Home Page

Quote of the Week

Products & Services

Customers

Modeling Language

MGT Team

Weak Signal® Research

Part V: A Process Model for Weak Signal Research

Bryan S. Coffman

January 21, 1997

back to Part I: Introduction
back to Part II: Information Theory
back to Part III: Sampling, Uncertainty and Phase Shifts in Weak Signals
back to Part IV: Evolution and Growth of the Weak Signal to Maturity

The Range of Weak Signal Research Processes

Following is a list of some processes that might be of interest:

1. How an enterprise creates weak signals
2. How an enterprise hunts for and models weak signals and scenarios of weak signal ecosystems
3. How enterprises can propagate weak signals to other systems in the environment
4. How an enterprise can employ and apply weak signals to improve its ability to thrive
5. How networks or ecosystems of weak signals self-assemble across multiple systems in the environment
6. Designing and building an enterprise that can manage all of the above without relying upon a bureaucratic or departmental approach.

MG Taylor Corporation is offering a series of Weak Signal Workshops to be held later in 1997. The purpose of these workshops will include both a discovery and documentation of models for these processes.

Portions of these processes have already been presented in other parts of this paper. Miller's Living Systems model explains the structure of the signal and information processing system. Part III of this paper discussed sampling strategies. The 'Spoze model handled suspension of disbelief in the hunt for weak signals. Part IV of this paper outlined a four-step model for the emergence and growth of a weak signal. The Appropriate Response model illustrates some of the criteria for testing strategies for capitalizing on weak signals.

This paper will present a rough model of these processes in an attempt at synthesis, but the reader is encouraged to make his or her own observations of how enterprises successfully handle weak signals, and

build models as a consequence. Certainly there are many valuable approaches and insights that can be made. If you wish, we can post some of those models to our website for the benefit of others. Click on the E-mail button at the bottom of this page for the address.

Agents and Actions

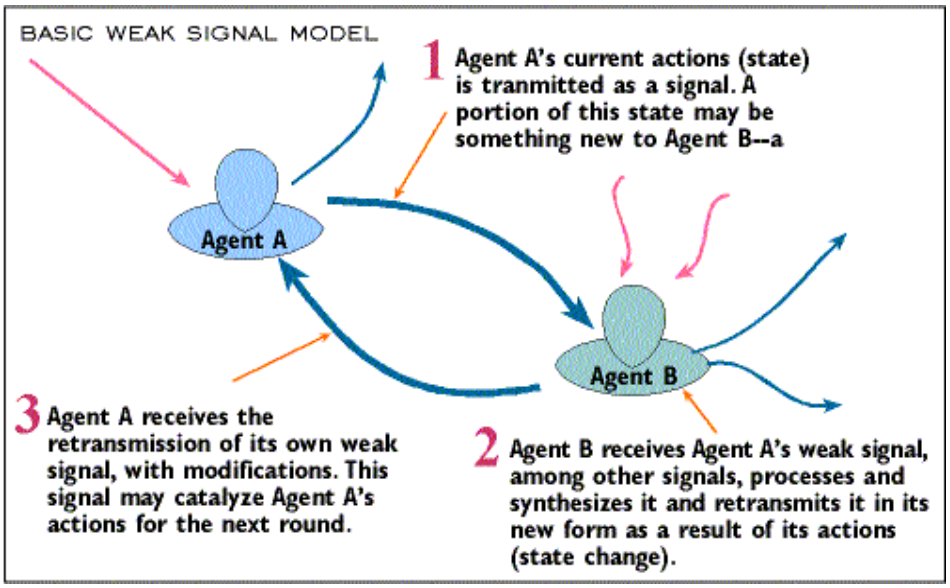
In this discussion of processes I'll be referring to Agents and Actions. An Agent can be an individual, group, team or enterprise--any entity or collection of entities that acts in concord and presents a single identity. Actions refer to specific behaviors that the Agent exhibits at any one time. The Actions of one Agent may influence another Agent to modify his behavior, and produce different Actions. A web of such mutual influences that is stable (homeostatic) and reproduces (or grows) is capable of accomplishing the six processes listed above.

In the terms of the science of complexity, an Action that an Agent exhibits at some point of time is called its current ***state***. The breadth of all possible Actions that an Agent can exhibit is called ***state space***. If the Agent has settled into a set of Actions, the cycling through which allows it to thrive, it is said to inhabit a ***stable basin of attraction*** in state space. As conditions in the environment change through competition or cooperation, the Agent may have to hunt for a better, or more fit, basin of attraction. This hunting process is called evolution or adaptation. An Agent that is capable of such behavior is called an ***adaptive agent***. ***Autocatalysis***--as it relates to the enterprise--refers to one Agent's ability to facilitate the productivity and creativity of another Agent. A web of such Actors who influence each other's Actions to cause the web to coalesce, gain identity, grow, survive and reproduce is called an ***autocatalytic network***. More common terms for this are enterprise, organization, company, community, team.

Although some of these terms may seem mysterious to us because they were born in the science of biology, their representations in our organizations are familiar. An organization's state of being can be a very complex thing, involving perhaps thousands of variables. Accounting models and product advertising are two simple windows opening onto this current state. There are life cycle models that present simplified maps of state space from birth to death of the enterprise. MG Taylor's version of this is called the Stages of an Enterprise model. When an organization hits upon a "system" for doing its work profitably, and it repeats this system reliably, then it is in a stable basin of attraction. If it can survive assaults by competitors and other external and internal threats and opportunities by adjusting its structure and processes, it is adaptive. If the output of the organization exceeds or is not predicted by the potential output of its components if they were acting separately (synergy) then its members have an autocatalytic relationship with each other: they can do more together than they could do apart.

All of these features are natural and every organizational system exhibits or embodies them. The question is, will bringing these terms into consciousness help to map the underlying processes and structures, and can this mapping be transformed into a collaborative edge? In other words, can self-knowledge lead to self-improvement?

Agent to Agent Process

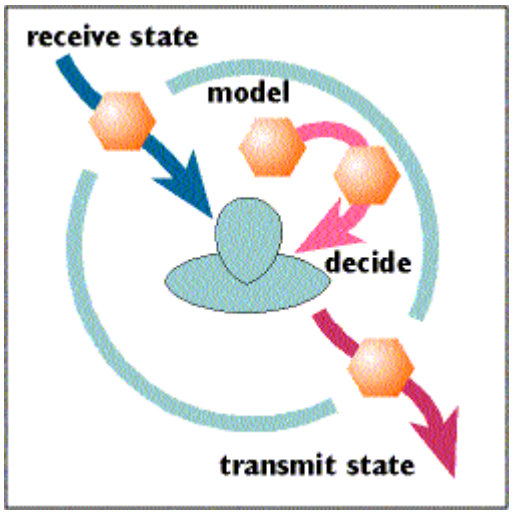


In previous parts of this paper I've examined weak signal from a time-based process view. This diagram shows the weak signal process in simplified form from an entity-based process. Agents A and B both exhibit behaviors, or states. This exhibition is a form of conscious/unconscious, voluntary/involuntary transmission of signals: we observe the behavior of other organizations and organisms in the world around us. Agent B does this by employing input transducers (eyes, ears, phones, computers) to gather signals produced by these other entities. Most signals are deflected by Agent B for reasons discussed in Part II. Some signals get through and are processed to help the receiver maintain its own balance, or homeostasis. Other signals get through and may contain messages that are totally new. If Agent B's Associator mechanism is adaptable enough, it can process these new messages as weak signals, folding them into larger predictive models or scenarios. Then it can use these new predictions to make decisions that affect its own behavior, or state. Agent A may pick up on these behavioral signals from Agent B, recognize its own weak signal as a component, and modify its behavior accordingly. If this cycle of modification allows the two agents (along with many others) to form a productive, profitable web, then autocatalysis is achieved and the weak signal passes into the stage of becoming a strong signal.

But the point is that the entire process is governed solely by several discrete events:

1. Transmission of a system state to the environment
2. Reception of this system state by another system
3. Association and synthesis of new weak signals into predictive models
4. Decision making based on the predictive models that yields a new system state

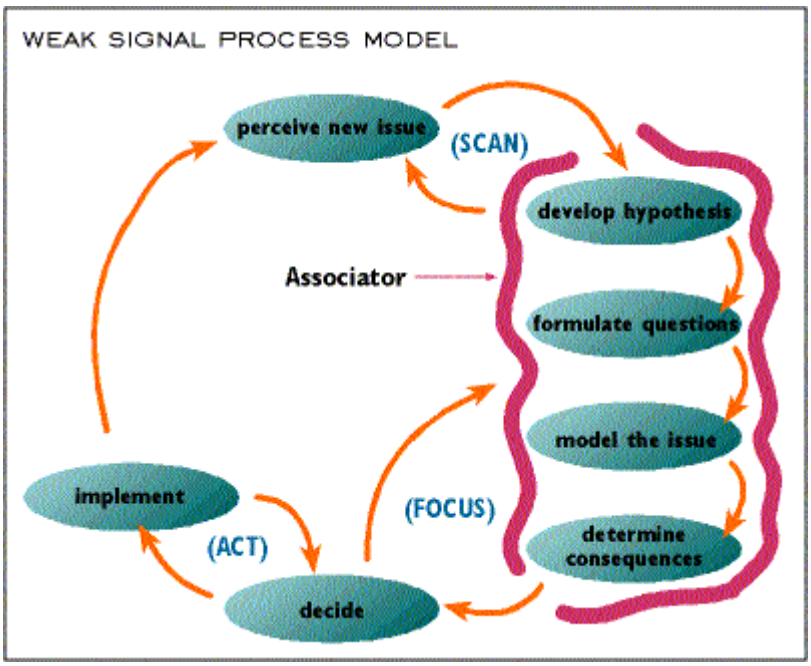
That's it. We receive stuff, model the stuff we receive, figure out what to do next, and then send that stuff... If a web of interactivity results, and it helps us thrive, then we've helped launch a weak signal into a full-fledged trend and we will benefit from it.



This helps us target areas for improvement in our own enterprises. We can scrutinize and modify how we receive signals and what we are willing to receive. Recall from Part II that this is termed "knowing our noise." We can examine our modeling process--our ability to play 'Spoze and the robustness of the resulting models. We can examine the modeling process for its incorporation of nonlinear, or lateral thinking. We can understand how that modeling process folds into our decision-making and what criteria we use for allowing strategies to pass the decision threshold--what our definition is for Appropriate Response. Then we can take a look at how we transmit what we've learned to the environment in a form and manner that makes it most useful. If it's useful, then other organizations will pick it up and it will be amplified as it's passed on.

Another Version of the WSR Process Model

Below is another version of the same process using different terminology which may be more useful to some readers. Steps 2-5 constitute what goes on in the system's Associator. For the interest of MG Taylor network members, the Scan Focus Act model is mapped onto the process model.



1. Perceive new issue (a message with meaning) in the environment
2. Establish a hypothesis concerning the future of the issue
3. Formulate questions to validate or invalidate the hypothesis
4. Map (model) the landscape of the issue, hunt for and select related signals based on the questions

5. Determine consequences of the map or model and design the opportunity

6. Decide

7. Implement

Other material on Weak Signal Research on this website

- *Miller's Living Systems model for information processing*
- *Playing 'Spoze*
- *Glossary of Weak Signal Research Terms*
- *Appropriate Response Model*

home parent page

19970121220342.web.bsc


Index of Archives


Index of This Site


Search


Contact MGT


Terms & Conditons

iteration 3.5