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Weak Signal® Research

Part IV: Evolution and Growth of the Weak Signal to Maturity

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Weak Signal Source

[For stories and more information on the emergence of weak signals in Silicon Valley, check out the San Jose Mercury News series called *The Revolutionaries*. Also see the PBS online companion to the series *Triumph of the Nerds*. Finally, see the whole list at Yahoo under Computer History.]

Where do weak signals come from, and how do they become strong signals? How do they gather support from other signals and systems?

Signals must have sources. They come from somewhere and from someone. When new ideas are conceived, at first only the inventors are aware of them. Even if they share the idea with others, it will spread rather slowly and weakly. People who first perceive new ideas often have difficulty explaining what they themselves only half understand. Those with whom they share these ideas may understand even less, or scoff at them, discarding the message out of hand. The popular press is not interested because the topic will be confusing and hard to sell. Even if it is published, it will likely escape attention because it will not register statistically as an emerging trend.

Many new ideas are conceived not by one individual or isolated team, but by many individuals and teams that may or may not be aware of each other's work. So it was with the birth of the automobile, the steam engine and the personal computer. In addition, the originators of weak signals tend to be "homeless". Their work is hard to fit into existing categories, institutions and budgets. So they often can't be found in typical places where you might be tempted to look. Of course, this is not a maxim; institutions like Bell Labs and Xerox PARC were hotbeds of technological innovation (even though they did not always recognize the value of what they had).

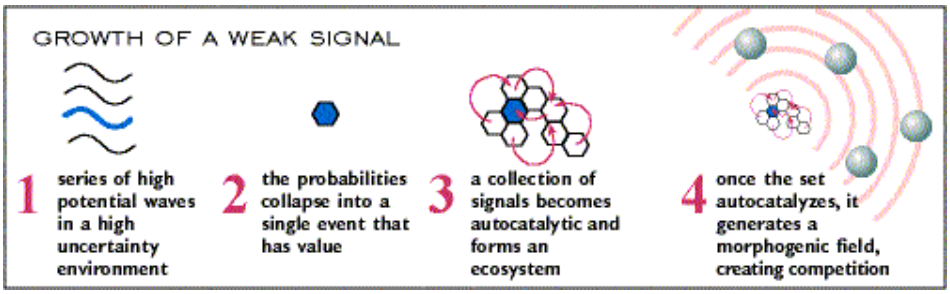
But where do the new ideas come from? The process begins with messages from the past, a vision of the future and a high degree of uncertainty.

Growth of a Weak Signal

All of the messages whose synthesis will result in a new weak signal or idea come to us from the past. But their synthesis is assembled based on our assessment of the future. We employ a function called the Associator [see Miller's Living Systems model] to accomplish this assembly. If all we wish to do is assemble messages to help us maintain the status quo (something that is very necessary) then we will have the Associator apply models based completely on past experience of success and failure. If we wish to change or innovate our situation, the Associator must complete its work based on vision, with a certain "suspension of the rules" when it comes to using past experience to define what is and is not possible. This means we are willing to admit what we do not know.

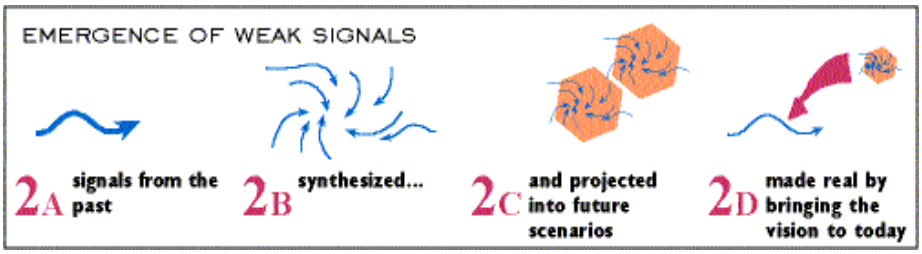
If we're only listening to the same signals that we've always listened to--the ones we most probably use to maintain homeostasis--we're not likely to discover or create high leverage weak signals. We need instead to enter an environment, and listen on a bandwidth where the information is much greater. Recall from Part II of this series that one definition of information is uncertainty and surprise. High uncertainty environments are more likely to be meaningful to me than low uncertainty ones. Meaning is another loose synonym that I've been using in this series for information. Information is a message to which the receiver assigns some meaning. On a daily drive to work or a walk down a familiar corridor, there is little uncertainty, and therefore little information. There's nothing to pay attention to. Throw a detour into the drive, or an interior decorator into the corridor (not literally...), however, and for a while, our senses will be commanded by a flood of uncertainty, novelty and surprise. This high information environment is rich with opportunity to learn, discover or create something new.

So Phase I in the growth of a weak signal is placing yourself in the path of high-novelty signals in an uncertain environment. No wonder so many artists get depressed...



In Phase II, the potential inherent in this packet of high-novelty signals collapses into a single synthesis of great value: the "aha!" Phase II is composed of four stages.

First, the signals must be gathered and stored. Many people pass through high-novelty experiences with the intent only to suppress the events as quickly and firmly as possible in order to return to homeostasis. In general, we don't like to be stirred from our familiar mental loungers. The fundamentalist is infuriated at the mere mention of the word evolution, while the biologist turns livid at the thought of creationism. It's no use telling either party that they don't need to "suffer" conversion from their closely held beliefs in order to obtain value from different ways of thinking. If you don't feel honestly challenged during the weak signal process, then you're not in a high-novelty environment and your results will be severely attenuated.



Next, the gathering of messages must be synthesized and understood, or packaged in to chunks. Out of this packaging, a basic understanding of new terms and connections will emerge. This ends the second stage.

The third stage is playing 'Spoze, or what-if. Here the packages are projected into future scenarios where they are simulated through storytelling, follow-up research, and quantitative analysis. Finally, in the fourth stage, the true, most valuable weak signal emerges out of this melee as vision. The signal grows in strength as more of the vision is brought to it--made real--every day.

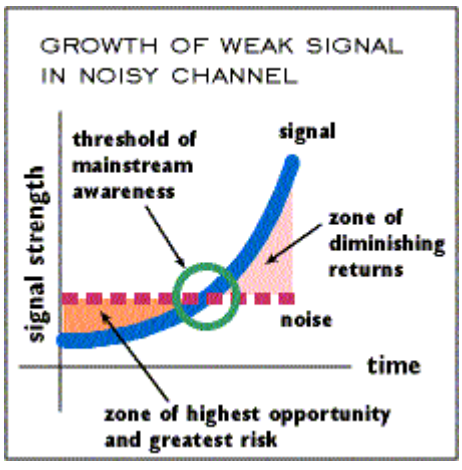
But weak signals can't exist alone. The automobile would not gather strength as an idea without a distribution system of petroleum products, mechanics, roads, and a host of social and regulatory changes. None of these things existed in the required form before the automobile was invented. All of them together had to be woven together into an autocatalyzing web. So petroleum products were invented to surface the roads, and trucks delivered these product to the work crews. The trucks in turn were fueled at a network of stations, and so on. In an autocatalytic web, the actions of one component usually create more demand and more opportunity for another component--a form of positive feedback necessary for growth.

This autocatalysis is represented in Phase III and its result is an ecosystem of intermeshed new and old ideas.

In Phase IV, the growth becomes exponential, the weak signals cross the threshold of noise in society and become strong signals. At that point, huge barriers to entry are raised. But before that line is crossed, the proliferation of the weak signals sets up a furious competition. A sort of collective memory appears that Rupert Sheldrake would call a morphogenic field [see the Spirit to Spirit page for some quotes... and be prepared for a high-novelty experience :-)].

When to Get in the Game

From a capitalist mindset, the decision of when to invest in weak signal development is a question of risk.



As the chart to the left indicates, investment in weak signals before they become mainstream is risky but includes the greater potential rewards. Not every set of weak signals clicks into autocatalysis and not every autocatalytic set becomes a viable economic ecosystem. However, once you can be sure of the success of a set of weak signals, you may also rest assured that it's too late to invest in hopes of reaping large returns. This may not always

be the case, depending upon the assets of the investing company. Microsoft, for example is making a bid now to make up for its lack of attention to the growth of the graphic based part of the Internet. Its rival, Netscape clearly detected and helped propagate this product when it was a weak signal.

If an enterprise identifies weak signals early on, it may always choose whether or not to execute a strategy to promote and invest in them. If the enterprise, through some quirk of its structure and processes cannot or will not identify weak signals, then it can only fall prey to whatever comes along. It's like flying a jet without radar.

To drive this point home, I quote one of my favorite stories from Steven P. Schnaars book, *Megamistakes*.

> "In 1967 Keuffel & Esser, a leading manufacturer of slide rules, was commissioned to study the future. Its study produced many interesting findings, some of which came to fruition, but most of which did not. One of the things it failed to foresee was that within five years the company's product woud be obsolete, the victim of a substitute product, the electronic calculator. It ceased production in the early 1970's. By the end of the decade an executive of the firm stated: 'Now we sell about 200 of them a year, tops'. Most sales are now made as souvenirs of a bygone era."

There are two approaches to finding weak signals: either look for their source, or see if you can be an inventor of one yourself. The best approach is a hybrid. A good Weak Signal Research capability in an enterprise is one that not only scans the environment for new ideas, but conceives of new ideas itself. A discussion of that process and others is the topic of the next and final installment in this series.

Part V: A Process Model for Weak Signal Research

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*

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