

The Theory of Meta-Systemic Markets

CHAPTER 02

Markets as Meta-systems

Meta-systems Theory and the Structure of Markets : An Explanation of Speculative Bubbles, their Bursting and other Strange, yet Dangerous, Market Dynamics

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Theory of Meta-systems

In this paper I will attempt to establish the broad outlines of Meta-systems Theory so that we can use that to try to develop a theory of markets based on it. Details of Meta-systems theory will be left for later essays in this series and also details of the application of the theory to markets will also be developed later. In other words we will see how far we can go attempting to understand markets using meta-systems theory as it exists now. We take it for granted that almost all the work done in academia on markets are from the point of view of a systems perspective on them, and

that if any work from a meta-systems perspective exists then it will be rare and probably difficult to find within the literature. In other fields occasionally meta-systemic approaches to subjects are found, but it is very rare. So this assumption that economics is system theory driven and concerns almost exclusively restricted economies is what allows us some confidence in starting from a clean slate. This study will take the form of an exploration of the theory of markets based on the meta-system theory viewpoint. We will start by establishing a strong theory from the meta-systemic viewpoint and develop a hypothesis as to what a market is from that viewpoint, and then we will search the economic literature for confirmation or disconfirmation, that the discipline has a systemic viewpoint that it is imposing on the phenomena of markets, and that it has missed or misrepresented the possibility of a meta-systemic view of the phenomena. Then we would like to argue that a meta-systemic view point is a more natural and insightful way to approach the subject which has been entirely missed not just by the Economists but also the Political, Social and Psychological Sciences.

Our view is based on a radical critique of Systems Theory which extends it in a new and hitherto unthought direction. We call that direction Meta-systems Theory. Meta-systems theory is the inverse dual of Systems Theory. We use the term 'meta' in the sense of *beyond*. Here the dual of the System is considered what is *beyond* or outside of the system. Meta-systems theory is different from the normal idea that a system has a boundary and that what ever is beyond the system is non-system. Meta-systems theory posits that there is an organization to what is beyond the system that is different from the system itself. In other words when we step beyond the boundary of the system itself, then we enter a different organization of things which is not just the negation of the system organization but has its own essential organization. In order to understand this it is necessary to understand that each higher schema is de-emergent with respect to the next adjacent lower schema, and so there is an de-emergent difference between

the system and the meta-system. It is possible to produce a recursive hierarchy of each schema in the series, so that we can have sub-systems, systems, and super-systems (so called 'system of systems') in an indefinite series. It is therefore possible to have sub-meta-systems, meta-systems, and super-meta-systems in a similar recursive series. But because systems and meta-systems are inverse duals of each other they are also nested alternatively like Russian dolls where the systems are like the dolls and the spaces between the dolls are like meta-systems. Systems fit like niches into the meta-systems. So when we look at the system from the point of view of the sub-system, what the sub-system sees is the meta-system that is the interface with the next higher system. The next higher system is emergent, but the space within the next higher system into which the sub-system fits is de-emergent. The meta-system is the interface that allows the sub-system to fit into the system. The same is the case at the next higher level where systems are part of a meta-system which is de-emergent, but beyond that there may be the emergent super-system that acts as a system of systems. When we look at the doubly nested hierarchy our attention is drawn to the emergent thresholds of organization because they are foregrounded, but our attention is drawn away from the backgrounded thresholds of de-emergence between the emergent layers of the systems, i.e. we do not notice the meta-systems that are the environment within which the systems operate within the next higher system threshold of emergent organization. Meta-systems naturally hide themselves because they are the supporting background to the appearance of the emergent layers of the recursive system. But the key point is that the de-emergent recursive layers with their different organization from that of the system are just as necessary as the emergent organization of system the itself. The meta-system makes room for, offers niches, and offers resources for the sub-systems within the system, or the system within the system of systems (super-system).

Let us take an example that we are all familiar with. The Automobile we drive is a system

within the meta-system of the highway and street meta-system. But we are systems within the Automobile. Look at the interface between ourselves and the Automobile, which offer to the driver the interface with the Automobile System. In many instances the interface is oriented toward making the Automobile more comfortable, and convenient in many ways. Look how different the interface is between the human and the Automobile and between the automobile and the road. The super-system in this case is the Road and Highway Transportation System. But the Automobile does not interface with the whole of the Road Transportation System, but only the part of the road, the niche it occupies, within the overall Road Transportation System. The key point here is that the interface of the human inside the automobile is very different from the interface of the automobile to the road. And in general it is this interface which accommodates the subsystem into the system, or the system into the supersystem, which is the meta-system. The meta-system of the roadways is very different from the meta-system of the interior of the automobile. They have two completely different organizations, which is different from the organization of sub-system of the human organism, and the system of the automobile, or the super-system of the road transportation system. The internal architectures of the human being as an organism, the automobile design, and the transportation system design are very different from each other. There is a recursive nesting of the emergent system properties in each case. But this is dependent on the de-emergent meta-system properties and their organization at each level which is especially designed to accommodate the next lower level in the hierarchy and its needs. Human System Interface Design is used to produce optimal accommodations between the technical system and the human being. Urban planning and Civil Engineering is used to produce optimal accommodations between the parts of the Roadway Transportation System which is part of Local and State government operations. How you design a transportation system is completely different from how you design an automobile. And this is very different from

how nature designed a human organism. This example should give some idea of the nature of meta-systemic interfaces within nested systems, and how the meta-systems themselves are nested between the emergent system layers. The meta-system layers are de-emergent because in each case the totality of effects of a given emergent system layer is not unified at the interface. Notice how when you look at the automobile interface with the driver and passengers that the various interface components are scattered around within the interior of the automobile. The same is true of the automobile when it interfaces with the components of the road transportation system, the various components of that interface, like stoplights, signs, lines on the road, curbs, etc are scattered around the landscape that the road you are driving is built upon. The interface design of different automobiles is very different and that has to do with the placement of the interface devices and their functionality in controlling the automobile or offering services or accommodation to the passengers. Similarly the external design of the look of the automobiles is designed to be taken in at a glance. It's interface features are sparse and limited to egress and ingress as well as servicing. The design of the exterior is done in such a way that the vision of the whole is emphasized. If an automobile hits a pedestrian or another automobile then the full causal force of the emergent system comes into play. But if we sit in a car in normal operation then the interface elements within the car do not come into play all at once but are dispersed and activated at different times in different circumstances. Similarly when the automobile is within the Road Transportation System environment it does not make use of all the elements of that interface (lights, signs, lines, curbs, etc.) at the same time. One way that we see the entire road system coming into play simultaneously is in Gridlock and in Traffic Jams which may be brought on by a variety of circumstances like for instance accidents. But the key point is that a meta-system interface is dispersed while the emergent effects of a system is usually focused. This difference between the way that meta-system and system are organized is key to understanding the

distinction between them.

A system and a meta-system are inverse duals of each other. We engineer and design both systems and meta-systems. However, the meta-system design is always de-emphasized and difficult to pin down no matter how crucial its interface is with the system. This is because we just naturally see systems and naturally look through meta-systems without seeing them. One way to understand this phenomenologically is to think of the system as a gestalt while the meta-system is the background of the gestalt. Since the gestalt is both figure (form) and ground, then the gestalt is something that appears on a deeper ground of the meta-system for which the gestalt is the new equivalent of the figure. We call this deeper ground of the meta-system a 'proto-gestalt.' We have no standard name for this even though it is an omnipresent phenomena. We talk about gestalts in psychology all the time and understand that everything we see is a figure on a background. But what is seldom discussed is that there is a deeper background on which all the gestalts appear. Something has to determine the order in which we look at the gestalts. That something by which we take in our whole environment in a *blink*¹ is the proto-gestalt. The proto-gestalt has an *implicate order* as discussed by Bohm in Wholeness and the Implicate Order. It also relates to our 'tacit knowledge' rather than our explicit knowledge as discussed by Michael Polanyi². Sanders³ discusses the concept of *indwelling* as the key to understanding tacit knowledge. And this is precisely right because we ourselves are systems *indwelling* in meta-systems as environments and ecologies, but also in markets and within various forms of media. But we also project systems as gestalts on the deeper backgrounds of the proto-gestalts within our lifeworld. We are *dwelling in* the meta-systemic environments we project as the backgrounds for the systemic gestalts we

¹ <http://www.gladwell.com/blink/index.html>

² http://en.wikipedia.org/wiki/Tacit_knowledge

³ Sanders, Andy F. Michael Polanyi's Post-Critical Epistemology: A Reconstruction of Some Aspects of "Tacit Knowing". Amsterdam: Rodopi, 1988.

see on those backgrounds. In this circumstance of indwelling in meta-systemic environments we understand through tacit knowledge the implicate orders of those habitats, and we develop our own *habitus*⁴ through which we routinely or habitually deal with things in those environments.

The way to think about the meta-system from a perceptual point of view is how things look from a particular point in the environment from that point to the horizon, if we do not move. The whole panorama from a given point in the environment is the meta-system. Once we add movement, so that we can look back at the starting point from a different point then we have moved out of the Meta-system into the Domain schema. It is this deeper horizon around the configuration system or the stationary dynamic system that we call the meta-system. In a sense the meta-system takes the system boundary and projects it onto the furthest horizon that is visible from the standpoint of the system without moving. We speak of this as the X-scape, whether it be a landscape, seascape or some other type of *scape*. In English it is the word 'scape' that is the closest fit for the term meta-system. But unfortunately the term 'scape' normally needs a qualifier. Thus we will call it the Open-scape, where we leave open the qualifier of the scape. But sometimes we will use the term 'Scape' on its own even though this is a non-standard usage. The meta-system is the open-scape around the system. The terms environment and ecosystem do not really describe it completely because these are overarching abstractions that relate to our place in nature, or the places of other species in nature. The environment is all the various Open-scapes that open up around us in nature. The ecosystem is the set of niches for different species in nature. Media are information feeds that open up within our environment. The market is the trade system that brings us what we need without our having to procure each item ourselves. Notice you can participate in trade without moving, and you can participate in the media without moving in terms of

changing location, both of these examples of meta-systemic things can bring you the information or the goods right to your door, or even deliver it inside your house. The same is true of the Environment or the Ecosystem, you are within them right where you are without having to move from one location to another. All examples of meta-systems are like this, they describe ubiquitous resources that are delivered where you are without having to necessarily change your location. A market, the corner shop, brings goods near your home and offers them to you for purchase. A market is a way to offer up goods or services that are resources that can be bought and sold normally though a medium of exchange like a currency being used as the basis for the transactions within the market. Notice we use the term *medium* for the money that makes the transactions possible. But what is normally offered in a market is some commodity or resource that is needed or desired. But many times we want to be informed buyers, and thus we need information to be delivered to us in order to make choices within the market of what to buy or what to sell. And so in many ways what the market does is that it takes the environment and brings it to us in a usable form. The resources from the environment were transformed into this usable form by labor. Hopefully it is beginning to become clear how the terms 'environment,' 'ecosystem,' 'media,' and 'market' are all part of the same meta-system or open-scape around the agent who consumes media, consumes products, and lives within an environment whose resources we need in order to us to live in our niches in the social political economic ecosystem as we experience it in our lifeworld.

If we understand that there is a higher level concept of the meta-system which the market, the ecosystem, and media are all examples, then we can begin to use this higher level concept to understand these various phenomena under the same rubric. If we have a theory of what a meta-system is then we have the beginning of a theory of what a market is, or the media, or an ecosystem. Otherwise these all look like disparate unrelated phenomena from our normal point of view in our tradition.

⁴ Bourdieu, Pierre, *Outline of a Theory of Practice*, 1972

A meta-system is not unified like a system, and it is not totalized either. In fact, it is the opposite of unified and totalized, it is de-unified and de-totalized. This is clear when one looks at the horizon beyond every system and one notices the variety that normally resides there. That variety is not unified under a single plan, or organization, but may have multiple orthogonal plans, or organizations, operating simultaneously. The horizon of a meta-system is not a hard boundary like that of the system that forms a meniscus that seals the system and gives it a definite outer skin that defines its boundaries in spacetime. The horizon or boundary of the meta-system is merely as far as you can see from the stance of the system within the landscape. It is an indefinite boundary instead of a definite boundary as in the System. We can understand the meta-system by reversing system characteristics. This is one example of such a reversal from a definite to an indefinite boundary. The meta-system is made up of complementarities. It is a de-unified and de-totalized field of such complementarities. The main thing to understand about the meta-system is its fourfold structure. The major complementarities are between Source, Origin (Sink), Boundary (Horizon), and Arena. These are the four structural parts of the meta-system. The arena is the spacetime environment within which systems appear within the meta-system. Those systems come into the arena at the origin and they leave at the sink. Within that arena the systems themselves normally have anti-system pairs. Many different systems and anti-systems can interact within the arena. What is beyond the arena is the area outside its boundary or horizon. There in that exterior there is a source where the systems and anti-system templates exist. That source is normally thought of as a singularity. There may be many singularities in the field beyond the boundary which is like a virtual phasespace. There may be also discontinuities there, as well as positive feedback vortices in both the positive and negative directions. A good model of this is Catastrophe Theory of Rene Thom. In Catastrophe Theory there is a control space with a surface which has a higher dimensionality than the response space within which we see

the discontinuities played out based on the topology of the control space. The meta-system is a marriage of the response space called the arena and the control space which is outside the arena. The surface of the boundary is the division between these two spaces. The origin point in the arena can serve as the zero point of a coordinate system for a metric that covers the arena. But this coordinate system does not reach beyond the boundary or the horizon that encompasses the arena, and thus the meta-system has two parts which are isolated from each other. But Systems appear within the area, live out their lifecycles, and interact with each other before they vanish at the sink. What is beyond the arena is a phasespace which in catastrophe theory is the control space. And that phasespace is of a higher dimensionality than the arena and movements in the control space are mapped through topological transformations into the response space. The phasespace where the control surface exists is non-local with respect to the response space. It is a virtual realm rather than an actual realm. Thus many of the ideas of Deleuze apply to this relation between the phasespace beyond the arena and the systems in the arena themselves. This is described very well by De Landa⁵.

When we think about the Meta-system as the panorama of the horizon from a particular place in the landscape, then this virtual realm is what is beyond the horizon that we can see. If we are not moving, then things come and go from this mystical realm beyond the horizon to us, but we cannot move the horizon itself. However, phenomenologically we know that there is plenty happening in that realm that affects the meta-system that we can see when we look out to the horizon. In a sense we can think about the fact that early humans probably tended not to travel very far from their place of birth throughout their lives except in the case of migrations. So for the most part the wider world beyond the vicinity of their village was a mysterious realm beyond their ken where cosmic events came to effect them

⁵ De Landa, Manuel. Intensive Science and Virtual Philosophy. Transversals. London: Continuum, 2002.

occasionally. But there was always a reminder that the wider world was there in the cyclical movements of the stars and planets nightly. Thus for early humans this mid-range panoramic background, this deeper background, had developed into a particular layer in our understanding of our place in the world which did not go away but became submerged in consciousness as we learned more about the world, but when we return to phenomenological views of our lifeworld we can see that the meta-system layer is still there and we are still actively projecting it as the complement to the system. In itself it is understood as a field of complementarities as it has been described by Arkady Plotnitsky⁶. And it lurks in the background as the General Economy beyond all our projections of Restricted Economies.

A game is the archetypal example of a system. And we need to distinguish between the game and a meta-game⁷. A meta-system is like a meta-game. In the meta-game the program generates games and then has tournaments between players playing the generated games. The template from which the games are generated is the source, like an object in object oriented programming which has not been instantiated yet. In other words the meta-system is an interface to a wider world beyond the small area which we know locally, from which the small arena we are involved in was generated. Plato says we are like frogs around a pond not aware of the bigger world of which we are part. That bigger world is what the Egyptians called the *Duat*. They saw it as a world to which they went after they died when they traveled West. The journey across the Nile to the West was a metaphorical journey between this world and the larger world experienced after death, which we now know as Heaven. Many of the ideas of a next life

⁶ Plotnitsky, Arkady. Complementarity: Anti-Epistemology After Bohr and Derrida. Durham: Duke University Press, 1994.

⁷ Pell, Barney. Strategy Generation and Evaluation for Meta-Game Playing (Thesis U. Cambridge 1993). <http://www.informatik.uni-trier.de/~ley/db/indices/a-tree/p/Pell:Barney.html>

were probably fashioned out of the interface between our local environment and the wider environment beyond the horizon of our local environment, i.e. the global environment. And if we understand that in terms of meta-games then we understand that what ever game we are playing might come from somewhere that generates games of the type we are engaged in. Writing an Artificial Intelligence program that generates chess like games and then plays them is much deeper than just writing a program that plays chess really well like Deep Blue from IBM. As Barney Pell says much of the work of that program is based on human analysts and so the intelligence is really in the work of the analyst built into the program and not in the program itself. More intelligence is needed to write a program that creates new games and then can play those classes of games in general rather than a specific game like Chess.

So let us take what we know so far about meta-systems and think about markets. First we should distinguish between markets and meta-markets. Meta-markets generate markets for agents to trade in. But a given market is an arena for trading agents, and commodities and currencies of a specific form with specific rules of play. The market has the arena of the trading floor traditionally where actual traders stand and call out their trades. In that non-virtual market we can see all the aspects we are discussing. There is the trading floor that is the arena. There is the agents that inhabit that environment trading with each other commodities for a medium of exchange, money. There are boundaries to that market such as times when you can and cannot trade, and rules for a trade to legally be within the system which usually attempt to assure fairness. But there is a lot of infrastructure and support that makes that trading possible like the communication infrastructure that allows bids and offers to come to the floor to be traded. So there is a whole horizon of interfaces to other systems that surround the trading floor. As the trader stands within the trading floor and looks at everything that can be seen to his horizon that is the meta-systemic interface. The complementarity of the trading

transactions is also a sign of the meta-system of the trade. Whatever a meta-system impinges on will have complementarities within it like those in communication protocols. There is an infrastructure that supports trading, and that can be seen as a system from the point of view of the provider of the trading environment. But from the point of view of the trader it is a meta-system, it is an environment within which he does his trades, and outside of which he cannot trade. The particular trading system that is created is only one possibility out of many possibilities for arranging for trade, and those possibilities could be generated in the meta-market. The meta-market is always trying to come up with new types of markets and new kinds of products for trade. And that is one of the major ways the financial markets grow through the proliferation of markets and products to trade. But that generation of possible trading systems, new commodities, new media of exchange all must happen outside the trading floor of a particular trade meta-system. But it shows that there is an interface to the virtual environment which is the source of the proliferation of new trading systems. That innovation cannot occur within a given trading system. A given trading system is a particular game, and coming up with new games is different from playing an already established game. But by knowing the meta-market is there beyond the boundary of the market, we can see how the meta-system has more than just a spacetime horizon but also a horizon to a virtual phasespace where new games/markets come from. It is out of this virtual horizon that emergent events appear to those within the meta-system. The horizon of the market is at the same time a spacetime indefinite horizon which is the panorama from the trading floor, and also the virtual horizon with the meta-market/meta-game where a specific market/game we are engaged in comes from, that by definition must be from beyond the boundary of the given arena.

A game seen from the outside is a system, but seen from the inside it is a meta-system. If you are a piece in the game then to you the game is a meta-system. But if you are a player of a game controlling all the pieces from the

outside then to you the game is a system. Wittgenstein uses the game metaphor a lot, in order to get across his idea of 'meaning as use.' This is very similar to the idea of Heidegger of the *ready-to-hand* verses the *present-at-hand* modes of being of Dasein⁸. When we view the pieces of the game as ready-to-hand in our play then we have a different relation to the pieces than we do if we are not playing a game and we see a board on display in a shop window. *Meaning as use* means that the pieces take on their meaning in the way they are used to play the game. Ready-to-hand means that the game forms a totalized panoply that has a certain practical relation to us as a tool, which we use to play the game which is different from merely looking at the game abstractly and statically as an idea. Both of these ideas try to distinguish how things look when we are *indwelling* in a meta-system, rather than when we are looking at things from the outside as a system. Markets are different from the perspective of the person running the market as a whole. To him it is a technological system and a set of rules for access to the game. The trader or player of the game has a completely different perspective of one enveloped by the environment of the game, who accepts its media, and designate as real the outcomes within the game. What is confusing is that a market is a real game, where losses and wins are real outside the game. It is like the circus in Ancient Rome where the games are life and death contests between gladiators. In the financial market you can loose all your money, which is counted as a real catastrophe in the outside world. So the market is not a game in that sense. But things also get confusing when we see a game like *Second Life*⁹ where there is virtual money that then translates out into money in the designated as real world. So we can see that it is possible for these boundaries between what is real and what is unreal to become blurred. The same is true for other aspects of Being like Truth, Identity and Presence. Markets as meta-systems have a different organization in their

⁸ Heidegger's special term for the human being which means "there-being."

⁹ <http://secondlife.com/>

meta-levels¹⁰ than systems do. And they control the relations between the aspects of Being differently than systems given those different meta-level organizations. Thus there are essential differences between the system and the meta-system, but in all their characterizes they are complementarities of each other, and part of that complementarity is the fact that systems are unified and totalized while meta-systems are de-unified and de-totalized as a field of complementarities. The meta-system is the way that things look from the point of view of the Wizard of Oz. Behind the curtain is an interface from which the Wizard of Oz interfaces with the entirety of Oz to manipulate things behind the scenes. Dorothy and crew are immersed in the meta-system but they do not see it from behind the scenes, just like the audience does not see what is going on behind the stage during the production of a play. But Dorothy comes to see that there is a meta-system interface there and thus wakes up to the behind the scenes goings on within Oz. Similarly if traders graduate to work for the market themselves then they see the inner workings of the market itself, and how the resources are provided for the traders, and how access to the market is restricted in order for those who run the market to make money from the trades that happen there in the form of fees, just as the traders themselves make their money from the fees charged to customers who use the market to trade their stocks. The market is just one type of meta-system. There are many different types of meta-systems. But it is an important type of meta-system and one which is ill defined because the broader concept of the meta-system is not well understood that can be a basis for defining the difference between these types. As we define better the meta-system and its characteristics this should allow us to focus in on the defining elements of the market vis-a-vis other types of meta-systems, and that should clarify what a market is. Exploring the examples should also clarify what the meta-system is though their similarities.

As we continue in our quest we will be

¹⁰ 'meta' here refers to levels of control

defining the meta-levels of Being with respect to markets called Pure Markets, Process Markets, Hyper Markets, Wild Markets and Ultra Markets. These are based on the articulations of the meta-levels of Being with respect to the meta-system of the market. Also we will see how at the various meta-levels the aspects of Being differ from each other because the meta-levels are emergent. We will contrast the meta-levels of the market as meta-system to the meta-levels of the systems within the market. At each of these levels we will find differences that make the markets different from systems they contain in essential ways. And the upshot of this is that we will find that only systems can be self-regulating because they have unity and totality while meta-systems do not. Saying that markets are self-regulating is a category mistake. It is very interesting that this has been the mantra of the Republicans that has led to de-regulation in our markets, which has led to bubbles which have led to financial crisis. But regulation also views the markets as a system from the point of view of government, which can be externally controlled. We can view a market from the outside as a system, but this misses the essential nature of the meta-system itself from the point of view of those within it. So we are not necessarily advocating regulation either, but rather the understanding of the market as a meta-system, and as essentially different from the system. This is a paradigm¹¹ or episteme¹² shift because meta-systems have been overlooked in our tradition. Until we understand meta-systems we will never really understand the nature of markets in order to come to terms with them and the roles they play in our lives. Partially they are out of control because we do not have a proper conceptual apparatus to understand the nature of the market as meta-system.

¹¹ cf Kuhn Structure of Scientific Revolutions

¹² Foucault, M. The Order of Things