

Computing consciousness with meta-intelligence

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1 Preface

I started working on this paper to find a more modern approach to consciousness, and arrived to my present opinion that the classical, self-referencing definition of consciousness is impossible and not more than learned behaviour. Most of my proofs and arguments are from mathematics and computing theory, but for the later parts I will use varied philosophies from eastern and western traditions as well. As a conclusion I will state that consciousness is not a single experience shared by different entities but a different experience fundamental for each entity, and building artificial consciousness is only a matter of complexity and resemblance. The most important issue we have currently is not using the plural of consciousness, as there is not a single phenomena of consciousness, *there are only consciousnesses*.

I will use the terms function and relation interchangeably, as a function is a relation between two or more variables. The difference between the domain of discourse (on which a system is implemented on) and model space is similarly nothing fundamental, they both mean the domain of a collection of objects that the examined function is working on. The term meta-intelligence denotes a general purpose intelligence, a layered structure of intelligences that work together like biological or artificial neural nets, affecting each layer of it's system. With intelligence I always mean optimization of a process. Whenever I write 'imperfect representation' I really mean the idea of a perspective.

2 Features of consciousness

What we do have as humans is a sense of self, that is a basic truth of our (social) existence, but consciousness itself as an attribute of agents in the world is something that may be hard to define. True enough, when distinct branches of science use the term consciousness they very rarely agree on the definition. In a purely medical theory consciousness could only mean the state in which agents remain active, because losing consciousness demands a state of passivity and a lack of agency. However, such a broad definition of consciousness doesn't help us to determine much about it's nature, it's a practical and common approach for a field that only has the term because it's necessary to include such into their view of the model space they work with. Awareness and consciousness are the same. Self-consciousness is presumed to start with an experience of the self, it's a distinction between the world and us. Self-consciousness seems to need three attributes of an agent to be possible, namely *self-reference*, some kind of *identity* and an *improper*

space of inner models. Any system capable of these may in theory develop into a conscious entity, even though two of these crucial features are impossible to reach an actual state, while the third one is trivially present in every organism that is capable of awareness and optimization. The classical definition of self-consciousness is awareness of the mere process of being aware, namely a point when an agent enters it's own domain of discussion, when it becomes aware of itself. I hope to argue in this paper, that such a classical consciousness is actually not possible, we only have a sense of self that is a learned understanding of the experience generated by a chain of reactions based on several foundations such as the capacity to store data, to optimize data sets, to filter them and on the ability to ask questions that is mainly a by-product of having an improper representation of the world, distorted and incomplete by the examined agent's perception. If any of the components are contributing into the experience with too low or too high amount, human-like consciousness won't happen - only another kind of consciousness from the virtually infinite but physically limited amount of possible states of consciousnesses.

Consciousness is also a difficult topic for a scientific approach (sometimes called the final frontier that is highly misleading) because it's not easily testable and falsifiable. In case of the fundamental forces, it's easier in theory to test if an object has the capabilities to produce the known effect, but consciousness has no clearly visible effect on materials that would be unique to the entities we usually consider conscious, so it becomes impossible to test directly with measurements, quite like in the case of virtual particles. The issue is so deeply involved with philosophy that the well-known idea of a philosophical zombie can be traced back to Descartes and even further. The idea of an automata organism without any type of consciousness is controversial in the sense that there are no known parameters that could be tested against the claim of being an automata. How do we prove of other beings that we only deal with representations of, that they are indeed conscious? I propose testing a strong and necessary requirement of consciousness for this kind of measurement, that is not sufficient in itself but more strict than the so-called Turing test in which an automata is capable of convincing humans of their humanity. This test was never intended as a serious measurement of consciousness, only as a thought experiment by Alan Turing to show how consciousness is more complex than a simple quantitative amount.

The crucial attributes of this classical model are self-reference and identity. These two ideas are closely related, and without these, the classical model must be inconsistent and flawed. Whatever the experience of consciousness is, it's not what is defined in the classical model, if the fundamental axioms of such an experience are paradoxical. The method and idea

of self-reference is also called recursion, a function having itself as it's own input. Identity is the relation that is only true for any object if it's argument is itself. Formally stated as $f(x)=x$, or in lambda calculus as $\lambda x[x]$. The classical definition of consciousness is closely related to the gap and difference between first order logic (FOL) and second order logic (SOL), and even more so to the idea of strange loops ¹ and recursion. The main questions I'm concerned with are the followings:

Is classical consciousness actually possible? Every interpretation is dependent on definition, consciousness may be impossible if our questions are not stated the right way. Consciousness may be just an idea, the illusory experience of our sense of self that brains are generating. In general, it very seems to be the case that either everything is conscious on a certain level, or nothing truly is - it all depends on our definitions. The distinction between conscious and unconscious beings seem rather paradoxical and arbitrarily chosen. In the second part I will try to offer a modern definition of consciousness instead of the impossible classical one.

Can you teach consciousness? If we could formulate and state the proper definition of consciousness, we may be able to teach it to anything having enough computing capacity to represent a wide enough part of the world to include itself. This is the actual question of the computability of consciousness, but as it turns out we only need proper enough artificial brain models to simulate human-like consciousness within a biological or virtual community, so in reality this may be only a technical question and not a philosophical one.

What's the real difference between FOL and SOL? Orders of logic are closed models of function spaces that are not compatible with each other of the lower order. Formally, you are not able to state a SOL argument in FOL. Their systems seem complete and consistent, yet with examining the gap between orders we may highlight the essence of the incompleteness theorems of Gödel and use them as an argument against classical consciousness.

What's the relation between consciousness and intelligence? Consciousness and self-reference may be only possible as a subset of general purpose intelligence, namely the optimization of an optimization process. While intelligence layers may work like orders of logics, they could filter a

¹Douglas Hofstadter - I Am A Strange Loop

model space to achieve a state of the experience of consciousness that is purely the mere working of such functions.

2.1 Recursion and self-reference

Some notions of recursion include even the functions that only uses it's own arguments like a procedural state machine. The modern formalisation and development of the notion is due to a number of people, most notably Gödel, Herbrand, Rózsa Péter and Kleene. The main types of recursion are iterative, primitive and double recursions, but they always need an intermediate layer to reach a recursive state. While self-modifying and reflective computation is possible, these are not truly conscious as missing a sense of identity and more importantly the only falsifiable evidence of consciousness: questions.

If we consider a semantic recursion like with sentences such as "This sentence is false.", we are required to deconstruct the act of interpreting the symbols that produce the self-reference. Without a mind to observe and interpret, the symbols mean nothing at all, yet somehow we have the misconception that the given sentence is refering strictly to itself. What we produce from the given sentence is really a loop, and not recursion. With interpreting the sentence our minds produce several instances of the sentence to work on, and even though we feel these instances identical, they are never exactly the same. The generality of such a sentence is a simplification, a method of deduction from these produced instances. Of course, with such a complex idea like truth it's not that easy to trace back the misconception, but let's consider another example such as "This sentence is shorter than six words." The difference between a loop and self-reference is crucial. A loop doesn't contain itself, it's not a set encompassing itself but rather a circle, always arriving to the same location, and this is where the identity problems come in. Could two locations be exactly the same? Could two form and idea truly equal to each other?

When you use something like "this sentence" then it's not refering to itself strictly but rather it's meaning points to the sentence. How is this recursion possible without another layer, in this case without someone interpreting the symbols? How could they self-reference if they dont even have actual instances outside of the interpreting mechanism? Instances are actual forms derived from a stable and immutable idea, in our case that means that in every type of recursions we really refer to instances to achieve a loop state.

It worths considering that to achieve recursion in lambda calculus, a fixed-point function is required to simulate it. This is exactly something our selfhood is, a method that looks like recursion but is not pure recursion. True recursion, a function including itself is paradoxical without the notion

of pointers or a fixed-point function. The recursive function is computed as the "fixed point" of a non-recursive function. To compute the fixed point, we can use the Y combinator, which is itself a non-recursive function that computes fixed points. This function is generally referred to as Y and satisfies the equation: $y f = f (y f)$ for all f . Using Y, a function has access to a bound copy of itself. We can deconstruct the idea of recursion by examining how programming languages work as well, we will see no sign of true recursions in an assembly stack or any other low-level implementations of self-reference, only looping methods over and over again, with different arguments and in different context, what also points us into the direction of the problem of identity. These functions may look like recursion in high-level languages like Java or C derivants, but closer to the processing unit, the self-references completely dissolve in the actual mechanisms that produce "recursion". Similarly considering the high-level workings and ideas of our mind, recursion may seem possible but the actual processes involved are based on deduction and not true self-reference, rather on looping mechanisms.

2.2 Russell's paradox

Based on the paradox formalized within set theory by Bertrand Russell, true consciousness may be impossible because it couldn't work without self-reference that really comes down to self-containment. Actually the impossibility of this makes a lot more sense compared to our everyday experience. You can not contain yourself, everything you know or experience about yourself is not yourself, but an improper representation by some kind of a reflection, not a real self-reflection. Recursion may be just an abstract idea that is fundamentally wrong in reality, just like the idea of infinity that is a paradox in itself being something without a form, nevertheless having a form. We call something conscious if it's model of the world contain the observer and modeler itself. What we call consciousness is really just including observers into our models, but the paradox arises when we realize that the observer would need to contain itself for it to work. On a certain scale and level, everything with awareness include some reflection of themselves into their model of the world, but it's more and more distorted as we consider less and less complex life-forms. Even if such an organism interacts with it's mirrored image, without the realization of selfhood, classical consciousness doesn't emerge. As cells can make difference between light and dark, more complex forms of life have more complex experience that makes better quantization possible. If anything could contain itself, that object would be identical to itself that is paradoxical if you consider the original claim of a set being subset of itself.

The original paradox is about the set of all sets, something complete and

all-including, that was ruled out by a simple axiomatic restriction in the Zermelo-Fraenkel set theory published in 1922. But what is one's representation of the world if not such a model or set? Whatever you don't have experience of is not included in your domain of discourse, and those objects are impossible to prove to be existing either. This improper representation of the world could give us a sense of self, as we are kind of a focus, a little area of experience in a vast and giant configuration space of the world, the most static part of our life-long experience is the selfhood with always having the same perspective by the quite stable configuration an organism has.

Miranker and Zuckerman proposes an abstract theory ² that circumvents self-reference, so a model of artificial consciousness becomes possible. They build a logical foundation that can account for a new, artificial consciousness what could be shaped to be human-like.

2.3 Identity and equality

Identity would mean that we can isolate certain properties and define them without any additional context. In the human model space nothing equals with each other. Any two things are distinct, they can only be identical in a loose sense (having the same frame of reference). In an abstract, context-free environment we can state equality between two terms, but in such a vast vector field as reality, it is not possible to have two objects completely identical, especially considering the time dimension. Even in mathematics identity means that as far as we are concerned, within a limited dimension of parameters, two comparable objects are interchangeable. It's not absolute identity but only equality on a certain level of complexity. What would happen as we introduce more and more amount of parameters, measuring with more and more accuracy, eventually adding deeper and deeper context to our variables? The probability of equality becomes less and less, approaching zero.

Algorithmically we could test identity by the equality of subsets or parts, and on finite sets it becomes theoretically possible to state absolute identity between two objects. What we need to notice here is though the framework we are stating identity in, it's always a matter of parameters examined. If we only examine a quantity, then their identity is completely straight-forward as two natural numbers can be measured and compared to test their identity - subset by subset, step by step. What happens if we introduce the possibility of an infinite set?

Two instances of infinity don't always equal completely either, their \aleph

²<http://arxiv.org/abs/0810.4339>

order may differ. This is surprising, as the concept of infinity seem to be either of the perfect forms, and when we consider the actuality of infinity it becomes an instance of the idea, with more than one possible identity. It was shown by Georg Cantor, that there are several possible orders of infinity, in fact his work implies the existence of an "infinity of infinities". Some numbers are two or more dimensional like complex numbers, their equality really mean the identity of their parameters of components that make them, this view of identity is limited by our perspective. For a conscious entity, an identity function is important and one of the crucial features of the conscious experience, with a closer view we can see how fragile the definition of identity in our model space truly is, because of the impossibility of the former method to state identity between two objects. Everything we contact is an instance, not the perfect form itself that could be free of context. We as the observers provide context to everything we encounter in our model space, making true identity impossible for us.

2.4 Isolated definitions

It may very well be possible that you can't define consciousness without intelligence. Isolating something completely makes it impossible to contact by observers, the practical possibility of existence starts at two objects, with a relation. I don't state that something couldn't exist completely on it's own in an isolated context (that's probably the case with this universe, if you view it as an integrated and contact object), but we are not capable to examine or observe such a thing. From a smaller subset you can't specify the proper set it was a subset of, if you don't have any more information about their relation. Like as the layers or orders of logic, it may be not feasible to formalize and state our own consciousness, as it is the way with FOL and SOL. Classical consciousness is the thinker thinking of itself, an eye looking at itself, a function or domain containing itself, a relation being in relation with itself. How is an isolated object capable of defining itself? You always need some context and extension for proper definitions. Listing the components of something without the proper relation between them won't yield the original set, so to define consciousness we will need both the partitions it needs to appear and how they work together to generate the qualia of the selfhood.

2.5 On the 'hard problem' of consciousness

Some distinct between the easy and hard aspects of consciousness, that is basically a distinction of outer (can be objectively measured) and inner parts (subjective without methods of verification) of what we call conscious. Parts

of the easy problem are the ideas for producing something that works like a conscious entity (describing the mechanisms of awareness, the information filtering, learning and so on that can be a scientific foundation of building something that produces conscious activity), while the hard problem is explaining why qualia or phenomenons even exist in the first place. Why colors and taste leave the imprint they do on a mind, when such a brain could work without having them in the first place? G. F. Stout (1931) argued that the world could function just as well without any first-person experience, it could exist as an automated process without any sense of self-hood and the distinction made no difference in the way everything works. If you add up the parts that make such a biological entity as a human or an animal, they could work blindly without any inner experience, and that would be a way simpler explanation than introducing a rich inner life.

I suggest the next thought experiment: We are floating in an isolation tank, but then we slowly begin adding back the senses. This way we can imagine what could experience mean to different life-forms. Touch is what a tree could feel, while in the other end great apes access all the sense data we do as well. As you get used to your own form and perspective, the experience becomes stable enough for the self to emerge. Blind people have a sense of self though never actually seeing their visual representation that we usually identify ourselves with, because they always think of the world the same way. Your self are the most stable parts of your model space.

Whats stronger than your own senses? Through always having the same human perspective, we come up with the arbitrary impression of the self. Chalmers so called hard problem really comes down to a physical problem: how does the brain integrate all the electromagnetic sense data into an inner model? Human perspective is a learned behaviour that can only be formed within a community. How some imagine seeing into others mind is not how an experience works, because they are nowhere like the place of the big bang. If we access all the brain impulses we can build another brain in theory, to interpret and reconstruct a similiar enough model space. We really shouldn't be surprised by the vast context that is required for consciousness, because asking where consciousness is formed is analogical to asking the location of laws of physics, or the meaning of words. The more strictly we try to locate them, the more futile this method seems to be.

What I state is, that our inner life comes from an improper model space, from all the distortions and missing pieces that make us aware. Most of our body can work without us being aware of anything at all, and in another chapter on altered consciousness I will try to mention the relevant experiences that may help us to highlight the nature of consciousness. When we question nothing, when everything seems to be in order then even humans

can experience a loss of consciousness for a definite amount of time while they are still fully capable of doing anything. Is the inner experience still there, even if we don't pay attention? It truly can not be a fundamental attribute of living beings and humans if we can lose such an ability from time to time. The hard problem is really about how our brains enumerate and presuppose the outcome of already known relations on our sense data, it's the very process of building up a representation of our model space.

Could we really work without a rich inner life? Our experience is like a graph, visualizing our model space and prefilter them for intelligence and optimization. Our brain does its best to represent and presuppose, saving processing power and work-load for itself. I would like to point out that the ever cited occam's razor that is really under this problem is not a logical law but a mere axiom or even less, a goal or guide - an ideal. The argument that we could work well without qualia is ultimately derived from the mentioned guiding idea of simplicity and so can not be a stronger claim than it's base itself.

2.6 The gap between first and second order logic

Logic deals with prepositions and relations, in the case of FOL the prepositions cannot be broken down into more basic components any more, they are atomic sentences having a definite truth value, with the law of excluded middle (such that a premise cannot be true and false at the same time). SOL deals with relations as prepositions, it's arguments can be broken down into relations of relations. It's kind of trivial that arguments in FOL can be stated in SOL, but not the other way around. A statement is locked into it's own order and cannot be stated in any lower order logic systems, This gives the problem of the main question: what is the difference between orders of logic and how is this related to consciousness? The difference between orders is a change in quality, that cannot be stated within the same order of system. Switching orders really mean an expansion of our domain of discourse, the space of prepositions into a true model space, where untyped distinction is possible. This expansion is possible through lambda calculus, namely leaving the idea of difference between functions and arguments, using everything in your domain of discourse purely as relations.

What is the quality of this gap between these two systems?

2.7 Integrated information theory

Giulio Tononi proposed a quantitative measure, called ϕ , of the amount of 'integrated information' in a physical system (i.e. information that can't

be localized in the system's individual parts), and that a system is more conscious the larger its ϕ value ³. It's possible, for all I know, that having a large ϕ -value is one necessary condition among many for a physical system to be conscious. However, having a large ϕ -value is certainly not a sufficient condition for consciousness, or even for the appearance of consciousness. As a consequence, ϕ can't possibly capture the essence of what makes a physical system conscious, or even of what makes a system look conscious to external observers. It's a promising theory of a necessary condition, but by no means a real answer.

There are several critics of this IIT, even though it may show us an important and necessary step towards listing the fundamental requirements towards consciousness ⁴. These theories are basically promising answers to the 'hard problem' as building a system as complex as a human will most probably show conscious properties. Deep learning neural networks already show interesting results, and with expanding the definition of consciousness we can see how conscious matter is possible.

2.8 Modelling the world with meta-intelligence

How is consciousness possible, then? The false consciousness we experience is a sense of self, that is generated by a general purpose meta-intelligence. Meta-intelligence only means a set of intelligences, like how the intelligence of a deep neural network emerges from smaller parts, layers by layers. Although we know of the parallel capabilities of our brains we rarely think of our mind as a society. If we can state a system capable of optimizing itself and choosing it's purpose from a certain goal space, then we may as well have a definition of consciousness as the actions and attributes of such a system. When comparing humans to animals or machines, we need to be aware of certain illusions that such wide options our goal space may give us. Our purpose space is not larger than the members of the model space we use, in no case it is infinite. You may not be able to explain consciousness without meta-intelligence, they are entangled and can't be isolated to be explained in themselves, as without a certain intelligence there is no consciousness, just as without some kind of consciousness there is no intelligence and optimization.

Human mind models the world contained within, and a generic way of viewing agents in this model is seeing them as relations. With introducing lambda calculus, we can see that everything can be represented as a function, or relation. This is analogous to a monadic view like a materialistic approach

³<http://www.scottaaronson.com/blog/?p=1799>

⁴<http://arxiv.org/abs/1405.0126>

of everything having some property that is distributed between everything. Relations in lambda calculus make categories by generating definitions and premises that can be used as arguments. What we view in logics as a premise is a generated meaning by a function in lambda calculus (see Church enumeration for a functional view of numbers), so everything can be viewed both as a function and a representation of such a meaning. This is a very similar problem to the particle-wave duality in physics. If everything is a function though, then how can you switch between layers or worlds of orders of such systems?

The problem of a general purpose intelligence is exactly the same one. To reach the general meaning of an intelligence, that is optimization, you need to explain the same gap between optimization of optimization as between the self-reference of a function of a function. Is such a thing even possible? We as humans don't have experience of our own experience but we are always locked into a domain of discussion just like an order of logic. Expanding this domain won't help much in explaining the difference between such layers, as including a process into itself seems impossible. To model a world with such a meta-intelligence we need an improper representation, or else questions become meaningless.

Our reality's true meta-intelligence, a self-modifying and repairing mechanism is not in the individual but in genetic evolution. This is the real "strange loop", that is not located within a single brain. These loops exist between generations of a species, and a robot with high enough intelligence and memory, with an option for evolution will develop human-like consciousness, probably even advance through it rapidly. We must consider how slow biological evolution really is, to understand non-anthropomorphized consciousness. The real meta-intelligence is evolution, not the ever running self-optimization of an individual.

Some features and abilities that are crucial to produce the experience of consciousness could be biological traits, mutations of a species. Like the wings of birds, some brain functions could have been evolutionally chosen to prove the individual being more fit than others. If this is the case though, then we may think that every living organism should produce human-like consciousness over enough time if it's just a multi-dimensional sense, but only humans can have human-like consciousness because we can't isolate genetic experience and brain functions from the rest of the body and more importantly from another important factor of learning from a community.

2.9 Questions as statements

What is a question? It's void, it's pointing to something missing. If you have every single possible relations stated, then there is no space for questions, there are no missing pieces in your domain of discussion, a proper and complete system cannot contain missing parts and questions as it would be paradoxical. There ought to be a definition of questions as statements, as everything that happens in the universe is a fact, a function in the function space of everything. Still the quality difference between the two is huge, even though we have the qualities of consciousness readily available in the form of lambda calculus.

After a certain level of complexity, a meta-intelligent system will behave consciously if it has improper models of the world. It will surely ask and start to optimize it's own optimization. We have several entangled definitions here, with questions, consciousness and meta-intelligence. A sense of self is generated from a non-complete domain of discourse, the self being the set of all relations working on the specific non-complete domain. Could a domain be even complete? A domain is complete when it is already well-ordered, completeness needs the matching intelligence function to compare it to.

Imperfect representation of the world generates questions that generate awareness, that generates qualia and false sense of consciousness. Animals have perfect representation that is less in their mind than the world is. the world as a representation is too huge for humans to comprehend.

The true question is the following: how is the optimization of an optimization process possible? With layers of intelligence, a society of intelligences. The society of the mind is not democratic, the strongest effect or meme wins the attention.

3 A modern theory of consciousness

After all these chapters, the most important feature we need to see, is that all the building blocks of consciousness are scattered amongst all kinds of matter and living organisms. That must mean that our consciousness is not fundamentally different from let's say, animals' consciousnesses, only more complex. Consciousness could be defined as the ratio of intelligence, memory, awareness and perspective. It is an experience generated by several factors mentioned. There can't be a reality of the classical definition of consciousness because it can be altered, what shows us that consciousness can't bear with an isolated proper definition for a single entity, but it varies between individuals and species. If anything, then consciousness is a matrix or set of possible

experiences with similar attributes listed in the earlier chapters formerly. The soil for human-like consciousness can emerge in a community only, as learning and evolution is crucial for improper (human) representations of ideas and experiences. Most of it comes from communication and language, they are semantic problems gained through learning.

What I called an improper representation or perspective is an inner tension between the goal and model space. With a larger goal space, the possibility for improper models sets in if the current layers of intelligence is limited enough. If a goal space comes with only a few possibilities that is enough for the current layers of intelligence to work on, the model space will seem complete. The most crucial part of building human-like artificial consciousness if one may will to do so is this ratio of these building blocks of memory, perspective, awareness and intelligence.

Every individual has a point of view that is always improper in itself because they are related to their own goals, and passing these views and experiences onto the next generation through genetic imprints and with their actions in the world changes some sections both of the world and within. If I had to describe the selfhood artistically, I would use the words focus and light, it's a part of the world that is being filtered down and focused on by a mind. It is important to understand that every single object in the world has the components of consciousness to an extent, and so they bear some level and type of consciousness that may be very but not fundamentally different from the human sense of self. When people mean the classical definition of consciousness, they only think of human consciousness that is only a partial subset and turns out to be paradoxical and not possible. A perfectly ordered set (in relation to the ordering relation, the goal) doesn't need any intelligence working on it.

A modern approach would be accepting that everything is conscious to some extent, but there are wide range of possible consciousnesses, human instance only being a tiny subset of all the possibilities. We feel contact because some objects last longer than others, and such objects grow together. In the context of neurobiology, there is a quote by Siegrid Löwel: "neurons wire together if they fire together".

There are some approaches to consciousness that state similar claims,⁵ a waking sleep state is true for every being.

⁵George Gurdjieff, etc.

3.1 Consciousness is all there is

Tony Abu Nader is a Lebanese neuro-scientist, researcher, university president, author and leader of the Transcendental Meditation movement who authored a 65 pages long paper. ⁶ This is some yogic knowledge in a modern form, reversing the western thought that "matter generates consciousness". In some eastern approaches, the proper question is how "consciousness generates matter". If human observers would have existed since the beginning of our universe, then this theory would be much more attractive, but such an approach needs a primordial consciousness to work, such as a God, or actually any structure or being that is capable of being an observer of the universe. Maybe the universe is observing itself in a low-level but nonetheless existing state of being conscious?

Is it possible, that consciousness comes first? Max Planck?

3.2 Why do we feel like a singular entity?

The self-experience is mainly learned, most probably starts in the womb and even further back in time. Yet the question remains: why do we feel like a singular entity, not a set of cells?

3.3 Altering consciousness

There are several ways to see how fragile the classical definition of consciousness is, and these methods are all in accordance with a more modern approach of a multi-dimensional definition. To raise awareness, you can use meditation. To lower awareness it's enough to get simply tired, to stay awake for 48 hours or more. Dissociatives (ketamine, dextromethorphan) hallucinogens and entheogens alter consciousness as well by more radical vectors like completely changing it's subject and reordering the experiencer's model space behaving like another layer of intelligence, also stimulants can trigger such an experience by raising intelligence or memory such as methamphetamine or caffeine. Sleeping and rem phases are worth considering as well.

A psychedelic experience can help us to connect to the rest of the world, to blur the line between our bodies and the rest of the world. When we realize that such a view is actually possible, we will be asking how could the brain generate consciousness if I am capable to experience these altered states where causality can break down, like movements can sensed before they actually take place and happen in the material world. In normal chemical

⁶<http://www.ijmac.com/wp-content/uploads/2015/12/a1105.pdf>

levels of the brain, electrochemical signals may come before our thoughts or intents ⁷.

Ketamine is capable of reproducing all the signs of a near-death experience.

In the automated reality of dreams we don't have a sense of self either, though there are several techniques to become lucid in this state. It really proves to be fruitful examining these techniques, because they are the exact same methods how the multi-dimensional bases of consciousness adds up to having the proper sense of selfhood and complete awareness. Most of the techniques like MILD, DILD (respectively Mnemonics Induced Lucid Dream and Dream Induced Lucid Dream) alters the character of our awareness and memory. The so-called reality checks makes it a habit of the subject to question their experience of everything to the point when it becomes a habit and will occur in their dreams. When an improper representation sets in and the subject starts to be aware of missing pieces in the model, some kind of lucidity can be achieved. This dream consciousness is slippery though, according to publications of Stephen LaBerge, a lucid state may last from mere seconds to up until waking up. After knowing such, how could we deny the possibility from animals to be conscious if only for a few seconds?

What these states show is that there is no strict border between unconscious and conscious entities. A human mind contains neurotransmitters in a certain ratio, altering this helps us to get rid of the human perspective.

3.4 Consciousness is learned behavior

What we do as humans as the biggest difference between our consciousness and animal consciousness for example, is cooperation and fiction ⁸.

3.5 How can we have impossible ideas?

Ideas must be somehow possible or must exist somehow, like infinity. Could something infinite be possible to exist? ⁹ What does it mean that something is infinite? I really think the best definition is that something infinite is without any form. Does the abstraction of time have any form? What even a form is?

Form is border, closed-ness, set, relation, period, law, it's the logical contrary of infinity. That wouldn't really define it though, as you can't

⁷https://en.wikipedia.org/wiki/Neuroscience_of_free_will

⁸Yuval Noah Harari - Sapiens: A Brief History of Humankind

⁹<https://plus.maths.org/content/does-infinity-exist>

define two abstractions with each other only. Form means that there is a $P(x)$ for x , if so, then x has form.

Because of the fact (see identity relation) that there is a $P(x)$ for every single x , maybe we can't encounter or know anything without form. Are infinite objects actually possible? Is there anything without form? You can find a $P(x)$ for everything, because of the idea of identity. (I meant $x=x$ here, but is that a proper statement or just tautology?)

For a bit here, I thought that it is not possible for infinity to be the contrary of form, because you can find a statement for infinity, and that's the exact definition of having a form, but I was messing things up at this point. The map is not the territory.

Both having a form or being infinite are attributes, not the things I'm finding statements for, to prove of having these attributes as being infinite etc. The contrary of (being green) is (not being green), not (being green not being green). All the mentioned property of infinity means, that infinity itself has a form, so infinity itself cannot be infinite, what is quite trivial as we are talking about the abstraction of infinity, and ideas can't be form-less.

It really means, using these definitions that even form has a form, quite seems so that it is not possible to be infinite. Are there anything that has the attribute infinity? Could anything be infinite at all? Is it possible to be without a form?

Even in mathematics infinity stands for an idea, the closest meaning of infinity is something like "to be decided", or "not enough data to solve and get an answer" ¹⁰. Existence may be eternal as nothing can not exist as that would be some kind of a form, so in one form or another existence may always persist. Does that mean that the universe is infinite? It worths considering that even in a cyclical model, the identity between universes can not hold. According to the second law of thermodynamics, entropy can only increase, what implies that successive cycles grow longer and larger. ¹¹ What really is important to us here, is the question of the nature such energy that may keep it's identity between different cycles of such universes. To have a sense of identity and a contact self, a really complex system is needed that is fundamentally different from the possible option of an energy that may consist between successive universes.

Impossible ideas may be not else than desires, imprints of subsets of our goal space, because our intelligence is capable of iterating through every possible combinations of known ideas, given enough time. In certain alignments

¹⁰<http://www.extremefinitism.com/blog/infinity-and-infinite-sets-the-root-of-the-problem/>

¹¹The Last Three Minutes: Conjectures About The Ultimate Fate Of The Universe by Paul Davies

of our models, potential infinity seems reasonable but that doesn't mean that it's actually feasible in any way. All the known causality breaks down in an infinity, Al-Ghazali was a persian philosopher who wrote a book called 'The Incoherence of the Philosophers' that even got a book as an answer by Averroes. On the eternity of the world there is an argument, how such an universe would lead to an infinite casual chain where nothing could really take place and happen, because of having infinite amount of preceding events. Infinity is a concept that can never be actualized, as it may even contradict with it's own definitive attribute of being limitless.

On the notion of how many dimensions could reality have, we can clearly see the concept of actuality and potentiality of ideas. Potentially we may state that the universe has any number of dimensions, but actually it won't affect us in any way. That's also the fundamental problem of string theory and theoretical physics ¹² suggesting a model that uses more than three spatial and one time dimension, because we have no ways to interact with more dimensions than three.

Nothing is impossible on the same notion infinity is. For nothing to exist it would require a form that would make it something, while non-existence is only possible through without a form, that is also the mere definition of infinity.

3.6 Notes for writing

Another layer problem with consciousness is the Tarskian language and metalanguage problem. It shows us yet again that self-containing is not possible. The way we get to the russel paradox is the following: lets assume that self-containing is possible. Then we can state the Russel paradox and show it's problems.

Intelligence is optimization. Even mathematics can be optimized, it's goal is to be consistent. Biology is optimized to get knowledge about life.

A general purpose artificial intelligence would be optimized for te mere process of being - and that's a philosophical statement, optimizing actions for a single purpose.

Is it even general that way?

Is there a general intelligence? That's philosophy, general relations, formal logic. A particle is just as conscious as it is alive.

¹²<http://www.whytrustatheory2015.philosophie.uni-muenchen.de/index.html>