



CYBERNETICS AND LAW



Most governments and founding charters originated at least 200 years ago: the United States Constitution (which then also served as a basis in most Latin American countries), and democratic governments such as those of the United Kingdom and France. Moreover, the concept of democracy is even older than that, dating back to the ideas of Socrates, Plato and Aristotle. Cybernetics, however, which is literally the science of government as it studies the structure of regulatory systems, is only about 63 years old. Many years ago I asked myself: What are current governments doing right or missing? What does Cybernetics have to do with the world of Law, given that laws are about controlling people's behaviour?

Rather than telling you the long-winded story, I want to "infect" you with a quick and valuable insight and an example of my findings.

If you think that "systems" have been around for a long time and that they have had their chance to make their impact on the world, please reconsider. Reductionist thinking has become so engrained in our culture that it has become invisible. We think that just because we are able to take things apart, we know how they work. Complex systems though are inherently tricky.

Systems thinking, the process of analyzing and understanding how things work and how they influence each other, is something absolutely necessary when designing a government, otherwise it just won't work. I learned about management cybernetics (the science of managing organizations) under Stafford Beer's guidance, who first introduced this concept of analyzing management and organizations in the late 1950s. I discovered with great joy for instance, that the American Constitution can be mapped in detail by his Viable System Model (VSM). Stafford built this model after standing on the shoulders of the giants of cybernetics such as Norbert Wiener, W. Ross Ashby and others.

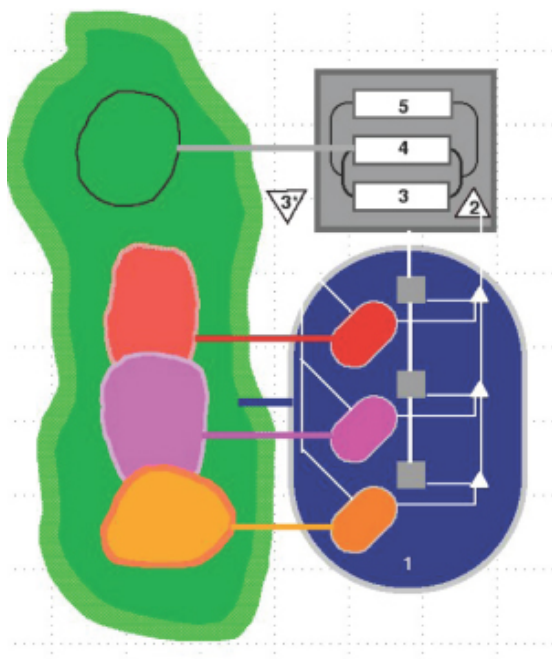
The modern state is a highly complex system. Stafford Beer discovered that nature and liv-

ing things seem quite multifarious, but not as much as they would appear to be. Nature's secret for creating complexity is a little magic trick called recursiveness, of which the human body is the best and closest example: cells, tissues, organs, each of these are a living entity working together as one.

Living things have evolved thanks to genetic evolution. Ideas and concepts evolve too. Lately, we speak about memes (copiable packages of information), and about memetic evolution, which results from meme mutation. Brains or minds copy memes and change them; the amount of copying done by autonomous agents depends on the meme's usefulness. Democracy, for instance, was a meme originally created by the Greeks, but it has come to mean many other things now.

Legal solutions and institutions are memetic super packages. They are meme complexes that have evolved slowly: from Greece to the Middle Ages, through the Industrial Revolution, and the Atomic Era.

If you research what a legal system is, you will find it defined as a system of rules, or norms or some other kind of order, but you are never referred to its ultimate essence: information. The legal realm is a world of guidelines with which to govern. Laws and constitutions are like instruction manuals telling people what to do in many different situations. As such, they resort to previous agreements, such as the meanings contained in a dictionary, in order to be understood and obeyed.



The Viable System Model (VMS) explains in great detail how several systems connect to one another to create a greater one, a whole which emerges from simpler parts and can do things that the individual components cannot do themselves. Building these connections and communication lines is what the law has been doing for many centuries now. Furthermore, emergence is what makes a system behave consistently. Businesses use the holistic synergy ($2+2=5$) to signify that the whole is greater than the sum of its parts.

Cybernetics was born as a strictly mathematical science, using sophisticated statistical methodologies discovered by Norbert

Wiener when he was studying Brownian motion in gases (the seemingly random movement of gas particles). When cybernetics evolved to become a scientific paradigm, it did not discard its mathematical foundations, but it simply built on top of them. Management Cybernetics, Stafford Beer's brainchild, is built on Set Theory and on Ashby's Law of Requisite Variety, which states that the regulator must match the variety of the regulated system in order to assure control.

The variety of a system has been defined as the number of different states that the system is capable of showing. When you have a system as large and complex as the nation-state, the number of potential individual behaviours is unimaginable and yet, somehow, control and an ordered society manage to make its way through. This is thanks to the facts that laws have evolved following certain cybernetic control principles intuitively. This is not a small merit of the legal system.

Therefore, if we opt for redesigning governance, we can do so with a very clear knowledge of how not to produce unwanted side effects. We can map the interactions and identify the positive and negative control loops. Positive feedback is like the acceleration made possible by a car's engine, while negative feedback is used for control, such as the brakes and the steering wheel.

Legal systems use circular causality, even if lawyers do not identify it as such. For instance, the legislative process is an example of a circular causality system. It is assumed that laws are not approved to work forever: lawmaking presupposes the need to go back and adapt legislations to the changing circumstances. These are clearly cybernetic mechanisms at work.

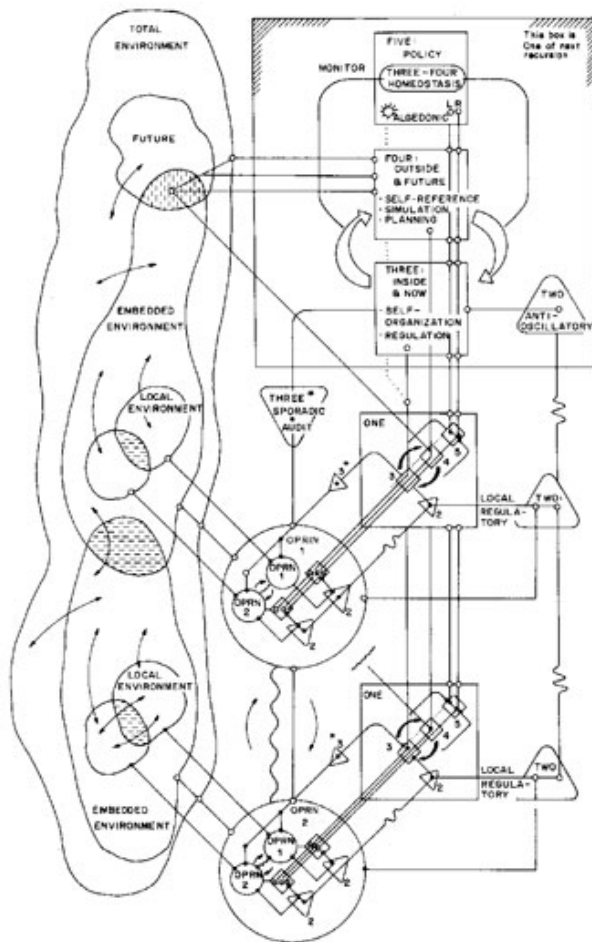
When I say that Law has discovered the VSM without any knowledge of cybernetics it is because trial and error leads to solving governance problems and, eventually, a system of

checks and balances has proved to be a wise solution. Well, checks and balances is another word for homeostats, which nature uses to get results while maintaining an internal stability. What many people have not noticed is that legal systems use contradictory values to balance the performance of the system. Some jurists are aware of the contradictions within the process, which can imply assumptions such as: justice is the enemy of certainty; liberty is the enemy of order and so on.

Lawyers are proud users of Aristotelian logic, the syllogistic logic of "All men are mortal; Socrates is a man; therefore Socrates is mortal." This is the supreme tool of the legal process, also used in defining the burden of proof.

However, what may seem as a chain of syllogistic reasoning could create an aberration. Consider the rules of "probable cause," which have degenerated into a bureaucratic mess that hinders the expedition of search warrants. Why not use a more systemic approach to the problem? What if several neighbours were given the power to request a police search? Individuals do not have "requisite variety," but the neighbourhood "system" does! Peer monitoring by neighbours would, for instance, dissuade the existence of crack houses. Has the Law realized that making finer and finer distinctions creates exactly the opposite effect?

Law has not used the power of dispersed information. Our ideas of individuality do not allow the current system of justice to know what is going on. A family knows its members better than any police ever will. Why not tap into this wealth of information? We disapprove the public lashing of graffiti violators in certain countries, but the truth is that the very existence of the rule produces a behaviour that seldom requires the punishment to take place at all! If you compare this to the high occurrence of rapes in some countries' prisons, we can deduce that it is not the severity of the crime per se that determines the frequency of said crime, but it is instead the entire system variables that affect the behaviour of the potential perpetrators.



Another "systemic solution" is the way the Iroquois, an indigenous tribe in North America, fought the unwanted behavior of their members. They sat the culprit in the middle of the tribe assembly and said: "We are going to do nothing and stay here until you convince us that you have repented because your behavior is something we cannot live with." This social pressure and the resulting bonding produced a society with virtually no crime! The Iroquois did not have jails, and those that repeated extreme cases of disobedience were declared "invisible," which meant that nobody could ever speak to them again or help them in any way. Without the tribe's support they would usually die or be killed by enemy tribes.

Therefore we must look "at the whole" system before making choices.

Living systems are awash with paradoxical situations. Cybernetics embraces paradoxes such as homeostatic checks and balances. The final analysis should answer the question: is the system doing what we want it to? Is filling jails with two million people the purpose of the system? This is what the complex system does. We can change that through the use of the systems' knowledge.

It is sad that defenders of minorities do not have their cybernetics in place. As they demand more and more safeguards of individual rights, they are giving proof of the counterintuitive nature of complex systems.

Take note that I have said nothing here about those attorneys and judges' self-interested role in perpetuating the mess. My analysis does not take into account the role played by those taking advantage of the perpetuation of this mess for self interest or political gain. Corruption is, for instance, a very important component in the system's performance and it can generate errors which negatively impact the communities in their functioning and in their daily lives.

For more information on the topic, see Law & Cybernetics on YouTube.

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