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# The Problem of Possibility: Competitive Governance as a Discovery Procedure

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In this essay, I argue that within Hayek's work we can find an important but underappreciated idea I call "the Problem of Possibility." Put briefly, this problem is that complex evolutionary systems like economies face astronomically large 'design spaces' that they must search for adaptive fit. This augments Hayek's traditional arguments about the challenges of ignorance and complexity in political economy. Rapid adaptation of a social system requires competition for scientific, not ideological or moral reasons.

First, I describe this problem using an allegory taken from biology and complexity theory. Second, I argue that this problem forms a key tenet of Hayekian political economy. Finally, I briefly conclude that 'the Problem of Possibility' in Hayekian political economy suggests a commitment not just to competitive markets in economic goods, but to a higher-level competitive market in law and governance.

> *"… [T]he economic problem of society is mainly one of rapid adaptation to changes in the particular circumstances of time and place."*
>
> F.A. Hayek in *The Use of Knowledge in Society"*

## SEARCHING THE LIBRARIES OF BABEL, MENDEL, AND SMITH

In 1944, Jorge Luis Borges wrote a short story called the Library of Babel. It's a metaphor that many have since used to understand evolution—especially natural selection's remarkable exploration of biological complexity.[1]

He asks us to imagine a library of all possible 500-page books—every possible 500-page book that could be written in the English language. We could remove this limit and expand the library arbitrarily.

The vast majority of the Library of Babel is, well, babble.[2] The library contains a complete list of all possible combinations, and as you might expect, most of those are nonsense.

But in the Library of Babel there is also an accurate collection of Shakespeare. There's the Bible and *Don Quixote*. The Library of Babel is truly massive: the number of books far exceeds the number of atoms in the universe.

We have a big problem in the library: it's hard to find the books that make any sense in the mass. The readable novel gets lost in the sea of babble.

The technical name for the Library is a 'design space'. Obviously, it's purely theoretical— we can't visit. But the 'designs' contained in these books are all the logical possibilities of combinations contained within the constraints of the given system—in this case: 500-page books in English.

How could we possibly find the needle in the haystack? Where do we find the books that exhibit sense or 'order' in the library?

Daniel Dennett uses this allegory for biology.[3] This design space of biological life is searched by Darwinian selection over long periods of time.[4] DNA, rather than English letters and words, are the contents of the books.

Natural selection sifts through these combinations. Only some forms of life have fitness for their environment. These are adaptive and persist in the long run. All 'nonsense' life forms die. Darwinian competition is our search strategy. Over time, we find our way through the library by sorting out the babble.

## THE PROBLEM OF POSSIBILITY

Economist Eric Beinhocker uses this allegory to understand markets. He calls the design space of an economy the Library of *Smith*. This library contains every possible business plan, made of technologies both physical (e.g. assembly lines) and social (e.g. limited liability corporation), rather than DNA or 500-page books.[5]

All of these libraries are part of a broader issue we'll call 'the Problem of Possibility' (henceforth 'The Problem').[6] Within a sufficiently complex system, agents are faced with the task of coping with an astronomical number of possible combinations of adaptive fit in their environment. They have no way of knowing ex ante which combinations are adaptive and which are not.[7]

Unfortunately for those browsing the library, any 'book' chosen at random will almost certainly be noise rather than signal. It will be non-adaptive and fail. The challenge for agents, and for the system as a whole, becomes: how can we search these libraries of possibility for the signal in the noise, as quickly as possible?

One argument is that we need markets not for 'efficiency' but to cope with the Library. We need the trial and error of competitive businesses to search the huge Library and find the plans that have adaptive fit.[9] When others discover this fit, the whole system will benefit.[10]

Although this argument fits nicely with his other remarks about ignorance, it is not the typical 'knowledge problem'

that many attribute to Hayek.[11] But 'the Problem'—searching spaces where most designs are non-adaptive noise—is a powerful complement to these ideas.

Hayek clearly understood this problem, though he did not describe it in this way. In the Constitution of Liberty he writes,

> *Every organization is based on a given knowledge; organization means commitment to a particular aim and to particular methods, but even organization designed to increase knowledge will be effective only insofar as the knowledge and beliefs on which its design rests are true … and if any facts contradict the beliefs on which the structure of the organization is based, this will become evident only in its failure and supersession by a different type of organization.*

In short, if we can only learn if a book is babble by taking it from the shelf and reading it, then the faster we can sort through the failures, the faster we can arrive at adaptive fit. [13]

'The Problem' cannot be solved with technology, by central planning, or by anything other than finding an effective search strategy to work through the library as quickly as possible.[14]

Here we find a foundation for Hayek's classical liberalism: monopolistic systems are ruled out as ineffective search algorithms[15] This decision is not political preference or ethics—it's a scientific response to the problems of large design spaces.

We need organisations to fail so that we can learn.[16] The only way to cope with 'the Problem' is through trial and error in vigorous competition.

## CLASSICAL LIBERALISM, COMPETITION, AND THE LIBRARY OF HAYEK

"Competition", wrote Hayek, "is important primarily as a discovery procedure whereby entrepreneurs constantly search…" [17] Competition is for "discovering facts" that "would remain unknown" without it.[18] Without competition we face ignorance—untamable, and ever-growing.[19]

But Hayek says, "organisations are based on a particular knowledge" not just "businesses". 'The Problem' is not

just an economic problem. It's a problem—perhaps the problem—of Hayekian political economy. [20]

Hayek was not a dogmatic classical liberal, but an evolutionary theorist who recognized 'the Problem':

*The argument for liberty is … an argument against all exclusive, privileged, monopolistic organization, against the use of coercion to prevent others from trying to do better.*[21]

For Hayek, there are two ways to structure a social system: one where "alternative ways based on different views or practices may be tried" and another, "in which one agency has the exclusive right and the power to prevent others from trying."

Hayek's argument against monopoly is an argument for coping with 'the Problem': [22]

*It is only when such exclusive rights are conferred on the presumption of superior knowledge of particular individuals or groups that the process [of evolution] ceases to be experimental and beliefs that happen to be prevalent at a given time may become an obstacle to the advancement of knowledge.* [23]

If any organization is based on a particular knowledge, and that particular knowledge is likely to be 'falsified' by the overall environment—because conditions change and because it's chosen from the unfathomably huge and noise-dominated design space—then legal systems and governments also face 'the Problem'. Any given institutional arrangement is likely to be noise, not signal.

This may sound jarring to classical liberals who have convinced themselves of the merits of a particular institutional order.

Hayek believed the details of a liberal order were still open to change. He refers to "our great ignorance of the optimum forms of delimitation of various rights" despite our "confidence in the indispensability" of private property. Today's rules are refined "from continued trial and error of constant 'experimentation' in areas wherein different orders contended."[24]

"Traditional concepts of property rights", says Hayek, "have in recent times been recognized as a modifiable and very complex bundle whose most effective combinations have not yet been discovered in all areas." [25]

This gives us a final allegory, which we might call the Library of Hayek.

This Library contains every combination of technologies, physical (e.g. voting machines, surveillance) and social (e.g. simple majoritarianism, common or civil law), that could constitute a social order. We'll call its contents 'constitutions' rather than books. In essence, this is a huge design space of social orders.[26]

If we take 'the Problem' seriously, and we see how it leads to Hayek's strictures against monopolistic organization, then why shouldn't we also extend this argument to constitutions and social orders themselves?

In short, Hayek's classical liberalism is not just a commitment to private property liberalism per se. It's a commitment to a higher-level rule about building systems that allow humanity to cope with uncertainty, ignorance, and 'the Problem'. Private property is the backbone of a particularly powerful system, markets, that allows us to cope with this problem in the economy.

But if we take this commitment seriously, Hayek leaves the door open to all forms of organizational experimentation —including the legal and public policy organisations that structure markets themselves.

If we must have vigorous competition, failure, and trial and error to learn; if we cannot tolerate monopoly because it traps us in a corner of the Library; then the question that Hayek poses for the 21st century is: What does a world of competitive law and governance look like? This is the logical extension of his ideas, and there is no more relevant economist than Hayek on this frontier.

# REFERENCES

1. Richard Dawkins appropriated this image for his book *Climbing Mount Improbable* (1996) where he called it the Museum of All Possible Shells.

2. Examples include: a book of the letter 'A' repeated over and over for 500 pages. A book that's entirely blank. A book of all letter Bs, and a book that says the word 'dog' over and over again for 500 pages. An accurate biography of your life, including things that haven't happened to you but will. A biography of your life with a few details wrong.

3. Appropriately, he calls it the Library of Mendel.

4. Chapter 35, *Intuition Pumps and other Tools for Thinking* (2013) citation, also *Darwin's Dangerous Idea* (1995)

5. See especially pgs. 233-239 in *The Origin of Wealth* (2006). The schema-reader that interprets business plans in Beinhocker's example are management teams. Two excellent arguments about combinatorial evolution that form the basis of this part of the argument are: *The Nature of Technology* (2009) by W. Brian Arthur and *What Technology Wants* (2010) by Kevin Kelly.

6. Another way of describing this situation is in the language of "The Infinite Series" coined by Virginia Postrel in *The Future and its Enemies* (1998) or "The Adjacent Possible" coined by biologist Stuart Kauffman. See Kauffman's remarks on the subject at: http://www.edge.org/conversation/the-adjacent-possible

7. For example, the Library of Babel has approximately 10^1,000,000 combinations.

8. In fact, to an outside observer this process would seem maddeningly inefficient. The virtue of markets is not in their efficiency in this view, but in their ability to cope with failure.

9. Pg 279-297, Eric Beinhocker in *The Origin of Wealth* (2006). Some will notice the affinity here between Beinhocker's Hayekian argument and the work of Armen Alchian on firms and evolution. Firms do not maximize—they face too much uncertainty to have the final data to maximize anything. Instead, they grasp, they search, they try to find positive feedback that signals adaptive fitness, Alchian, A. A. 1950. Uncertainty, Evolution and Economic Theory. *Journal of Political Economy* 58: 211-221.

10. One might say, 'as though led by an invisible hand'.

11. Indeed, knowledge is dispersed and local and therefore inaccessible to highly centralized organisations. But some people challenge Hayek's arguments about dispersed knowledge by suggesting that a 'future supercomputer' could gather the relevant data to a central authority. Traditionally, Hayekians retreat to Michael Polanyi, arguing that much of this local knowledge is tacit and therefore could never be shared. The Problem of Possibility is a much more difficult issue.

12. Notice the use of 'design' here. Pg 37. *Constitution of Liberty* (1960). Readers may notice that the overall problem and model being constructed here maps onto scientific discovery quite well. See for example, *The Logic of Liberty* (1969) by Michael Polanyi, *Conjectures and Refutations* (1962) by Karl Popper, and "The Theory of Complex Phenomena" in *The Critical Approach in Science and Philosophy*, M. Bunge, ed. (1964). Hayek titled the first section of Chapter 2 in the Constitution of Liberty, "Civilization and the Growth of Knowledge." Philosopher of science Imre Lakatos would publish *Criticism and the Growth of Knowledge* (1965) shortly thereafter. Although these titles are likely a coincidence. the connection is not. Hayek's arguments in this part of *CoL* are fundamentally epistemological. Hayek had spent years engaging with the philosophy of science, especially through his relationship with Karl Popper.

"The Problem of Possibility" is a modern contribution of complex systems theory to natural sciences and the philosophy of science. This essay is a small attempt to map the language of design spaces back onto Hayek's arguments about complex social systems.

13. It's worth noting that in the highly competitive market of technology start-ups, the motto of many entrepreneurs if 'Fail Faster'. The agents in this complex system have internalized the Problem of Possibility so deeply that their quite Hayekian search strategy has become a slogan. See *The Lean Startup* (2011) by Eric Ries.

14. There are technical issues, too long to go into here, that further support this point. For example, if social systems like markets are computationally irreducible (i.e. cannot be reduced to a formula that allows the analyst to 'cheat' and see the end result), then the fastest way to search the design space will be the speed of the system itself: the universe. If we speed up our own pace of iteration, we arrive at provisional answers more quickly. But there are no shortcuts to predicting the future in irreducible systems like these. Design spaces are also constantly expanding as the novelty-generating process of combinatorial evolution takes place. For further reading on ideas like these, see *A New Kind of Science* (2002) by Stephen Wolfram, *Order Out of Chaos* (1984) by Ilya Prigogine, and *The Origins of Order: Self-Organization and Selection in Evolution* (1993) by Stuart Kauffman.

15. Beinhocker, channelling Hayek, calls these "Big Man" systems because they are shaped by one central actor and they're slow searchers. He considers them completely unable to cope with the Problem of Possibility in the Library of Smith. See pgs 279-297, 415-450 in *Origin of Wealth*. See also *White Man's Burden* (2006) by William Easterly for an application of this idea to international development: planners versus searchers.

16. Pg. 30, *Constitution of Liberty*. "Man learns by the disappointment of expectations."

17. Pg. 18, "Competition as a Discovery Procedure" *The Quarterly Journal of Austrian Economics* Vol. 5, No. 3 (Fall 2002): 9-23.

18. Pg 9. Ibid.

19. "Economics and Knowledge", *Economica* IV (1937), pp. 33-54. "The Use of Knowledge in Society" *American Economic Review*, XXXV, No. 4; September, 1945, pp. 519–30, particularly Section V.

20. Arguably this problem runs much deeper: to biological and physical systems too.

21. Pg. 37, *Constitution of Liberty*.

22. As in the quote at the beginning of this piece, Hayek saw that social systems face the challenge of rapid adaptation.

23. *Ibid.*

24. Pg. 20, *Fatal Conceit* (1988)

25. Pg. 36, *Ibid.*

26. One might have as samples from the Library of Hayek an executive-dominated common law democracy with an authoritarian surveillance state, an Islamic-law oligarchy with bureaucracies like the FDA, or a sci-fi 'futarchy' that uses corrective democracy of land owners with the judgments of artificial intelligence and large statistical analysis in supercomputers to make public policy decisions.

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