

### Negative feedback systems

Feedback systems are perfect conceptual models. They provide a framework which is both robust and elegant, balanced perfectly at all times on the edge of efficiency. They are both self contained and self regulating lending them the clean edged organizing quality we as human beings are intuitively attracted to.

Norbert Weiner describes the feedback system as a self-aware machine. It includes the ability to sense its position in relation to its environment, and to process this into a complementary actuation upon the world. In Wiener's words these machines incorporate mechanisms "to control the mechanical tendency toward disorganization; in other words, to produce a temporary and local reversal of the normal direction of entropy."<sup>i</sup> This is a portrait of the self-regulating machine.

Alongside the water clock, steam engine and thermostat, the toilet is a classic example of a mechanical feedback system. The toilet must have a critical amount of water in the tank for an effective flush. Too little doesn't work and too much will overflow. To maintain the proper amount of water in the tank at all times, a float sits atop the water connected to a valve. After a flush the water level falls and the float falls with it thereby opening the valve and letting water back into the tank. As the tank fills the float rises back up, eventually closing the valve at the critical point.<sup>ii</sup>

The defining characteristic of the self-regulating machine is its use of the negative feedback loop. The effect of the machine on the environment is fed back to the machine which in turn affects the machine's effect on the environment, and so on in an endless, self-perpetuating loop. This use of negative feedback guarantees that whatever extreme state the machine may be driven into, stability can always be recovered by applying an equal and opposite force in the opposite direction effectively neutralizing the extreme. Feedback systems combat entropy by perfectly folding fluctuations back into the system itself, swallowing them whole.

Though feedback systems can create beautiful and elegant mechanisms, the most interesting feedback examples are found in the social, economic and political dynamics of human society. Generalizing the idea of the feedback system what we are looking at is essentially a robust method of control; a stability generator. Adorno and Horkheimer's culture industry and Barthes' mythology are two examples of negative feedback models. I believe the reason both of their conceptual models feel so all encompassing and inescapable is precisely because they describe a negative feedback system we are components of and thereby feel consumed by in a perpetual loop. I believe that by analyzing their theories as negative feedback models we can better understand the internal dynamics of the systems they describe. We can then apply this understanding towards constructive action for breaking the system from within.

Adorno and Horkheimer describe the way in which the culture industry homogenizes the individual and commodifies dissent as a negative feedback system. "Something is provided for everyone so that no one may escape"<sup>iii</sup> (p.97)  
The masses want to be enslaved, they want to be fed the very ideology which destroys their freedom. The capitalist mode of production has rendered them empty consuming

machines, and though they see the cultural commodities being marketed to them as specious they clamor for them anyway.

"By artfully sanctioning the demand for trash, the system inaugurates total harmony."<sup>iv</sup>

"That is the triumph of advertising in the culture industry: the compulsive imitation by consumers of cultural commodities which, at the same time, they recognize as false." (p.136)<sup>v</sup>

The mass sameness forms a mute and complicit background from which the resistance feedback cycle emerges. Rather than combating opposition, the culture industry envelopes and inverts it. It devours dissent and transforms it into a waste product for mass consumption.

"Anyone who resists can survive only by being incorporated. Once registered as diverging from the culture industry, they belong to it... Realistic indignation is the trademark of those with a new idea to sell." (p.104)<sup>vi</sup>

The dissenter becomes the next new commodity; hipified, packaged and ready for the masses, always eager for something new. This is the framework of a negative feedback system: information about the dissenter is fed back to the culture industry-control mechanism, which compares it with the ideal state of stability and takes the necessary actions to neutralize the dissent by commodifying the very concept.

Barthes' negative feedback system is mythology. By robbing language of meaning myth transforms words into pure form.

"Nothing can be safe from myth, myth can develop its second-order schema from any meaning and.. start from the very lack of meaning."<sup>vii</sup>

By its nature as an abstract symbol system language is easy to distort and open to interpretation, leaving it vulnerable to invasion by myth. Even less ambiguous languages, such as mathematics, ultimately succumb to myth. They are taken as totalities, becoming symbols of the very ideology they were attempting to defy.

"Myth can reach everything, corrupt everything, and even the very act of refusing oneself to it. So that the more the language-object resists at first, the greater its final prostitution".<sup>viii</sup>

Barthes' feedback system is one of predatorial language. Just as the culture industry commodifies dissent, myth installs itself inside the resistance made against it thereby stealing its meaning. Myth appropriates form and invests it with new meaning, thereby self-regulating and maintaining the stability of its system.

"It thus appears that it is extremely difficult to vanquish myth from the inside: for the very effort one makes to escape its stranglehold becomes in its turn the prey of myth: myth can always, as a last resort, signify the resistance which is brought to bear against it."<sup>ix</sup>

The question then, is how this understanding of the inescapable cycle as a negative feedback system can help us break out from its grasp? Perhaps it is possible to destroy the system from the inside out. To return back to the toilet, one can fool its mechanism simply by reaching into the tank and manipulating the float by hand. Holding the float down while you flush will keep the valve open and let water flow in continuously to the point of flood and self-annihilation. Taking this model as a guide, the task before us is to find the system's vulnerability, the weak point of its feedback mechanism, and exploit it to the point of self-destruction.

- i Norbert Wiener, *Cybernetics in History*, in *Multimedia: from Wagner to Virtual Reality*, 53, ed. Randall Packer and Ken Jordan, (New York: W.W. Norton and Co., 2001).
- ii Gary Cziko, *The engineering of purpose: from water clocks to cybernetics*, (Cambridge: MIT Press, 2000), 60
- iii Theodor W. Adorno and Max Horkheimer, *Dialectic of Enlightenment*, trans. Edmund Jephcott (California: Stanford University Press, 2002), 97.
- iv Adorno, 106
- v Adorno, 136
- vi Adorno, 104
- vii Roland Barthes, *Mythologies*, trans. Annette Lavers (New York: Hill and Wang, 1972), 131
- viii Barthes, 132
- ix Barthes, 135