

Aftershock: Pattern Channeling

Who will dominate our future economy and how they will do it.

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In the three short decades between now and 2050, the boundaries of the human being—both as a physical body, and as a personality—will become more and more translucent. Like a server, a human being will be seen as a collection of information and scripts—memories, subpersonalities, orientations, skills—that simply happen to be co-located. Rather than imagining society as a place where humans interact, we will see society as the network of situations in which the scripts themselves interact as *autopoietic patterns*.

An autopoietic, or self-reproducing, pattern is that which can compress the lessons of history and transfer them to a future niche where they are still sound. Each pattern is elaborated, or drawn out, by the domain in which it finds itself, and to the degree that its compressed history is valid in that domain, this elaboration produces a future in which the pattern will again exist. This is circular—present “validity” is measured by future existence—but this recursive circle is indeed what people mean by “sound” or “valid” or “successful” strategies. We search for patterns that will be validated again in terms of their future success.

Think about how your DNA compresses your ancestral history—the techniques for overcoming challenges faced—and how it transfers this history into the future. It is elaborated in the present situation by the machinery of your cells in the context of your body and environment; to the degree that this compression of history remains valid in present circumstances, it makes you a successful member of your societal niche. The same idea works for your eating habits, the way you perform your daily work, the way you play. You have patterns that “take into account” (i.e. compress aspects of) the past, and you act out these patterns in the present to produce a future where those patterns can propagate. *You are what you feed.*

For various reasons having to do with the evolution of our society, it has been convenient to imagine that each human being is responsible for managing her behavior patterns, that we can stop a pattern or start a new one at will. But this conception is dubious. Instead, it is always a different pattern that is put to use (i.e., is newly elaborated) and lets us change course. This new pattern was perhaps propagated to us by reading a self-help book, by talking to one friend, or by imitating another one. It might

also have come from reconfiguring a technique we used successfully in the past. It is this new pattern, not our will power, that emerges as successfully producing the change.

Let us consider a few social and economic patterns. Sports teams or leagues constantly renew themselves with traditions supported by a founding mythology that suggests an eternal existence. These traditions are themselves autopoietic patterns. The Olympics and The America's Cup (as the longest running International sporting trophy) are ultimate expressions in that much of their perceived value is exactly because of their seeming forever-ness. Whole countries will encourage such traditions and mythologies as a pattern. Commercial enterprise may be considered to have at least two patterns: 1) the corporation; and 2) fiat currency. These are autopoietic in that they continually reinforce themselves through social and legal agreement. Neither represent any physical laws. There are myriad autopoietic patterns. Google, linear algebra, Donald Trump, gene editing, the university system: each of these comprises a pattern that compresses some lessons from its history and is elaborated in the present to produce a future within which it will again exist.

So what exactly is a pattern? A human is not exactly her body, not exactly her mind, and not exactly her history or potential future, but at least we can speak as though she is. The definition of a pattern is even less well-formed, and even harder to pin down with standard language, than is the definition of human.

As an entity, a pattern is very light weight. A pattern does not need to be fed sugars and proteins. It instead needs to be fed situational instances in which it can be elaborated. Thus the supply chain of tomorrow will not be one of materials, but one of situational instances: energy and information in any form (including sugars and proteins) that can resource the most dominant existing patterns (including us). The supply chain of tomorrow is a system for transferring the very situational *domains* in which patterns can be elaborated and thus reproduce themselves.

The key enabler of tomorrow's supply chain will be the proliferation of highly technical and strongly interoperating languages, each of which is form-fit to a particular situational domain. Each domain-specific language will connect with a large variety of other domain-specific languages, through highly technical information channels which are formed whenever an analogy between the domains is rigorously articulated. In this way, working patterns in one domain can be translated through the channels to produce working patterns in other domains.

Autopoietic patterns, much lighter weight than a football team but even more powerful, will propagate at high speeds within this network of pattern languages.

A recent mathematical framework, called *category theory*, provides not only the primitives for designing these new, high tech languages, form-fit to any specified

purpose or domain, but also for transforming valid reasoning from one language to valid reasoning in another language, using rigorous channels called *functors*. An expert in this discipline is able to distinguish between those patterns that are guaranteed to arrive intact as they pass through the functor channels, and which patterns will be mangled or lose merit in the process. Pattern security will encompass and surpass all other forms of security.

This new mathematics is not a language but a new linguistic ability: the ability to form and interconnect new and existing languages with a rigor never before imagined. The results can be made into technological artifacts, such as databases and functional programming languages.

This new technical linguistic ability heralds a new age for humanity. Indeed, human history really begins with language, the refinement of an older animal ability to coordinate group activity using specialized behavior, mainly sounds and gestures. Human groups that developed better language could outcompete those that didn't, as the strongest alpha male was easily defeated by a well-coordinated gang.

And of course language has correspondingly proliferated and been refined to an astounding degree since its humble beginnings. Today there is a language of finance, a language of love, a language of popular culture, and a language of science. Within science, there is a language of chemistry. Within chemistry there are even languages of physical chemistry, biochemistry, and organic chemistry—and these are not as similar as they may sound. The tree of languages continues to branch as one dives deeper into any domain.

Choosing the most refined language for a job ensures that coordination between its adherents can happen with speed, precision, and accuracy. And yet, to solve larger problems we constantly must travel from one domain to another; as we do, the language we use must correspondingly transform. In the future, these transformations will happen in a seamless and technified (i.e., functorial) way, ensuring that valuable contextual information is not dropped in the process. Our patterns of thought will travel through functors and set up shop in new domains, like spores ready to show their dominance or die trying.

The human being and her network of friends will be one way to group the reproducing patterns, but it won't be the only way or even the most sensible way. The boundaries of human beings will give way to more appropriate and durable categories. Tomorrow's economy will be dominated by those who supply and stabilize the pattern domains, as well as by those who create the most useful functorial channels for transferring and translating patterns into new worlds for them to root and flourish.

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