a relationship between any experience and its physical substrate.

While the *extrinsic analysis of intrinsic experience* is important, IIT can benefit from the work like that of German philosopher Hegel. In the *Phenomenology of Spirit* (Hegel et al., 2018), Hegel does a brilliant *intrinsic examination* of intrinsic experience<sup>10</sup>. Hegel realized that regardless of the content of consciousness, there is an essential universal flow/movement beneath the content. Examination of this universal flow allows one to navigate the subjective experience objectively: first-person science. Thus Hegel very precisely followed the spiral-like dialectical movement of consciousness, the rising of its contents-appearances, the negation of its contents-

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<sup>9</sup> Some major types of meditative states include:  
*dhyana, arupas, turiya, samadhi (savikalpa, nirvikalpa, and sahaja), and samyama*

<sup>10</sup> The details are beyond the scope and purpose of this project.

appearances, and so on, until consciousness ultimately frees itself from its loop of sense-object-appearances (dualities) for a homecoming to its primordial state of *nothingness*.

Hegel laid down an extremely precise description to map the journey of his intrinsic examination. Hofstadter's "strange loop" is a modern version of Hegel's dialectic that gets to the essential point of the recursive loop of self-referential thought. However, Hegel's description is philosophically more technical than Hofstadter's, given that Hegel's examination of his mind was itself far more rigorous than Hofstadter's. Plus, Hofstadter couldn't go beyond the strange loop. Hegel, at least intellectually and sometimes experientially, went beyond the loop of thought. In his mind and model, dualities kept negating and giving rise to each other in a highly contagious loop-like fashion. One can think of a phoenix continuously burning itself to only be born anew from its ashes to burn itself again, and so on. After an enormous intellectual struggle, there came the point when all the thoughts and dualities dissolved, leaving pure consciousness—the unitive experience with the rest of existence.

Despite the lack of rigor in the phenomenological inspection of both content-full and meditative consciousness, IIT has its cohesive and consistent simplicity. It is far from a complete picture of consciousness. But it (Koch, 2019) achieves its goal quite well: characterizing a relationship between experience and physical system supporting any experience (p. 77). It begins with five properties of experience that it considers to be self-evident. First, experience exists, a fact we appreciate in our experience itself. Second, experience is structured, consisting of multiple aspects in various combinations. Third, experience is informative. Fourth, experience is integrated, i.e., irreducible to its independent components. "Each experience is unitary, holistic, including all phenomenal distinctions and relations within that experience" (Koch, 2019, p. 8). Fifth, experience is exclusive, i.e., "definite in content and spatiotemporal grain" (p. 9). The flow



of time is not considered a universal property of experience as its perception ceases during mystical experiences. Every moment is *now*. Koch (2019) paraphrases Tononi's insight, "Every conscious experience exists for itself, is structured, is the specific way it is, is one, and is definite" (p. 10).

Even though IIT is not attempting to explain the arising of consciousness from a physical substrate, IIT argues the necessity for a physical substrate for consciousness, i.e., experience cannot exist in limbo. IIT is a theory that aims to characterize the relationship between experience and its physical substrate. A common critique of IIT is *why* should a system with maximally irreducible intrinsic cause-effect power (non-zero integrated information) have an experience. While it is true that IIT does not answer this question, IIT is only looking to see what *essential characteristic* differentiates those who experience from those who do not. IIT (Oizumi et al., 2014) frames its question in the following way: *why* certain systems have experience while others do not? Because those certain systems have a maximally irreducible intrinsic cause-effect power (non-zero integrated information). Why this specific quality gives rise to experience? IIT doesn't aim to answer that. IIT recognizes that one is bound to fall into a tower of turtles with an endless chain of *why* questions.

According to integrated information theory (IIT), consciousness is determined by the causal properties of any physical system acting upon itself. That is, consciousness is a fundamental property of any mechanism that has cause-effect power upon itself. Intrinsic causal power is the extent to which the current state of, say, an electronic circuit or a neural network, causally constrains its past and future states. The more the system's elements constrain each other, the more causal power... These causal powers can be

represented as constellation of points (distinctions) linked by lines (relations). (Koch, 2019, p. 79)

One must see that “self-reference” also lies at the core of IIT as only a system, which has cause-effect power upon itself, experiences. As seen throughout the project, Hofstadter (like many thinkers since ancient times) emphasized much on self-reference as the key to thought, “I,” and consciousness. Even though IIT differs in many fundamental ways from Hofstadter’s strange loop—in IIT, consciousness is experience (and can be thoughtless); in a strange loop, consciousness is self-referential symbolic activity (nothing but thought)—the crux of both lies in self-reference. In IIT, self-reference happens in the form of a cause-effect network affecting itself.

In IIT, “consciousness exists intrinsically, for itself, without an observer” (Koch, 2019, p. 80). It uses this axiom to reason that when it comes to experience, “everything must be specified in terms of differences that make a difference to the system itself” (p. 81). What Koch is trying to say is that when talking about experience, one cannot translate (can only associate) experience in terms of third-person neural terms. One needs to talk about experience in an intrinsic manner itself. However, one cannot simply talk about *experience* in a fully intrinsic manner, for *linguaging* itself is a part of going extrinsic. One can only intrinsically experience. Only silence is purely intrinsic. Thinking, talking, and *linguaging* are both intrinsic and extrinsic (social, biological, cultural). Moreover, “Here, we can usefully bring in Korzybski’s statement that whatever we say anything is, it isn’t” (Bohm, 2017, p. 1).

Koch and other integrated information theorists seem to forget that IIT is only a picture of the reality of consciousness. They seem to take everything in IIT as if it is the actual reality itself. IIT is just another map isomorphic to reality. If Hofstadter needs to realize that experience

without thought and sense-perception exists, Koch needs to realize the self-referential loopy nature of thinking, talking, and *linguaging* itself. Given that Koch is a neuroscientist, it is quite strange that he fully doesn't recognize, mention, and emphasize the high-order virtual reality of his thought and perception. IIT only appears to be talking about experience in an intrinsic manner. In reality, since IIT is *linguaging*, it is doing an extrinsic examination of the intrinsic approach to intrinsic experience. While it seems to be going inside-out, it is still stuck in the outside description of the inside. It is not IIT's fault; it is just the nature of thinking itself. To truly go inside-out in experience, one needs to go fully silent in thought: mystical nondual experience.

IIT differentiates between its usage of the word "information" from Shannon's usage. "The meaning of Shannon information is in the eye of the beholder, not in the signals themselves, Shannon information is observational and extrinsic" (Koch, 2019, p. 85). In contrast to Shannon information, Koch argues, "Integrated information is causal, intrinsic, and qualitative: it is assessed from the inner perspective of a system, based on how its mechanisms and its present state shape its own past and future" (p. 85). Now here is the trick: while what Koch and other integrated information theorists are referring to as "integrated information" may very well exist and be intrinsic in itself, but their very act of referring is an extrinsic treatment of an intrinsic phenomenon. The very concept of "integrated information" is Shannon information, just like the "laws of nature" are informational statements themselves. While the beauty of "integrated information" may not lie in the eye of the beholder, the beauty of *the notion* of "integrated information" definitely lies in the eyes of integrated information theorists. Like Einstein (1963) famously said, "Time and space are modes by which we think, not conditions under which we live" (p. 81). Similarly, "intrinsic integrated information" is a mode by which

we think about the inner, subjective experience; it is not an absolute reality by itself (which integrated information theorists seem to think). The map is not the territory.

Integrated information theorists need to realize that the level, where all this thinking about the intrinsic experience is happening, is highly virtual and loopy in nature composed of many twisted-virtual layers. A purely intrinsic phenomenon lacks any virtual reference whatsoever. Koch (2019) himself said that experience is about *being*, while intelligence is about *doing* (p. 36). So, as soon as Koch engages in any act of symbolic reference, he is moving from pure *being* to *doing*. Even the very duality of “inside/outside” is virtual in nature: a product of mind caught in recursive self-referential thought. So happens when one fails to see the infinite mirroring happening in the universe and takes one’s highly distorted perceptions to be real. Ultimately, in *turiya* (the least virtual state of consciousness), there is no inside and no outside.

IIT is a good theory, probably the best we have, but it (like any other theory including the notion of “recursive semantic information” laid out in this project) benefits and suffers from the nature of thinking and symbolic-virtual representation.

First, IIT (Koch, 2019) calls a whole set of elements with maximally irreducible causal power over itself as “main complex.” Koch (2019) likes to call this “main complex” as “Whole” (p. 87). This “Whole” is what experiences itself as an entity from its own intrinsic perspective. Second, there is a maximally irreducible cause-effect (conceptual) structure. The *central identity* of IIT characterizes an identity between the two: Any experience is identical to the maximally irreducible cause-effect structure associated with the system in that state (p. 87). To be precise, any experience is not identical to its physical substrate but to “the irreducible, causal interaction of the interdependent physical mechanism that make up the Whole” (p. 88). Just like strange loops, isomorphism also plays a central role in IIT, albeit in a different manner. “The

maximally irreducible conceptual structure specified by a complex exists intrinsically (from its own intrinsic perspective), without the need for an external observer” (Oizumi et al., 2014, Models, Identities, para. 2). These concepts within a complex are self-generated and self-referential:

Each concept is *self-generated*, because it must be specified exclusively by a subset of elements belonging to the complex. It is also *self-referential*, because its cause-effect repertoire refers exclusively to elements within the complex, and therefore only indirectly to external inputs. (Oizumi et al., 2014, Results/Discussion)

IIT is precisely further validating the insights of Dick and Hofstadter, in which the brain is *linguaging* to itself in its process of rearranging information recursively. Once the sensory input comes into the brain, it is all about the recursive semantic informational movement referring to itself as it makes a difference to itself.

“While emphasizing the self-referential nature of concepts and meaning, IIT naturally recognizes that in the end most concepts owe their origin to the presence of regularities in the environment, to which they ultimately must refer, albeit only indirectly” (Oizumi et al., 2014, Results/Discussion). It is true that the virtual activity going in the brain indirectly refers to the external environment and regularities. But in its very doing, this activity further generates itself by recursively referring to itself.

In this same line of thought with Dick and Hofstadter, IIT also confirms a strong association between feedback/recursion and consciousness. Systems with purely feed-forward architecture—no matter how numerous its elements and complicated its connectivity—cannot be conscious. For example, cerebellum—one of the biggest areas of the brain with the largest number of neurons (69 billion)—contributes almost nothing to conscious experience. “Even

being born without a cerebellum does not appreciably affect the conscious experience of the individual” (Koch, 2018, para. 8). Why? Because the cerebellum is almost exclusively a feed-forward system:

Moreover, the cerebellum is functionally divided into hundreds or more independent computational modules. Each one operates in parallel, with distinct, nonoverlapping inputs and output, controlling movements of different motor or cognitive systems. They scarcely interact—another feature held indispensable for consciousness. (Koch, 2018, para. 8)

IIT recognizes that there are quite a few proponents of the idea of “feedback” and “recursion” being the essential ingredients of consciousness. While it seems greatly true that purely feed-forward systems display no consciousness, not all feedback systems display consciousness either. The brain itself has many feedback circuits which do not seem to contribute to consciousness. As per IIT, for consciousness, there must be properties additional to feedback:

First, the need for reciprocal interactions within a complex is not merely an empirical observation, but it has theoretical validity because it is derived directly from the phenomenological axiom of (strong) integration. Second, (strong) integration is by no means the only requirement for consciousness, but must be complemented by information and exclusion. Third, for IIT it is the potential for interactions among the parts of a complex that matters and not the actual occurrence of “feed-back” or “reentrant” signaling, as is usually assumed. As was discussed above, a complex can be conscious, at least in principle, even though none of its neurons may be firing, no feed-back or

reentrant loop may be activated, and no “ignition” may have occurred. (Oizumi et al., 2014, Results/Discussion)

In IIT (Oizumi et al., 2014), even an inactive neuron contributes to the intrinsic causal power of maximally irreducible cause-effect structure. The complex is a whole greater than the sum of its parts. In such a dynamic interaction, inactive mechanisms also selectively constrain past and future states of the system as a whole. So, a complex that only displays feedback without making a difference to itself as a whole—doesn’t have maximally irreducible causal power—won’t contribute to consciousness. Such a complex is merely a subset or superset of the “main complex” that does have maximally irreducible causal power to exist for itself. Again, the heart of IIT lies in intrinsic causal powers.

Building upon these insights, IIT argues that consciousness cannot be computed. It must be built into the physical structure of the system. “To create human-level consciousness in a machine, the intrinsic causal powers of the human brain must be instantiated at the level of the metal, the transistors, and wiring making up its hardware” (Koch, 2019, p. xiv). Since contemporary computers lack the intrinsic causal powers of the brain, “even a perfect software model of the human brain will not experience anything” (p. xiv). We earlier saw how intelligence and consciousness are distinct. Intelligence is about *doing*, and consciousness is about *being*. As per IIT, we can definitely get machines more intelligent than humans, but that doesn’t necessarily mean they would be conscious. For them to be conscious, feedback tangled interactions (with intrinsic causal powers over the whole of themselves) must be built into the physical structure too.

I can’t stress enough the complete dissociation between the profoundly impoverished causal structure of the fragmented computer and the potentially rich intrinsic cause-effect

structure of the irreducible physical circuit the computer is accurately stimulating. (Koch, 2019, p. 147-148)

The integrated information that is necessary for a system to be conscious is zero in purely feed-forward physical architecture. It lacks intrinsic causal powers over itself. Feedback mechanisms are crucial for a system to experience. Current machine learning lacks such highly intrinsic and tangled feedback structures to have an experience like humans:

Today's success stories in machine learning are feedforward, deep convolutional networks with up to a hundred layers, each feeding into the next one. They can name dog breeds indistinguishable to most, translate poetry, and imagine visual scenes they have not previously seen. Yet they have no integrated information. They do not exist for themselves. (Koch, 2019, p. 144)

Adding simple feedback mechanisms here and there within the structure of the computer will not make the computer as a whole to be conscious. "The computer doesn't exist as a Whole, but only as tiny fragments" (Koch, 2019, p. 150). All the feedback mechanisms should be tangled, overlapped, and integrated for the whole computer to be conscious.

Consciousness is not a clever algorithm. IT's beating heart is causal power upon itself, not computation. And here the rub: causal power, the ability to influence oneself or others, cannot be stimulated. Not now, nor in the future. It has to be built into the physics of the system. (Koch, 2019, p. 149)

Koch (2019) provides an analogy to argue why a perfect simulation of the brain would not be conscious (p. 149). A software can simulate a supermassive black hole, but such a simulation/model of a black hole is not a real black hole itself as it lacks the extrinsic causal powers of the real one. He (2019) exclaims, "gravity is not a computation! Gravity has real



extrinsic causal power” (p. 149). Likewise, consciousness is not an algorithm. It is an intrinsic aspect of any physical system with causal power upon itself. Koch and other integrated information theorists seem to be right in their conclusion that physical structures must be built in such a way that they actualize consciousness. However, there may come a time when the definition of computation extends beyond the conventional Turing notion to encompass the aspect of causal powers too. A time when computation and causality are seen two fundamental aspects of the same coin—just like IIT seems to see mind and matter.

Intrinsic causal power does away with the challenge of how mind emerges from matter.

IIT stipulates that it is there all along. (Koch, 2019, p. 160)

IIT plays a middle ground between Searle’s *biological naturalism* and Chalmers’ *naturalistic dualism*. Like both Searle and Chalmers, IIT considers consciousness to be ontologically irreducible. Like Searle, IIT considers the idea of natural causal powers as fundamental to consciousness. Like Chalmers, IIT considers the idea of certain information-bearing systems as being conscious. It puts the two ideas together. A material system, with non-zero integrated information about itself, exists for itself, in the process of causally making a difference to itself. Koch (2019) claims that “IIT is not only fully compatible with Searle’s intuitions but makes his notions precise” (p. 205). This is not true. IIT is not fully compatible with Searle’s view. Searle himself has criticized IIT for its extrinsic treatment of intrinsic information. Searle’s view doesn’t even touch the notion of information.

Integrated information theorists feel that they are intrinsically approaching the concept of “intrinsic information.” They don’t seem to realize that they are partially extrinsic in their approach of “intrinsic information.” The very act of theorizing, languaging, and thinking is largely extrinsic in nature. They claim that “intrinsic information” differs from “Shannon

information”—which is conceptually true as the two hold different meanings—but they fail to see the second-order nature of their thinking, i.e., the very concept of “intrinsic information” is itself Shannon information in nature. This doesn’t mean that “intrinsic information” is “Shannon information.” This means their concepts of “concept,” “complex,” and “integrated information”—the entire theory itself—is largely extrinsic in nature. The purest intrinsic treatment of an intrinsic phenomenon only happens in the thoughtless state of meditative silence. IIT thinks that it is moving from “intrinsic information” to the intrinsic treatment of “intrinsic information.” However, IIT is moving from “intrinsic information” to the extrinsic treatment, usage, and application of “intrinsic information.” So is bound to happen as long as there is thought, language, and cognitive intelligence at play. For example, the very notion of “a difference which makes a difference” that lies at the core of IIT is an extrinsic import from the work of Gregory Bateson. Ultimately, like any theory or model, IIT is stuck in a strange loop of its own concepts. As Gödel’s theorems imply, there is a truth to be found outside IIT and its logical-philosophical framework.

Panpsychism is unitary. There is only one substance, not two. This elegantly eliminates the need to explain how the mental emerges out of the physical and vice versa. Both coexist. (Koch, 2019, p. 162)

Moreover, Searle’s view does not support panpsychism. IIT supports panpsychism in systems with some degree of intrinsic and maximally irreducible causal power. So, in this sense, IIT leans more towards Chalmers’ view. Like Chalmers’ view, IIT’s version of panpsychism treats both as two sides of the same substance, with experience essentially being intrinsic causal power of matter (with certain integrated information) acting upon itself. In Searle’s view, the mind is causally reducible to matter. In IIT, the mind is there all along as the intrinsic causal

powers are themselves not reducible to matter. They exist with the matter, but it is these powers themselves that allow a certain material system (as a Whole) to be informed about itself (as a Whole) while making a difference to itself. In this process, the system experiences itself to exist.

Intrinsic causal power does away with the challenge of how mind emerges from matter.

IIT stipulates that it is there all along. (Koch, 2019, p. 160)

The philosophical language of IIT can be polished. IIT attributes consciousness as a fundamental property of certain complex structures (with intrinsic causal powers) and not of simplest structures. One may wonder: Why does *experience* come into existence in complex structures and not in simplest structures if *experience* is “there all along” as claimed by IIT? It would imply that the mind is not there all along. How can something that is “there all along” be all along in certain systems only?

But what IIT seems to be trying to go for is that there is some degree of causal power all along in matter. After all, “things” interact, influence, and make a difference to each other in the world by informing. It is only when this causal power becomes intrinsic in the process of acting upon itself, experience happens, and that particular system with that intrinsic causal power feels to exist. The potential of intrinsic causal power exists all along in the form of causal power. The actualization of this potential occurs when a recursive interaction happens. When this causal power becomes self-referential and self-affecting, experience happens. For example, individual atoms in a heap of sand may be conscious, but the heap of sand is itself not conscious, as the system as a whole lacks that intrinsic causal power upon itself. In this way, IIT also attempts to solve the *combination* problem against panpsychism.

To put IIT’s insight in more specified fundamental terms: Consciousness is an intrinsic potential immanent in the matter (due to the causal nature) that is actualized when a maximally

irreducible intrinsic cause-effect power surfaces due to highly interactive, overlapping, and tangled recursion and self-reference. Entities causally affect each other in the process of tangled, recursive rearrangement of information.

While IIT does a great job in approaching the problem of consciousness, its theorists need to realize the virtual nature of it. While information—such as “intrinsic information” that makes a difference to itself by informing itself about itself—may exist, the very concept of such “intrinsic information” (and “information”) is only possible in the presence of a conscious observer capable of virtual symbolic reference and thought activity. It is highly virtual. Here also we run into a circular self-referential loop: a system with some intrinsic, integrated information is conscious, and the knowledge of such “intrinsic, integrated information” is only possible because of consciousness. Moreover, IIT is stuck in a self-referential loop of its own concepts. So is bound to happen as long as there is thought and virtual-symbolic reference involved.

IIT comes with great usages, but as far as primary understanding of consciousness is concerned, it really doesn't make any major improvement. It also doesn't profoundly describe the flow of consciousness and its contents. At the level of experience itself, it also doesn't know about the various permutations of “pure consciousness,” each with their subtle differences. Plus, it doesn't know how this pure consciousness is tied to the body-energy system as a whole (an area where Hindu/Buddhist Yoga and Tantra excel). It doesn't even show how to induce such experience naturally.

The whole picture of consciousness requires integrated information of both East and West. At its best, IIT nicely characterizes differences in the physical-informational properties of those materials that are conscious and those that are not. There lies a great experiential unchanging truth about consciousness outside the framework of IIT or any other theory-model-

map that can be found directly within consciousness without any thoughts. Such consciousness-without-an-object itself is that truth: an unchanging aspect of reality with direct access to itself. This truth liberates one from the strange loop of thought. All the concepts (complex, concept, integrated information, intrinsic information, etc.) that IIT might have to explain consciousness are just that: concepts. These concepts are representations which are highly virtual, imperfect, self-referential, and dualistic. They are not the least virtual reality with direct access to themselves. They are not actually real. Compared to these virtual concepts, consciousness itself is really real.

### **8.5 Consciousness is Beyond Fundamental vs. Emergent**

The question of “whether consciousness is a fundamental property or an emergent property?” has daunted the western thinkers since the times of ancient Greeks. It is important to realize that this very duality of fundamental-emergent is inherently virtual and imperfect, like every other logically produced duality. Logic itself is inherently imperfect and incomplete as it is an active product of virtual symbolic thinking, which is itself self-referential, imperfect, and incomplete. One follows any line of recursive reasoning, and one gets caught in a strange loop. Even if we neglect the inherently flawed, virtual, and imperfect nature of thinking, reasoning, and logic, as Deutsch (2007) claims, “regarding microphysical explanations as more fundamental than emergent ones is arbitrary and fallacious” (p. 47). Both emergent and fundamental explanations are fundamental (in their respective unique ways) to the human explanatory loop. It is as simple as that.

So far, experience—neither conceptually nor empirically—has been reduced to matter (or vice versa). As per this, consciousness may not necessarily be an emergent property. It seems more likely to be a fundamental property of nature. But most importantly, whether consciousness is a *fundamental property* or an *emergent one* does not determine its *fundamental value*. Its *fundamental value* is determined by the very fact that: *it is that unique aspect of reality that has direct access to itself*. It is more real than any theory, map, model, or even the concept of reality itself. As Harris (2015) bluntly states:

Consciousness is the basis of both the examined and the unexamined life. It is all that can be seen and that which does the seeing. No matter how far you have traveled from the place of your birth, and however much you now understand about the world, you have been exploring consciousness and its changes. Why not do so directly? (p. 200)

Hofstadter claimed that our nature prevents us from understanding our nature. This claim is only valid as long as we are trying to think about our nature virtually. It is also only valid regarding our nature at the gross level, which is continually changing. But, it is not true at the primordial level, where pure consciousness (without any virtual thoughts/perceptions) exists in direct access to itself:

However, his claim that our nature prevents us from understanding our nature cannot be taken at face value. Like a Gödelian claim to be unprovable, it applies only inside the system from which it is derived, namely Hofstadter's own philosophical framework. But, again like Gödel's construction, this simultaneously reveals that there is a truth to be discovered outside of that framework. (Deutsch, 2007, p. 47)

Deutsch is right that there is a truth to be discovered that lies outside Hofstadter's philosophical framework, when it comes to questions related to mind, consciousness, thinking, and reality.

However, fortunately, Hofstadter's strange loops show the dualistic, self-referential, paradoxical, and incomplete nature of thinking itself. Thinking cannot arrive at the kind of truth that intelligent sentient beings crave from the very core of their experience. Truth has always been more of an experiential quest than an intellectual one. World's best chess AI program, which is more intelligent in playing chess than a human player, doesn't crave truth as the player does. Though, like most people, the player might not consciously know about their craving for this kind of truth.

The advances in computer science, neuroscience, and philosophy will surely provide a better understanding of consciousness than the current one. Is consciousness fundamental or emergent? If it is emergent, then how? Is it substrate-dependent? Is it an attribute of certain programs of the brain that can also be run on silicon? Or, should it be built into the structure of the system itself? Can machines become conscious? Despite our imperfect, self-referential, dividing, dualistic, and paradoxical character of thinking and reasoning, all these are interesting questions worth exploring. We may realize that our fundamental/emergent dichotomy is deeply flawed and insufficient. We may also realize that we are not asking the right questions. We may also realize that we are incapable of asking the right questions. We may also get answers to these fundamental questions. But, we must not ever forget that all the answers that we would ever get are implicit in and derived from our collective framework, which in itself is virtual, incomplete, and imperfect. Gödel's theorems (at least in a suggestive manner) apply on the very foundation of our collective framework. Even our notions of "complete" and "incomplete" are virtual, incomplete, and imperfect.

Many truths about ourselves will be discovered in consciousness directly, or not discovered at all. (Harris 2011, para. 12)

There lies an entirely different kind of theoretical and applied epistemology that lies outside the logical, philosophical, and scientific framework of thought, abstraction, symbolic reference, and reasoning embraced by the western mind. This different kind of epistemology is that of the nondual meditative traditions of mysticism. Zen tradition that was touched upon by Hofstadter follows under this epistemology. These traditions are not vulnerable to incompleteness, as they are not trying to create any consistent framework, system, or model of reality. They want to transcend their dualistic perception, dissolve all their virtual mirages, and exist in absolutely unwavering unity with the rest of existence. They realize that all maps and models of reality are not reality itself. Nonetheless, the people who practice these traditions are still the most hardcore realists. Instead of engaging in symbolic reference, which is virtual, they want to abide in that least virtual state of consciousness, which has direct access to itself. They recognize that the least virtual reality to which they have direct access is their own contentless (thoughtless) consciousness. They are less interested in making a model or map of such least virtual reality, but more interested in directly accessing it, and then abiding in it.

From tradition to tradition, the practices to access the primordial or the least virtual state of consciousness differ. The word “yoga” does not refer to that aerobic stretching that has gotten mainstream. The word “yoga” is very ancient and means union; this union requires dissolution of the strange loop of self. In section 6.2 (*In is the only way out*), the practice of ultra-meta-cognition was recommended to Hofstadter. In Jnana yoga or the yoga of knowledge, the method of ultra-meta-cognition is called Atma Vichara or self-inquiry. It was popularized by the Indian sage Sri Ramana Maharshi. He would go into the state of *nirvikalpa samadhi* for days on end. These sages are not interested in accumulating more information and virtual representations, but in transforming their entire being from the inside out through the practices of self-knowledge.



They want to free their minds from any virtual perceptions of the world due to the illusory, dualistic, and confining nature of the thought. Given so, they are less interested in theorizing about the universe, but more in liberating themselves by achieving pure union with the universe.

So, there is indeed a kind of truth that lies outside Hofstadter's, anyone's, and everyone's logical-philosophical-scientific framework. This truth can only be reached through the purity of experience, for this pure experience (devoid of any duality) is itself that truth. One can never reach this truth by thinking or symbolic reasoning. One must turn inward and take a deep dive into the vast endless empty space of consciousness. When awareness is free from all the symbolic or virtual perceptions, representations, abstractions, ideas, thoughts, etc., truth is experienced. One may never understand one's nature at the gross level or higher orders of virtuality, as our finite nature is being actualized on fly; hence there is no getting ahead of the curve. But one can surely access one's primordial nature by unfolding into the deeper dimensions of thoughtless, selfless, and egoless consciousness. This nature is primordial because the thoughtless or egoless consciousness is "unchanging." It is that eternal screen upon which our virtual and perceptual drama is projected. It is a timeless, spaceless space.

## Conclusion

This project explored various views on the nature of consciousness and self/ego (“I”). A complete study of consciousness requires both neuroscience and phenomenology: neurophenomenology. One cannot simply dismiss experience, as experience is the condition for knowing the world and oneself. Hofstadter’s (1998, 2008) idea of “strange loop” is a robust phenomenological explanation for the illusory sense of self (“I”). It also showed the virtual, self-referential, imperfect, and incomplete nature of symbolic thinking itself. His idea of “strange loops” was broken down into more fundamental terms of *recursive semantic information*. Recursive rearrangement of symbolic, semantic information by the brain is a condition for the strange loop. When this active, continuous process of recursive semantic information becomes sufficiently self-referential at the phenomenological level, a sense of self or “I” surfaces.

The illusory sense of “self” is a source of one’s mental suffering and agony. An overgrown “I” is an information-rich symbolic-mental tumor. It is associated with many mental and attention disorders as information consumes attention. The inability to attend to the present moment while being caught up in self-referential thought is the key reason for unhappiness. The most profound and fruitful solution to this problem lies in the meditative practices of Hinduism (esp. Advaita) and Tibetan Buddhism (esp. Dzogchen). These practices “program and metaprogram the human bio-computer” (Lilly, 2014) and shut down the default mode network (DMN) to dissolve self, that is, *to eat the strange loop that eats awareness*.

Given the practical and first-person experimental utility of eastern meditative phenomenology, the western phenomenology needs to be updated to a meditative one. Some

truths of consciousness can only be (directly) *experientially realized* in consciousness itself. For that to happen clearly and profoundly, meditative phenomenology is required. There is a big difference in 1) theoretically deducing that self is virtual and 2) experientially being free from the illusion of self. Continuous meditative application of eastern phenomenology is necessary to stabilize the most profound egoless and thoughtless states of consciousness in the waking state.

Hofstadter (2008) ended up equating consciousness and self as one. He concluded the two phenomena to be one phenomenon: self-referential thinking. However, this project showed Hofstadter got only one half of the picture as correct. A sense of “self” is indeed a virtual illusion that arises due to virtual and self-referential symbolic thought. On the other hand, consciousness is fundamentally and intrinsically real. Consciousness (in its primordial nature) is about pure experience devoid of any thought or sensory perception: *consciousness-without-a-self is, or experience without any phenomenal object is*. This objective claim regarding subjective experience can be tested in first-person experimental science of meditative phenomenology. Beyond any sense-perception, intellect, thought, and self/ego, pure consciousness exists.

Based on strange loops, Integrated information theory (IIT), and the relationship between recursion and information, the project concluded a direct, strong relation between consciousness and feedback loops of information. Consciousness is *ontologically irreducible* to physical reality. Consciousness probably isn't *causally reducible* to physical reality. If consciousness is an activity of intrinsic, causal powers (of a system with non-zero integrated information) acting upon itself (as suggested by IIT), then causal powers themselves are not reducible to physical substrates. In such a view, consciousness is a potential immanent in the matter from the very start, which essentially and not accidentally requires feedback loops. Feedback loops cannot

themselves be physical as they are unfolding processes. Feedback loops, in other words, are events rather than things.

Both consciousness and matter, therefore, are fundamental aspects of each other. Matter is a gross aspect of existence, and mind is a subtle aspect of that very same existence. Regardless of whether consciousness is a fundamental or emergent property, its *fundamental value* lies in the fact that it is that unique aspect of reality that has direct access to itself. It exists in direct access to itself. *Consciousness-without-a-self* is more real or less virtual than our virtual-metaphysical concept of “reality” itself or any theory/model of reality. Thoughtless *consciousness-without-a-self* is an *experiential* reality that can be directly accessed by itself. In contrast, the intellectual notion of “reality” is *virtual, symbolic, metaphysical, and representational*: a product of virtual thinking. As demonstrated by strange loops, thinking itself is inherently virtual, self-referential, incomplete, and imperfect. Therefore, consciousness is more real than any theory of reality/consciousness itself.

*Consciousness-without-an-object* is the least virtual reality or truth to which all sentient beings have direct access. All theories, maps, and models of reality or truth rely on 1) imperfect and incomplete self-referential dualistic thought and logic-language and 2) indirect virtual reference and representation by the brain. These are both fundamentally representational strategies. On the other hand, thoughtless, selfless, and objectless consciousness accesses itself in its bare-naked state, free from any virtual reference, perception, representation, and any other phenomenal object.

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## ACADEMIC VITA

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### EDUCATION

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**Schreyer Honors College - The Pennsylvania State University, University Park, PA**

**May 2020**

Bachelor in Science in Information Sciences and Technology (IST): Design and Development

Minor in Philosophy

Honors Thesis in IST: “On Recursive Feedback between Mind and Information”

### RESEARCH INTERESTS

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Recursive Feedback between Mind, Matter, and Information: Recursive Semantic Information

Neurophenomenology: Meditation and Flow/States of Consciousness

Nondual Asian Philosophy: Yoga and Tantra

### RESEARCH EXPERIENCE

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**Engineering, Technology, and Ethics Research Fellowship | State College, PA**

August 2018 – May 2019

- Selected among the top 5 undergraduate students from across Penn State University Park campus for the prestigious interdisciplinary fellowship that focuses on critical infrastructure security.
- Conducted SWOT and data analysis on security risks and ethical implications of automated port shipping.
- Analyzed and provided technical solutions to ethical issues arising from vulnerabilities in automated systems.

**Research Assistant | College of Information Science and Technology, State College, PA**

January 2018 – May 2019

- Used a software called Themis to identify, test, and measure discrimination like sexism and racism in an Artificial Intelligent software system in the fields of human resource and healthcare.
- Targeted various suspected hiring software, tools, and info-systems with the potential to develop implicit bias.
- Developed theoretical and computational methods to prevent/mitigate implicit bias in AI software systems.

### PROFESSIONAL EXPERIENCE

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**Global Technology Analyst | Bank of America, Charlotte, NC**

Jun 2019 – Aug 2019

- Drove project and communication between data team and risk management team.
- Reduced risk of hardware and software assets from 54% to 12%.
- Coordinated and participated in weekly meetings.

## **Software Engineering Intern | Excellent Softwares, New Delhi, India**

May 2017 – July 2017

- Collaborated with a team of 5 people to customize (Java MVC and .NET Framework) a business accounting software called BUSY used for financial accounting and inventory management.
- Successfully reduced the runtime complexity by debugging a relative chunk of unneeded code.
- Performed user testing and simulations of a cloud-based Distribution Management System called Info Serve to ensure the usability of the new interface on major web browsers.
- Used SQL to maintain and modify the company database by creating/updating tables.
- Handled documentation for the technical processes, phases, and the user analysis of results.

## **PROJECT EXPERIENCE**

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- Developed a Video Rental System (Java and Swing GUI) that allows users to rent movies by implementing Derby Database (SQL) and data structures to keep track of movies, transactions, and user inventory.
- Lead a team of 4 people to design, develop, and implement a database solution using SQL for an online movie rental company. Prepared ERD and entire documentation that included the concept, plan, budget, user analysis, privacy policy, and the terms and conditions.

## **SKILLS**

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Languages: Python, Java, SQL, JavaScript

Other: SDLC, Agile Development, UML, Risk Control Tools

Applications: Netbeans IDE, MS Visio, MS Office, MS SQL Server, Android Studio

Soft Skills: Leadership, Writing, Project Management, Communication

## **HONORS AND SPECIAL ACTIVITIES**

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- Research on Mind and Consciousness by merging western Cognitive Science with Eastern (Buddhist and Indian) Philosophy and living in a monastery:  
<https://news.psu.edu/story/517760/2018/04/23/research/ist-schreyer-scholar-further-philosophy-tech-research-indian>
- Secured National Rank 2<sup>nd</sup> (India) in MAA AMC12 (American Mathematics Competition)
- Academic Excellence Scholarship from Penn State Schreyer Honors College
- Engineering, Technology, and Ethics Fellowship from the Rock Ethics Institute, Penn State
- Charles E. (Chick) and Joan F. Rolling Scholarship from Penn State College of Engineering
- Student Engagement Grant from Penn State Student Engagement Network
- Semifinals of Nittany AI Challenge