

This is a transcript of an 8-minute video about Google's ability to reshape humankind. It was made internally at Google in 2016 and leaked to *The Verge* in 2018. For commentary and to view the video, visit: <https://www.theverge.com/2018/5/17/17344250/google-x-selfish-ledger-video-data-privacy>



[00:20](#)

This man is John-Baptiste Pierre Antoine de Monet, Chevalier de Lamarck. In 1809, 50 years before Darwin published *The Origin of the Species* [sic],¹ he wrote what is widely recognized as the first comprehensive theory of evolution. His book, the *Philosophie zoologique*, introduced the notion of an internal code² within every living thing, which, when passed down through successive generations, defined the physiological characteristics of a species.

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At the center of Lamarck's theory laid what he called "the adaptive force."³ He believed that the experiences of an organism during its life modified this internal code and upon reproduction, this modified version was passed down to its young. While it's not biologically accurate and ultimately superseded by Darwin's theory of natural selection, the epigenetic theories put forward by him⁴ are beginning to find new homes in unexpected places.

LAMARCKIAN USER DATA

[01:13](#)

When we use contemporary technology, a trail of information is created in the form of data. When analyzed, it describes our actions, decisions, preferences, movement and relationships. This codified version of who we are becomes ever more complex, developing, changing, and deforming, based on our actions. In this regard, this ledger of our data may be considered a Lamarckian epigenome, a constantly evolving representation of who we are.

SELFISH GENETICS

[01:53](#)

This is Bill Hamilton, one of the most significant evolutionary theorists of the 20th century. His work studying the social structures of ants, bees, and wasps had a profound effect on our understanding of the role of genes in social

behaviors such as altruism. He believed and went on to prove that the driving force behind evolution was not the individual, but the gene. He stated that the ultimate criterion which determines whether a gene will spread is not whether the behavior is to the benefit of the behavior, but whether it is to the benefit of the gene.

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In the mid 1970s, the British evolutionary biologist Richard Dawkins built on the work of Hamilton and others to popularize the concept of "the selfish gene." In his book of the same name, he introduced the notion of a gene which, whilst devoid of any motives or will, could be metaphorically and pedagogically described as if it were. In this model the individual organism is a transient carrier, a survival machine for the gene.

[02:57](#)

User-centered design principles have dominated the world of computing for many decades, but what if we looked at things a little differently? What if the ledger could be given a volitional purpose, rather than simply acting as an historical reference? What if we focused on creating a richer ledger by introducing more sources of information? What if we thought of ourselves not as the owners of this information but as custodians, transient carriers or caretakers?

EPISODE 1: IL GRILLO PARLANTE [Jiminy Cricket, Pinocchio's Conscience]

[03:34](#)

Initially, the notion of a goal-oriented ledger may be user driven. As an organization, Google would be responsible for offering suitable targets for a user's ledger. Whilst the notion of a "global good" is problematic, topics would likely focus on health or environmental impact to reflect Google's values as an organization.

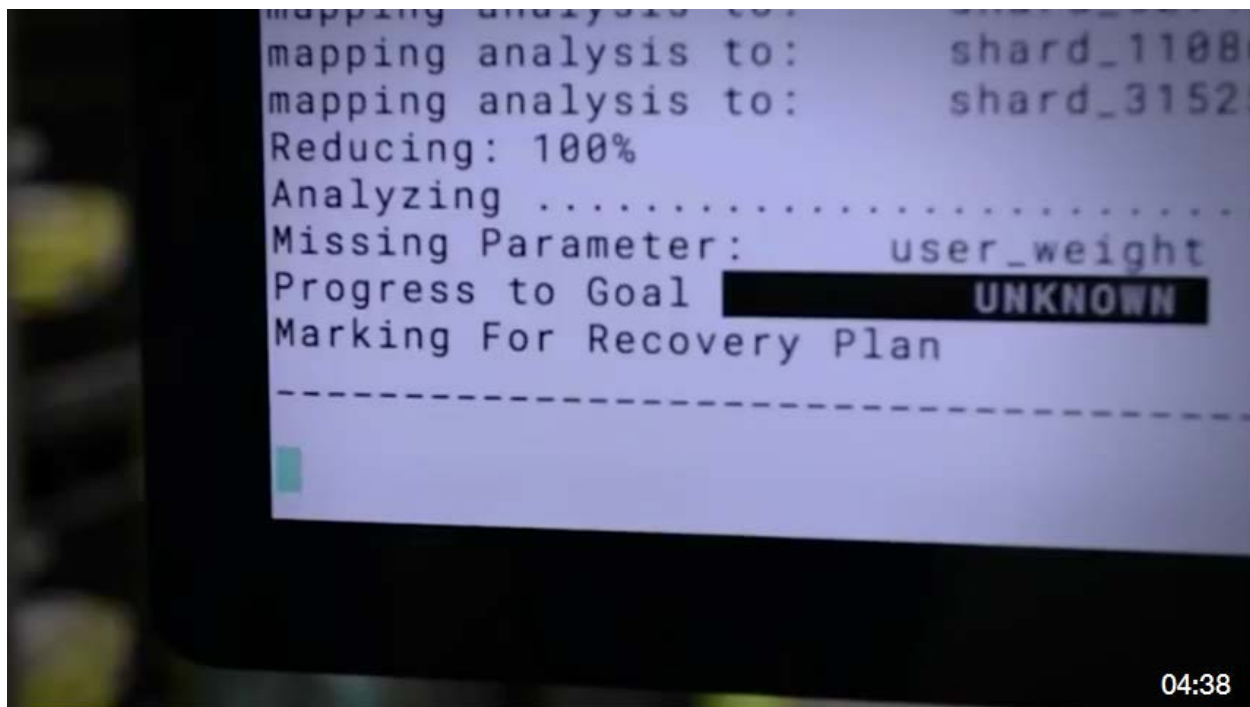
[03:53](#)

Once the user selects a volition for their ledger, every interaction may be compared to a series of parallel options. If one of these options allows the ledger to move closer to its goal, it will be offered up to the user. Over time, by selecting these options, the user's behavior may be modified, and the ledger moves closer to its target.

EPISODE 2: THE QUILL OF CORNELIUS FUDGE [Self-Writing Quill in Harry Potter]

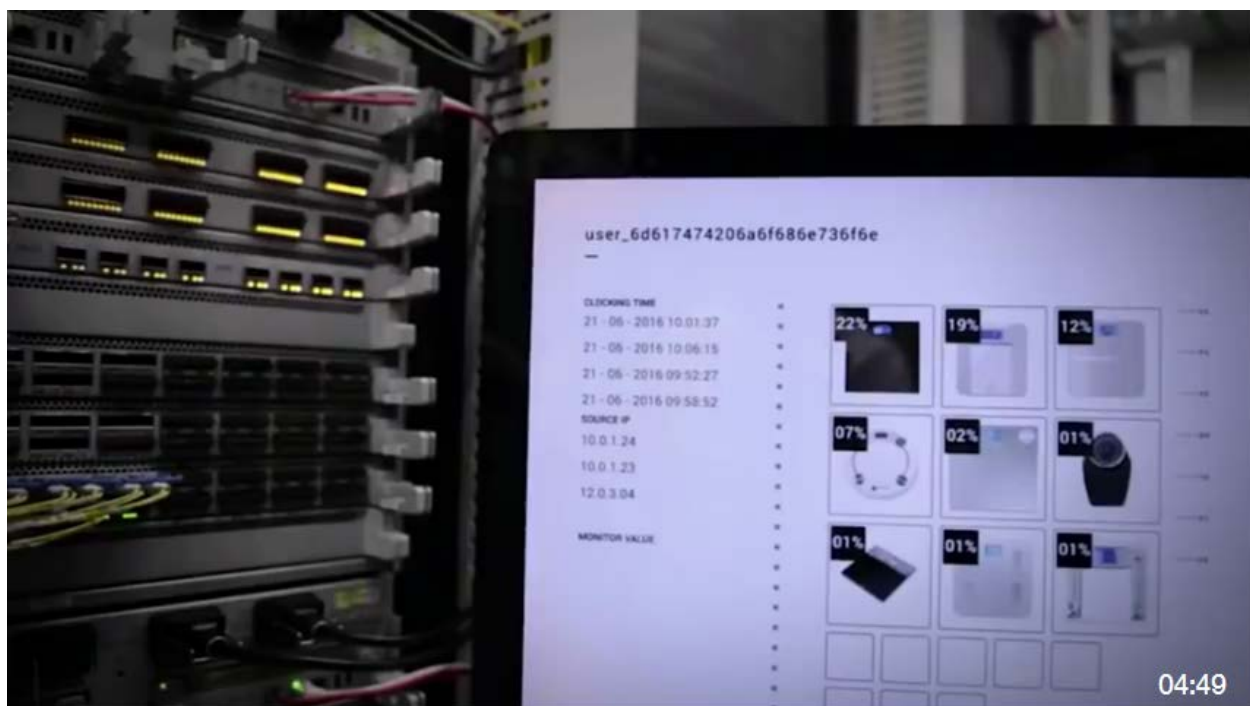
[04:24](#)

As this line of thinking accelerates and the notion of a goal-driven ledger becomes more palatable, suggestions may be converted not by the user, but by the ledger itself. In this case, the ledger is missing a key data source which it requires in order to better understand this user.



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In order to plug the gap in its knowledge, the ledger begins searching for a device which delivers the required data when used. From this list, the ledger begins sorting the options most likely to appeal to the user in question.



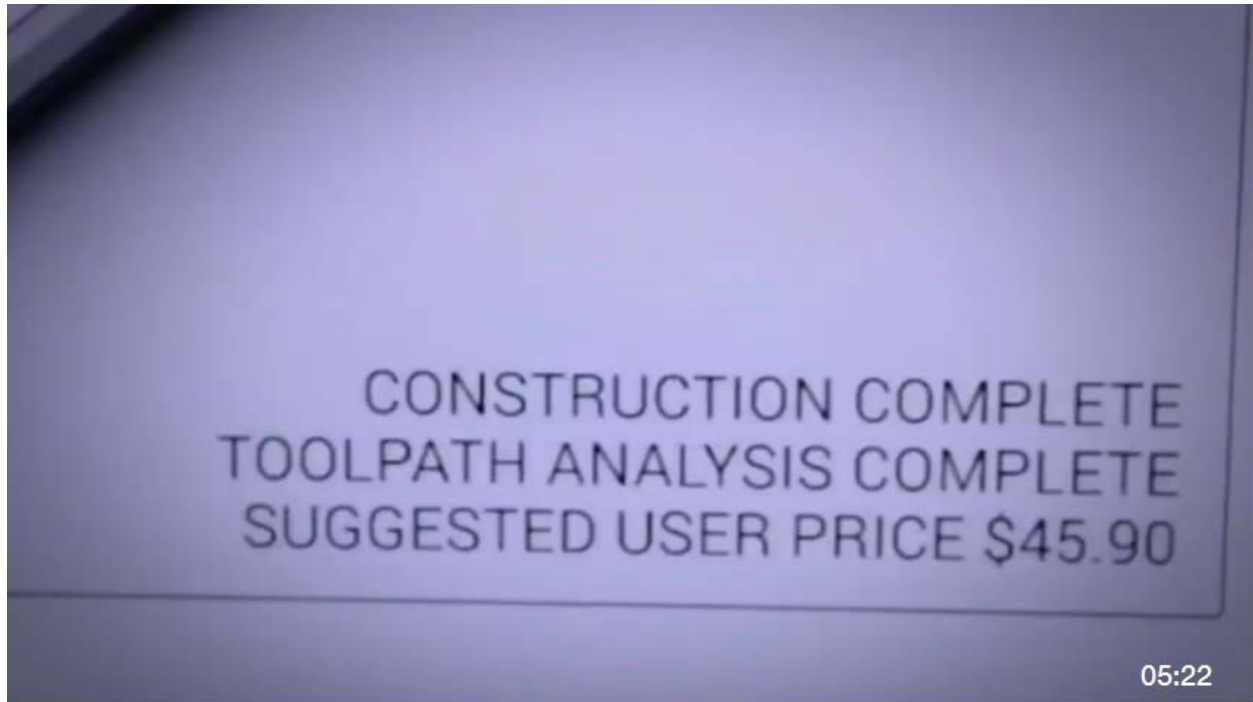
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In situations where no suitable product is found, the ledger may investigate a bespoke solution. By analyzing historical data, it is increasingly possible to

discern qualitative information, such as taste and aesthetic sensibility, which may be used in the creation of a design proposal.

[05:11](#)

With the advent of technologies such as CNC milling and the emergent possibilities of 3-D printing, a custom object may be created to trigger this user's interest. In this way, the ledger is able to plug gaps in its knowledge and refine its model of human behavior.



EPISODE 3: UNUS PRO OMNIBUS [One for All]

[05:39](#)

User data has the capability to survive beyond the limits of our biological selves in much the same way as genetic code is released and propagated in nature. By considering this data through a Lamarckian lens, the codified experiences within the ledger become an accumulation of behavioral knowledge throughout the life of an individual.

[05:57](#)

By thinking of user data as multigenerational, it becomes possible for emerging users to benefit from the preceding generation's behaviors and decisions. As new users enter an ecosystem, they begin to create their own trail of data. By comparing this emergent ledger with the mass of historical user data, it becomes possible to make increasingly accurate predictions about decisions and future behaviors. As cycles of collection and comparison and extend, it may be possible to develop a species level understanding of complex issues such as depression, health and poverty.

[06:35](#)

Our ability to interpret user data, combined with the exponential growth in sensor enabled objects, will result in an increasingly detailed account of who we are as people. As these streams of information are brought together, the effect

is multiplied. New patterns become apparent, and new predictions become possible.

BEHAVIORAL SEQUENCING

[07:04](#)

Since the 1970s, huge efforts have been made in sequencing the human genome. Today, after many years of research and billions of data points, that sequence is known. By adopting a similar perspective with user data, we may begin to better understand its role. Just as the examination of protein structures paved the way to genetic sequencing, the mass multigenerational examination of actions and results could introduce a model of behavioral sequencing.

[07:30](#)

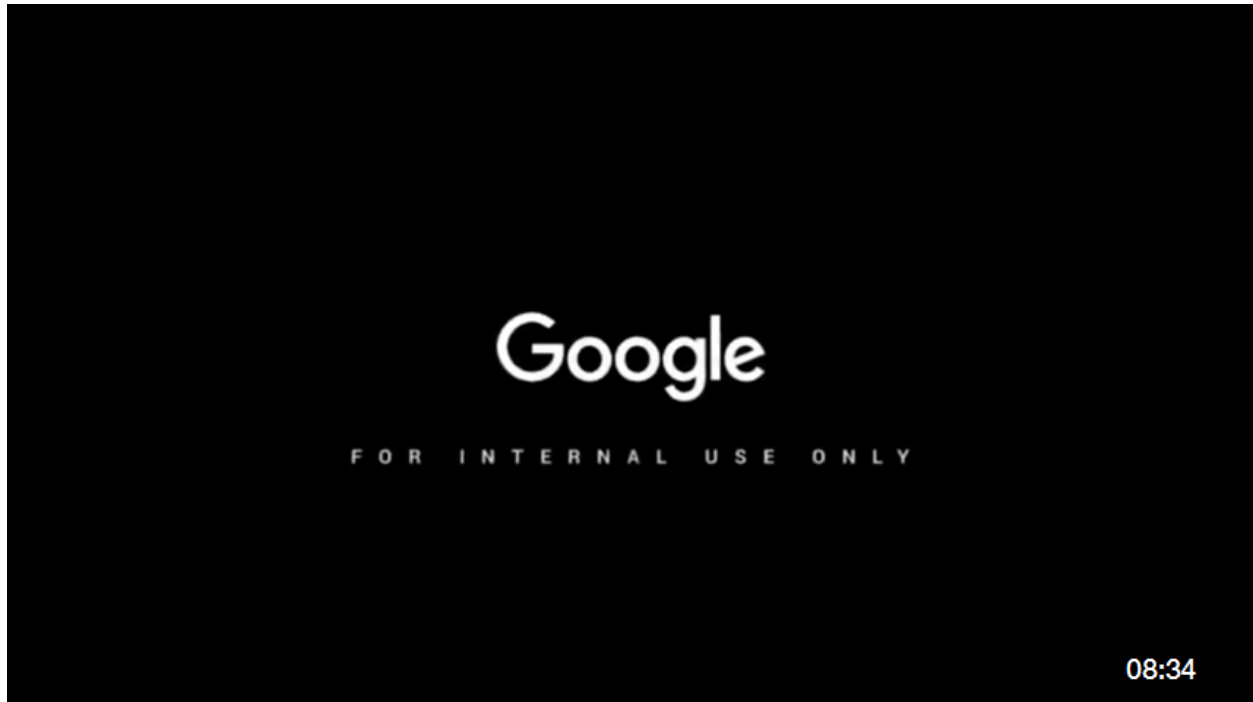
As gene sequencing yields a comprehensive map of human biology, researchers are increasingly able to target parts of the sequence and modify them in order to achieve a desired result. As patterns begin to emerge in the behavioral sequences, they too may be targeted. The ledger could be given a focus, shifting it from a system which not only tracks our behavior but offers direction towards a desired result.



[07:58](#)

We are at the very beginning of our journey of understanding in the field of user data. By applying our knowledge of epigenetics, inheritance, and memetics to this field, we may be able to make mental leaps in our understanding which could offer benefits to this generation, to future generations, and the species as a whole.

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GO / SELFISHLEDGER

Transcript, notes and highlighting by [Robert Epstein \(@DrREpstein\)](#), May 25, 2018.

1. The correct short version of the title of Darwin's book is *On the Origin of Species*.
2. Lamarck first published his theory in 1801, and nowhere in Lamarck's many writings did he say anything about an "internal code." That assertion is completely false.
3. Lamarck never spoke of an "adaptive force," and such a concept was not perforce at "the center" of his theory.
4. It is meaningless to say that Lamarck "put forward" "epigenetic theories" since he had no idea of the existence of genes. For further information, see:

Burkhardt, R. (2013). Lamarck, evolution, and the inheritance of acquired characteristics. *Genetics*, 194, 793-805. <https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3730912/>

Lamarck, J.B. (1809). *Zoological philosophy: An exposition with regard to the natural history of animals*. London: Macmillan. (1914 Eng. translation by H. Elliot) <https://archive.org/details/ZoologicalPhilosophy>