§0.1 This document aims to be the current compound theory of Derivation, while the presentations are compromised to a concise and more concentrated shape, of 12 pages. Currently, the content is very similar to that of the presentations, while also going more in-depth. To link up with the communication of the project, feel free to join the Discord server. If you have any thoughts on this document, please share them at derivation.project@proton.me, or on the Discord server. This document is intended to be used digitally, so the references, and multiple topics and fields, are in the shape of links.

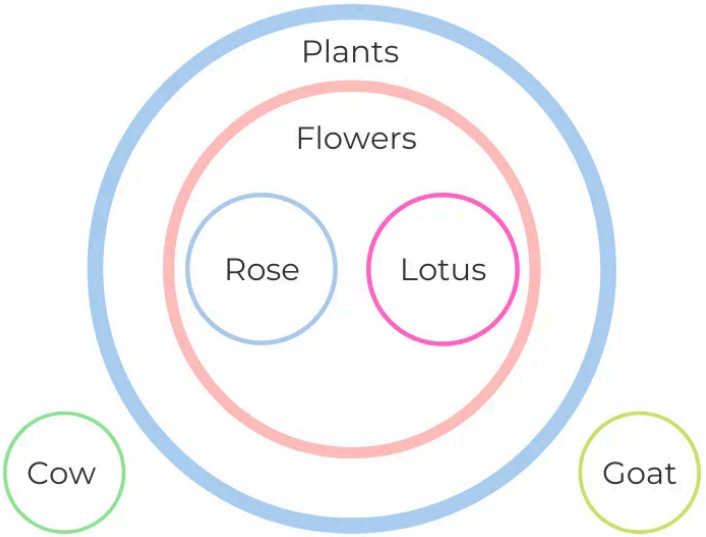
§0.2 Index:

1. Core theory:

§1.1 Derivation is a project about communication and knowledge, aiming partly to connect people through their mutual knowledge, beliefs, and perspectives; which is a part of their common ground. It will take the shape of a website and app, in which people's knowledge would be, as much as possible, collectively formulated and put to numbers and logical relations, and then systemized and made as accessible as possible. These systems could be called nets of knowledge. What is possible remains to be seen.

§1.2 People use their senses to perceive reality, communicate the perceptions, and then put forward and test hypotheses to try to figure out how reality works and is connected, such as naming things that seem similar similes, and thus build systems and theories. An observation on its own does not say anything, but, when we make more and more observations we get more and more information about the observed phenomenon, which gives us a framework to develop theories. When you get more insight into the phenomenon, your theoretical model of the whole, how you view your observations, becomes revised and updated, continuously, this is called the hermeneutic circle, even though it's mainly used for understanding texts. When we relate the observations to each other according to the developed theories, they become data, which can concretely describe relations. With enough data, we get statistics, and when the statistics can strengthen certain theories, it becomes knowledge.

§1.3 Different pieces of knowledge are logically linked with other pieces, often with the help of mathematics, to generate new results. Using logic to infer a result based on premises is called deduction, which is fairly similar to extrapolation. That can be done in a multitude of ways, there are many rules of inference and types of logic. I will go through some of them here, with examples. That mostly concerns how Derivation works, rather than what it is.



Pictured above is a Venn diagram, commonly used in predicate logic. Assuming it's correct, it would show, for example, that if all roses are flowers, and all flowers are plants; all roses are plants. Pictured below is a bit of propositional logic, which shows relations with connectives, like for example: "the temperature is above 20°C" → ¬ "snowing". Which means; "if the temperature is above 20°C, then it is not snowing"

Name	Symbol	Connection	Meaning
AND (Conjunction)	∧	P ∧ Q	(P ∧ Q) is true if both P and Q are true otherwise false.
OR (Disjunction)	∨	P ∨ Q	(P ∨ Q) is true if either P or Q is true (or both) otherwise false.
NOT (Negation)	¬	¬ P	¬ P is the opposite of P. if P is true, ¬ P will be false and vice versa.
Implication	→	P → Q	If P happens then Q happens.

§1.4 The process of systemizing knowledge happens in different ways, in many different subjects, all over the world, all the time. Old examples include the periodic table within chemistry, the standard model within particle physics and biological taxonomy, while more recent examples include Neo4j, WolframAlpha, Sana Labs, and various systematizations within big data. But more often than not, when it does happen, it is mainly confined to specific disciplines and fields, and often even more locally, as in schools, companies, and other institutions. This delimitation is completely unnecessary, as long as one can recognize that different fields relate to a shared basis. Biological molecules can be described chemically in terms of their mass, which in turn can be described physically, such as when the mass moves and all this can be quantified. The idea of interdisciplinary systematization is not new either however; it has been theorized within, for example, the tree of knowledge,

synergetics, consilience, and tektology. Derivation wants to assist in developing the processes of systematization of knowledge and act as a meta-methodology to coordinate development on as large a scale as possible, to make systems more efficient and compatible with each other.

§1.5 There are, culturally and historically, different ideas, theories, and methods of knowledge. Among the most popular ones is science, but there are also often different ones for religions, philosophical ideologies, and political organizations, as well as others. It is risky to assume that one method of knowledge is automatically superior to another, and therefore Derivation would be open and receptive to all methods that are consistent, and not explicitly contradict themselves. This is central to trying to avoid scientism and epistemological power structures, and to let knowledge remain with the people holding it, and never abstracting beyond empirical phenomenological sensations. As there is knowledge of different types, there would be multiple different systematizations to take these into account. It is, however, quite possible that different methods generate overlapping and mutual results. Overlapping results would mean common ground between different methods, which could connect different nets of knowledge and by that; even world-views. Derivation only relies on the premise that at least some epistemologically consistent knowledge can be more connected than what it already is.

§1.6 Many premises can be used, and likely even will be required, in many arguments. To make an advanced conclusion in for example genetics, it all-in-all involves a long and complex chain of earlier conclusions in many different subjects and fields. Most of those conclusions were established a long time ago. New observations are made all the time, and the world is constantly changing, therefore the arguments within the nets have to be updated, which makes certain old conclusions constantly dated, and replaced. This does not need to be done manually, but there could instead be flexible formulas, linked from relevant observations, linked to decisive logical conclusions. As mathematics will be a very useful tool in a large proportion of all arguments, a part of the logical process becomes mathematical. The calculation and systematization can be largely automated, with things like artificial intelligence and machine learning.

2. History:

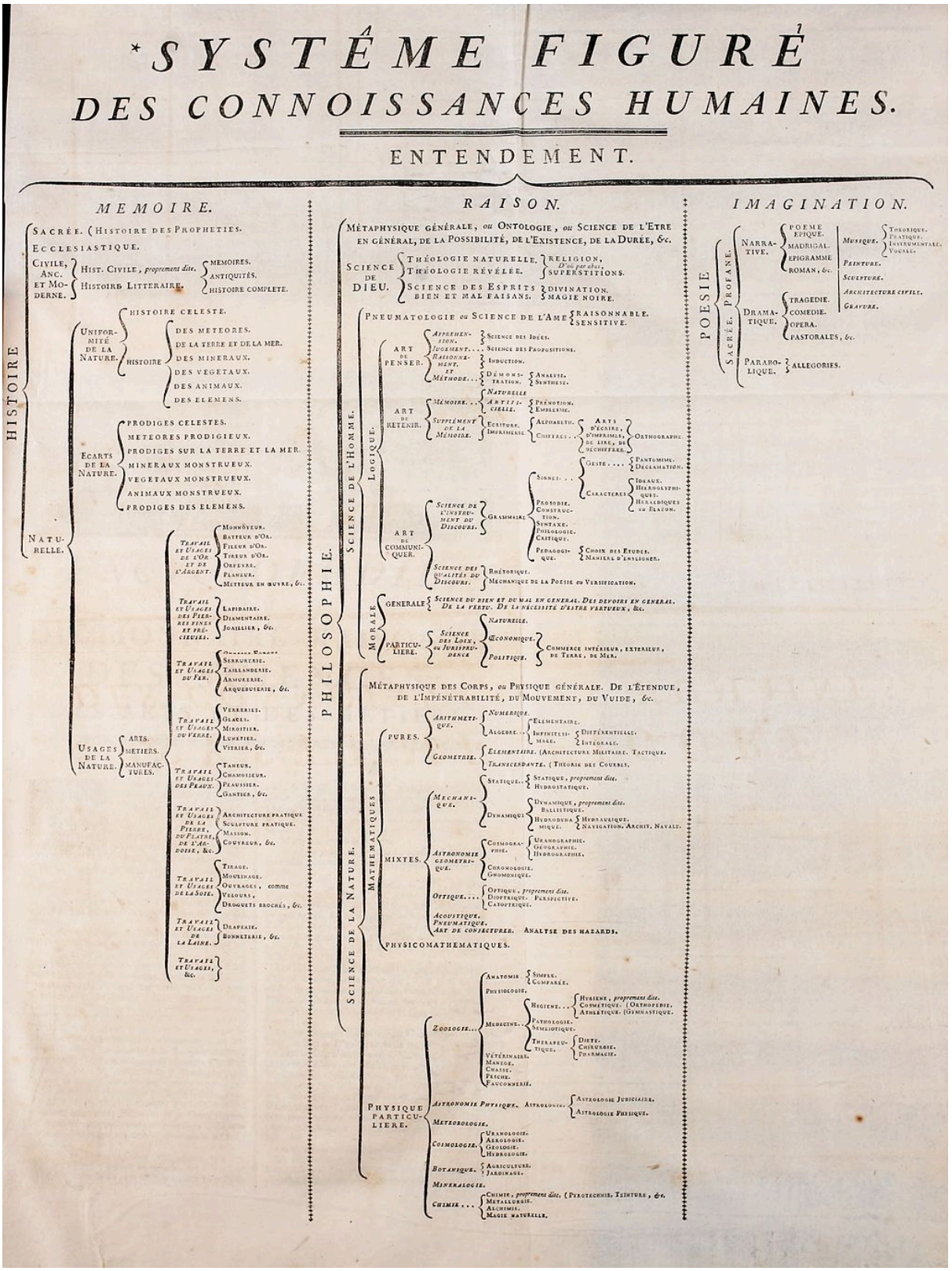
§2.1 There are, and have been historically, a lot of similar things to what Derivation aspires to be. Connecting knowledge with other knowledge is what makes knowledge; knowledge. If a piece of knowledge stands completely alone, it would not have any relation or reference to anything and would therefore be meaningless to us.

§2.2 Pictured is a 16th-century visualization of the Great Chain of Being, which is an idea of how everything in reality, all life and matter, would be structured hierarchically.

The later ideas of it were used by Christianity which put god on top, but the idea dates at least back to Classical Antiquity. Similar hierarchical ways of sorting life continued beyond the Middle Ages, although in different shapes.

§2.3 The first systematic attempt to create such an integrated system of the world's knowledge was the 18th century Encyclopédie of Denis Diderot and Jean le Rond d'Alembert. Pictured is the structure for knowledge that the Encyclopédie used. The major sets are *Memorie* (Memory), mainly focused on *Historie* (History), *Raison* (Reason), mainly

focused on *Philosophie* (Philosophy) and *Imagination*, mainly focused on *Poesie* (Poetry).



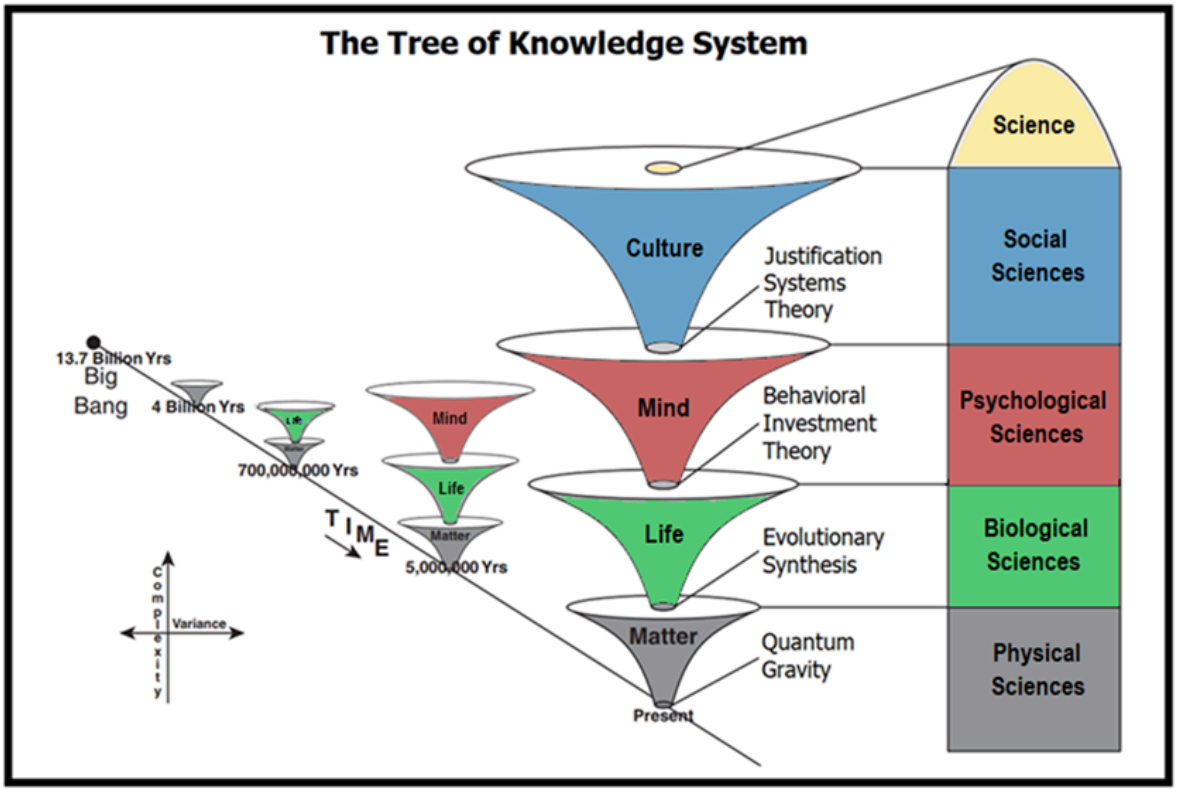
The categorization and overall structuring is a way of systematization, as well as the relational cross-references within articles about topics to others.

§2.4 However, by the end of the 19th century, the amount of knowledge had become too large to be published in a single synthetic volume. To tackle this problem, Paul Otlet founded the science of documentation, now called information science. In the 1930s he envisaged a

World Wide Web-like system of associations between documents and telecommunication links that would make all the world's knowledge available immediately to anybody. H. G. Wells proposed a similar vision of a collaboratively developed world encyclopedia that would be constantly updated by a global university-like institution. He called this a World Brain, as it would function as a continuously updated memory for the planet. However, the image of humanity acting informally as a more organic global brain is a recurring motif in many of his other works.

§2.5 Tim Berners-Lee, the inventor of the World Wide Web, too, was inspired by the free-associative possibilities of the brain for his invention. The brain can link different kinds of information without any apparent link otherwise; Berners-Lee thought that computers could become much more powerful if they could imitate this functioning, i.e. make links between any arbitrary piece of information. The most powerful implementation of encyclopedism to date is Wikipedia, which integrates the associative powers of the World Wide Web with the collective intelligence of its millions of contributors, approaching the ideal of a global memory. The Semantic Web, also first proposed by Berners-Lee, is a system of protocols to make the pieces of knowledge and their links readable by machines so that they could be used to make automatic inferences, thus providing this brain-like network with some capacity for autonomous "thinking" or reflection.

§2.6 A more recent similar idea is the Tree of Knowledge system, which aims to connect Matter, Life, Mind, and Culture together. It is described as a “theory of scientific knowledge that defines the human knower in relation to the known. It achieves this novel accomplishment by solving the problem of psychology and giving rise to a truly consilient view of the scientific landscape. It accomplishes this by dividing the evolution of behavioral complexity into four different planes of existence...The ToK also characterizes modern empirical natural science as a kind of justification system that functions to map complexity and change.”



3. Examples, uses, and structure:

§3.1 The Moon's orbit is roughly 95% circular, and it circles the Earth a little too fast for its mass, therefore the average distance between the Earth and the Moon increases by roughly 3.8cm every year. At that rate, the Moon would leave Earth's orbit in about 50 billion years, but the sun is expected to turn into a white dwarf before that, so there's hardly any reason to worry. But just to arrive at this, it has not been enough to merely observe, instead different observations have been compared and combined with each other, generated data, and inserted into formulas, according to which 3.8cm/year is a result. If the moon was more massive it would slow down, and with the arguments systematized, meaning: with all relevant knowledge as premises or data in formulas, one could make an equation that shows how much deceleration follows from a certain increase in mass. That might be helpful if you were to build something there. Similar equations can be made for the Earth's revolution around the Sun, as well as all celestial bodies.

§3.2 When, in different fields, you arrive at conclusions that are not directly observed, you make connections with the necessary knowledge to arrive at them; like a chain. For example, in astrophysics, it has been concluded that the observable part of the universe is almost 3.6*10^83 liters, a number that we do not manage to arrive at via solely observing, but rather observations combined with other observations, linked together using math and logic; data entered into formulas. Without a net in similar cases, one must partially start over with each new conclusion. One can then see it as Derivation would mean an assembly or organization of all these different networks, not unlike a global brain, and then mainly the encyclopedism of it. In this, all humans who wants to, and their technological artifacts, are connected together in a decentralized manner, for practical reasons.

§3.3 Similar to the Finite Element Method, one could define a particular architectural model through formulas that include dynamic spectra concerning, for example, the hardness of walls, volume, and all the relevant mechanics. Which values of the mass of a wall are functional is dependent on the volume of the wall, as well as the sustainability of a floor, and a lot of other things. These formulas can be derived from the material conditions that the model requires, such as environment, weather, and uses, for example, terraced houses that will be used as housing, located in an area that sometimes is subjected to minor earthquakes. Derivation can then be used to generate the most suitable options for the design and construction of the model, taking into account the availability of materials, energy, and time. Some models might simply be impossible; when no finished version of the model would only include materials with a combined set of properties that exists. Like for example if a model requires a material stronger than tungsten, but lighter than lithium, the model is currently impossible. These formulas benefit from being related as widely as possible, to avoid problems with other design plans. The ambition is then a net of knowledge as all-encompassing as possible. In such a net, all accessed consistent knowledge could be consolidated as, as much as possible, a causal chain connecting everything from the smallest level to the highest level. Of course, with a lot of error factors, but with this it would likely be easier to notice these error factors.

§3.4 One perspective from which Derivation can be viewed is what it would mean for productive communication such as discussions in forums. Instead of risking conscious or unconscious rhetorical tricks, logical fallacies, and ruling techniques, posts could refer to

arguments in Derivation, which are built on derivational chains of transparent premises and logic. One would be able to see the mutually recognized premises, their implications, where inconsistencies exist, and how they can be avoided, thereby investigating possible cognitive dissonance. One can delve further into why certain premises are polarizing, and perhaps find what would be fundamental in different perspectives on knowledge. The content of discussions of most kinds might then be derived with Derivation, and arguments could more easily become completely factual and goal-oriented and, you may through that arrive at results. The results generated by discussions could be saved in the net and used later, so that common discussions are not repeated as if they never happened, and people can easily know how to avoid old, refuted positions. A project based on this is The Democratic Evolution of Politics.

§3.5 With enough systematized knowledge, injustices that are based on illogical perceptions can be identified and brought to the surface, to inform the people and to inspire sufficient action against it. Within polarizing questions, you can set up all known and relevant data, compare it, do experiments, and maybe figure out what the issue is and why, and by that; progressively move away from misunderstandings and ignorance. In the cases where contradictions are not uprooted, they can often instead be derived down to the separating perspectives, which can then be addressed more directly. One could calculate the amount of available resources in a society, and how they can be used, and thoroughly calculate what would be mathematically possible with current technology, for example in terms of satisfying human rights, specific environmental goals, and automation. This could be explained and presented extremely concretely, concisely, and simply, and through it try to inspire change, by showing what is possible and how. By using as much mutual knowledge and logic as possible, you try to ideologize as few things as possible. A political perspective with this viewpoint is Expediency.

§3.6 The basic structure will be that of a website and an app, and in the longer run, something like multiple domains connected that are updated regularly with data from each other. The site will be fully accessible as it is, but it is also possible to register, save specific parts, and change personal GUI settings. Openness, impartiality, and transparency are crucial to try to avoid bias, where knowledge could be withheld for power interests, such as economic ones. The most important things are that arguments, sources, premises, and conclusions can be created, named, classed, and coded. The relevant sources will be linked and quoted and the quotes will be presented as premises. For security reasons, the sources should be peer-reviewed according to their epistemology. The arguments and mathematical formulas will be presented in formal shape and written shape, as clearly as wanted by the user. Among other classifications, everything will be classed according to its epistemology, or compatible ones, e.g. science. From there on, a net of knowledge is being built, and from it, data can be gathered, similar to a search engine. This allows for making more and more arguments, with the help of machine learning. Later, also articles about premises might be created, like an encyclopedia. The classifications of the articles could be inspired by the Dewey Decimal Classification. There will also be forums for discussing structure, arguments, premises, and other things that may be relevant and useful.

4. Praxis:

§4.1 At this point the project has not yet left the phase of theorizing, coordination, and planning. A theory has been deliberated and made more and more concise and concrete, and presented in shape of presentations, articles, and general theory. This is far from done, so it's crucial to receive new insights and perspectives, which people are implored to share if they get any thoughts from the presentation or other theories. There are a lot of potential theories, where similar things have been written or speculated about earlier, which can inspire thoughts. This is a list of suggestions for those. Communication has been established and coordinated, mainly on the application Discord currently, feel free to link up there if you wish to know more, as well as mention and share the project with people who might be interested. Proliferation is very central to realizing its goals. We are also using an app for practical project planning, called Coda, at which there are resources and suggestions for how to design a website for Derivation, but mainly a Proof Of Concept (POC), which would be a conceptual, working core for the project. If you wish to help with that, mainly through programming but also otherwise as well, like structuring and ideas for project planning, contact derivation.project@proton.me or reach out on Discord. Soon, funding through donations will also be relevant.

§4.2 When a working Proof Of Concept is realized, the growth and recruitment of the project becomes more efficient. It could be used to get in touch with some of the reasonably similar things to knowledge nets today, in order to collaborate. We would then hope that either code would be reused from several different nets in the programming of a new page, or Derivation would be the expansion of a net, which could use code from other nets. From that point, or before, a Minimum Viable Product (MVP) of Derivation would be the aim, which could be hosted with a server and uploaded to the website, and work as a beta-test, to get feedback for further development. While getting feedback, Derivation is upgraded and at some perhaps seemingly arbitrary point, it simply stops being in beta, yet keeps getting updated.

§4.3 Things you can do for Derivation:

1. In order to get access to discussion and deliberation, link up with people who are connected to the project, mainly on the Discord server.
2. Get a grasp of the project that you feel is sufficient, mainly by reading the presentation, but also this theory document, and perhaps come up with questions or things to change or improve, and share them at some of the connective media.
3. Talk about the project and share the presentation with people you think might be interested.
4. Delve deeper into theory, read things that could be relevant, and help with the development of the theory behind Derivation. Here is a list of resources. There is also a thread on this in the Discord.
5. Use programming to create a website and Proof Of Concept for Derivation. The Coda can be accessed here. Reach out to be able to comment or edit it, either at Discord, there or at derivation.project@proton.me.