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Derivation

Derivation is a project focused on linking together people through their knowledge. It aims to bring together different types of knowledge and make it easily accessible to everyone.

It will consist of big networks of information where people can share and source their understandings, beliefs, and perspectives. This shared knowledge would be organized using math and logic, creating systems anyone can access and use.

Conclusively, Derivation wants to build a place online where different types of knowledge are integrated, assisting understanding and further knowledge development.

The Derivation team is mainly organized on the communication application Discord, whose server you are very welcome to join here, and on the project platform Coda, which is viewable here.

Change language

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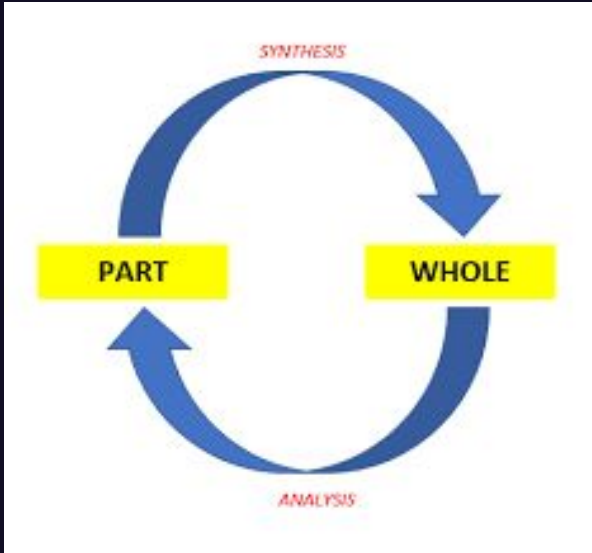
Finding knowledge

People use their senses to perceive reality, communicate these perceptions, and test hypotheses to understand how reality works and is connected. By naming and comparing similar things, they build systems and theories.

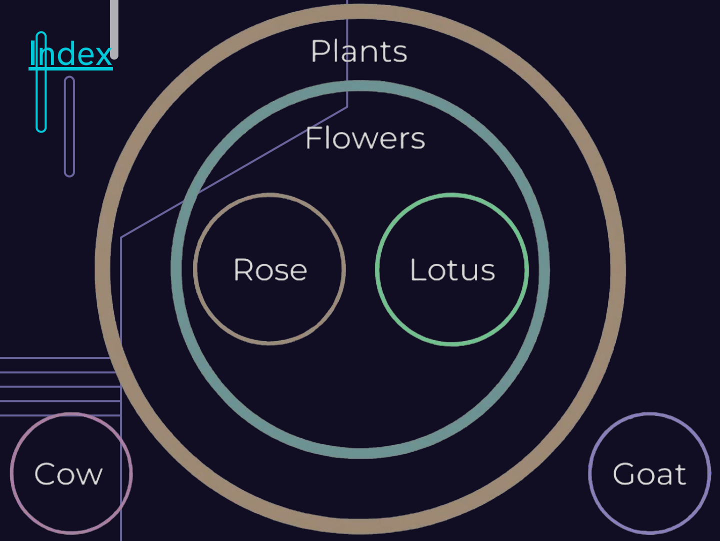
An individual **observation** doesn't mean much on its own, but as we make more observations, we gather more information about a phenomenon, allowing us to develop theories.

As we gain more insights, we get more context, and are able to make better analyses and further insights, a process known as the hermeneutic circle (pictured), which is often used for interpreting texts.



When we relate observations to each other according to developed theories, they become **data** that concretely describes relationships.

With enough data, we can generate **statistics**, which can support certain theories and turn them into **knowledge**.



Deduction

Different pieces of knowledge are logically connected, often using mathematics, to generate new results.

Using logic to infer conclusions from premises is called deduction, similar to extrapolation. There are many ways to do this, involving various rules of inference and types of logic. Here are some examples to illustrate this, which shows how Derivation work.

Pictured above is a Venn diagram, often used in predicate logic. It can show that if all roses are flowers and all flowers are plants, then all roses are plants.

To the right are a few connectives in propositional logic, which is used to show relationships between statements, a bit like algorithmic symbols (+, −, ×, ÷) in math.

Name	Symbol	Connection	Meaning
AND (Conjunction)	$\wedge$	$P \wedge Q$	$(P \wedge Q)$ is true if both P and Q are true otherwise false.
OR (Disjunction)	$\vee$	$P \vee Q$	$(P \vee Q)$ is true if either P or Q is true (or both) otherwise false.
NOT (Negation)	$\neg$	$\neg P$	$\neg P$ is the opposite of P. if P is true, $\neg P$ will be false and vice versa.
Implication	$\rightarrow$	$P \rightarrow Q$	If P happens then Q happens.

Systemizing knowledge

The process of systemizing knowledge happens in various ways across many subjects worldwide. Classic examples include the periodic table in chemistry, the standard model in particle physics and biological taxonomy. More recent examples include projects and systems like Neo4j, WolframAlpha, Sana Labs, and different systematizations within big data.

However, these systemizations often remain limited to specific fields, like history or physics, and institutions, like schools or companies.

This limitation is unnecessary, as there is no limitation between the fields in reality. Biological molecules can be described chemically by their mass, which can also be described physically, for example in terms of forces when the mass moves, and all this can be quantified.

The idea of interdisciplinary systematization isn't new. It has been explored in fields and models like the tree of knowledge, synergetics, consilience, and tektology.

Derivation aims to develop these knowledge systematization processes and act as a meta-methodology to coordinate development on a large scale, making systems more efficient and compatible with each other. Not all of these processes are necessarily good, but when they're put in relation with each other, they can be critically scrutinized.

Whose knowledge?

Throughout history and across different cultures, people have developed various ways of understanding knowledge, known as epistemologies.

Modern natural science is one of the most well-known, but there are also different epistemologies tied to religions (a Christian epistemology), as well as philosophical and political ideologies (a Marxist epistemology), and others.

At times, people have believed that one method of knowledge is superior to others, which has caused conflict and destruction. Derivation aims therefore to be open to all consistent methods of knowledge - those that do not contradict themselves.

Since there are different types of knowledge, we need multiple systems to account for them. Often, different epistemologies lead to similar or overlapping results, creating common ground that can help bridge different networks of knowledge and even different worldviews.

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Nets of knowledge

Many premises can be used and will often be required in arguments.

To make an advanced conclusion in genetics, for example, you need to connect a long and complex chain of conclusions from various fields. Most of these conclusions were established a long time ago.

Since new observations are constantly being made and the world is always changing, arguments within these knowledge networks need to be updated. This means some old conclusions will become outdated and need to be replaced. This updating process will not to be manual. Instead, the formulas generate the validity of arguments automatically, like with a calculator.

Mathematics will be a central tool in many arguments, making a part of the logical process mathematical. With technologies like large language models and machine learning can the calculation, and a big part of the argument generation, be automated.

Moon orbit example

The Moon's orbit is about 95% circular and orbits the Earth a little too quickly for its mass. Because of this, the average distance between the Earth and the Moon increases by about 3.8cm every year. At this rate, the Moon would leave Earth's orbit in around 50 billion years, but the sun will become a white dwarf long before that, so it's not something to worry about.

To figure this out, scientists didn't just make simple observations. They compared and combined different observations, generated data, and used formulas to calculate that 3.8 cm/year increase.

If the Moon were more massive, it would slow down. By systematizing all relevant knowledge and using it as premises or data in formulas, we could create an equation showing how much the Moon's distance-increasing speed would decrease with an increase in mass. This could be useful for future projects on the Moon.

Similar equations can be made for the Earth's orbit around the Sun and the relationships between all celestial bodies.

For engineering

Similar to the Finite Element Method, we can create an architectural model using formulas that consider various dynamic factors like the hardness of walls, volume, and other relevant mechanics. The functional mass of a wall depends on its volume, the floor's sustainability, and other factors.

These formulas are based on the material conditions required for the model, such as environment, weather, and usage. For example, designing terraced houses in an area prone to minor earthquakes.

Derivation can then help generate the best design and construction options, considering the availability of materials, energy, and time. Some models might be impossible if they require materials with properties that don't currently exist, like a material stronger than tungsten but lighter than lithium.

These formulas should be widely related to avoid conflicts with other design plans. The goal is to create comprehensive knowledge networks for more efficient and compatible designs.

For cooperation

With enough organized knowledge, we can identify and expose injustices based on illogical perceptions, informing people about these and inspiring action against them.

For polarizing issues, you can gather all relevant data, compare it, conduct experiments, and try to understand the root of the problem. This helps us move away from misunderstandings and ignorance. When contradictions persist, they can often be traced to differing perspectives, which can then be addressed more directly.

We can calculate the available resources in a society, how they can be used, and what is possible with current technology. For example, this can help in achieving human rights, environmental goals, and automation. Presenting this information clearly and simply can inspire change by showing what is possible and how it can be done. By relying on shared knowledge and logic, we aim to minimize ideological bias.

A political approach that uses this method is called Expediency.

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What would Derivation look like?

The basic setup will be a website and an app that are fully accessible to everyone. You can register to save specific parts and customize your personal settings. The website will emphasize openness, impartiality, and transparency to avoid bias and prevent knowledge from being withheld for reasons like economic gain.

The key features will include the ability to create, name, classify, and code arguments, sources, premises, and conclusions. Relevant sources will be linked and quoted, with the quotes presented as premises. For security, sources should be peer-reviewed according to their field of knowledge. Arguments and mathematical formulas will be displayed both formally and in plain language, as clearly as the user wants.

Everything will be classified by its field of knowledge, like science. From there, a knowledge network will be built, allowing data to be gathered similarly to a search engine. This setup will enable the creation of more arguments, potentially with the help of AI.

Eventually, articles about premises might be created, similar to an encyclopedia. These articles could be classified using a system like the Dewey Decimal Classification. There will also be forums for discussing the structure, arguments, premises, (similar to discussion on Wikipedia) and other relevant topics.

Practical progress

The project recently beyond the initial stages of theorizing, coordination, and planning. We've developed a theory and made it more concrete through presentations, articles, and general outlines. However, there's still a lot to do, and we need new insights and perspectives. If you have any thoughts after seeing our presentations or reading our theory, please share them.

There are many related theories and speculations out there that can inspire us. Here's a list of some of those suggestions.

We've set up communication and coordination, mainly using the Discord app. Feel free to link up there if you want to learn more, or share the project with others who might be interested. Spreading the word is crucial to achieving our goals.

For practical project planning, we're using an app called Coda. It has resources and suggestions for designing a website for Derivation, mainly focusing on a Proof Of Concept (POC), which will be the project's core.

You can access the Coda here. If you want to help, especially with programming, but also with structuring and project planning ideas, contact derivation.project@proton.me or reach out on Discord or Coda.