

The Market is a Complex System

The world itself is a system, but there are systems within it. In nature you can see the fractal ordering of systems. You can see in plant life, ecology. Geology, fractals representing in space the same phenomenon you see in physics in time. The fractal pattern of systems is like water responding in waves to the interruption of a stone.

Complex Systems

There are many systems which can be differentiated. For example cellular systems, information systems, physical systems, ecological systems and market systems. A well defined, well contained complex system in a natural state is one that has strict "rules of the game" which every agent or cellular component within the system must live by.

A complex system is dynamic, it has a steady state which is self-regulating, and interventions from the outside cause ripple effects of "unintended consequences." These are features of any complex system. In addition, a complex system is adaptive and tends to produce new emergent behavior and phenomena that are greater than the sum of its parts.

That they will produce unexpected consequences does not mean that one can't intervene in a complex system. But, it is important to recognize that it is a complex system, that the first-order effects seen are not the only effects of each intervention, that the system is capable of self-regulating (and indeed must self-regulate or try to). And, armed with this knowledge, it is wise to consider whether intervention will actually bring about the desired results.

The Island

One example of an isolated complex system is an island. An ecological system has animals of many species in it with predator-prey relationships, but none of them are immortal. The rules of the game are kill-or-be-killed and reproduce naturally. Each agent must live by the physical abilities it has evolved. It would be an introduction of an outside force if a helicopter full of young were to be transported in for one species each spring.

It is an intervention to move species around because the ability to move whole species around is not part of the rules of the game. No species on the island has evolved that ability. Environmentalists may debate whether it is an unnatural intervention or we are just acting within a natural predator/prey relationship when we take an isolated species off an island and move it to the mainland, but when discussing complex systems the answer depends on which system you are talking about.

Certainly, at one scale, we are just part of the ecological system and have naturally reached the top of

the food chain because we have evolved within the system and succeeded. We aren't aliens with immortal powers- we are just a powerful species within the complex system called Earth. But when you look at the sub-system called "small island" for example, we broke the rules of the game that had been in charge there. By removing or adding a species, all sorts of disruptions occur and unintended consequences may result.

The Market

The market is also a complex system. Well defined rules of the game are required to provide a structure to an otherwise self-regulating system. You can't have a market if you don't have laws protecting life, liberty and property applied equally to all agents – rule of law. A free market isn't anarchy.

A market exists within a fine structure that allows a complex system to emerge – the agents exchange, compete, cooperate, fight to survive in any way that they can within the well defined rules. So long as the rules are well enforced, the exchange leads to an emergent phenomenon: a well ordered marketplace with growth of production and increased wealth for all.

In the biological system, the rules of the game were predator/prey relationships and the physical capabilities of the given species within the system. In the system called the "free market" the rules of the game are protection of life, liberty and property-- ie contract and other property rights are enforced, you can't kill people or enslave people, etc. All agents can compete in the market and none of them can force people to do something, they can only make voluntary contracts. Those are the rules.

Now, if you add a new component called "Big Government" ("big" because "little" government would be just the rule-enforcer) then you have introduced an agent that is artificial and breaks the rules. This agent can force people to pay it, it doesn't have to compete because it can force other agents to do or not to do things, it can advantage and disadvantage other agents. It breaks all the rules. It is definitely artificial to the system as defined.

Regulation

Laws for the "rules of the game" create the structure within which the freedom for the agents of the system to interact is maximum. Laws or regulations that do this - such as those which punish fraud, breach of contract, theft, murder, slavery, etc - are part of what allows the complex system to self-regulate.

Regulations that break the rules - that allow a force to dominate not bound by the same rules and instead manipulating the agents, giving advantages to some and not others (by taxation or regulation), repressing their freedom of interaction, cooperation and evolution (with anti-trust or monopoly law) or repression exchange (with price controls or quotas) - make self-regulation and self-correction of the system impossible.

That regulatory government will produce unexpected consequences (or “ripple effects”) does not alone

prove that it should never be done. But it does mean that the first-order effects are not the only effects of each intervention. This must be recognized. Because the market is a complex system we also know that the system is capable of self-regulating and in fact it is this self-regulation which produces the ripple effects.

So now we must use this knowledge to consider whether intervention will actually bring about the desired results or whether the unexpected corrections by the market itself will turn a well intentioned intervention into a crank in the wheel of an otherwise strong economy. We must model the economy in its true dynamic form and allow it to tell us itself. The emerging field of Complex Systems must come together with the field of Economics to create truly dynamic models of the market. All of the answers are there if only we can recognize what we are looking at.