

# Control by individuals and societies

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# Question: Where are the social control systems?

It's interesting to hear (see) the howls of protest over the idea that society exists only in the minds of individuals. ...

The question is, where are the social control systems?

Control systems exist in cells, and in the collection of cells we call individuals, and in cells and individuals we can specify chemical and neural mechanisms that perform control functions. But while in a society certain individuals may be construed as having certain control functions (input, comparing, specifying standards, acting), the consequences of such "functions" are communicated to other individuals only as perceptions, not as signals from one function to another as in an actual control system.

*Mary Powers 1991, quoted by Bill Powers, 2005*

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# Where are the social control systems?

*Our nervous system doesn't know anything, it just functions.*

*E.G. The brain functions because particular transmitters conduces to the "transport" of neural signals. Acetylcholine is the prototype of many diverse chemical substances that can be released from diverse nerves and neurons in the brain as the all-important link in the signaling process.*

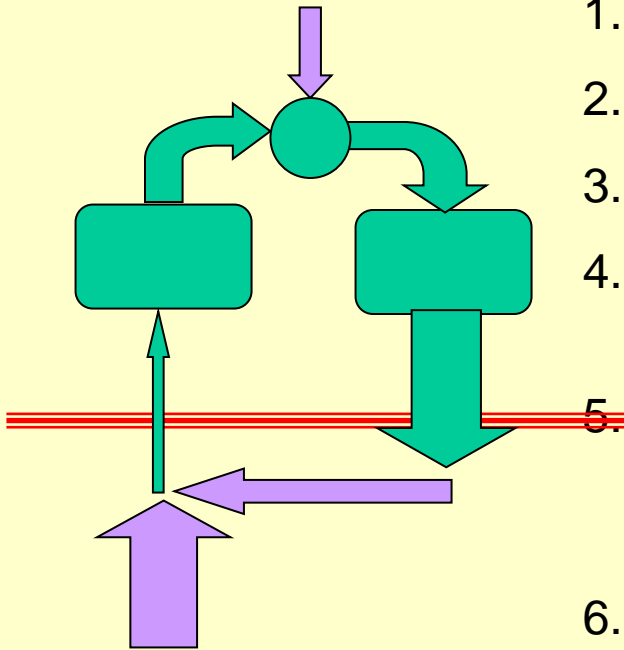
*Bjorn Simonsen (2005)*

That is like saying that a radio functions by electrons and holes moving through transistor, resistors, and capacitors, so the radio doesn't produce any music. Reductionism explains nothing, .... You could organize acetylcholine and all the other neurotransmitters differently and end up with a nonfunctioning brain, just as you could wire up transistors, resistors, and so on at random and end up with a nonsense device that did nothing useful. What makes the brain work as it does is the organization of its parts, not the parts themselves.

*Bill Powers, 2005*

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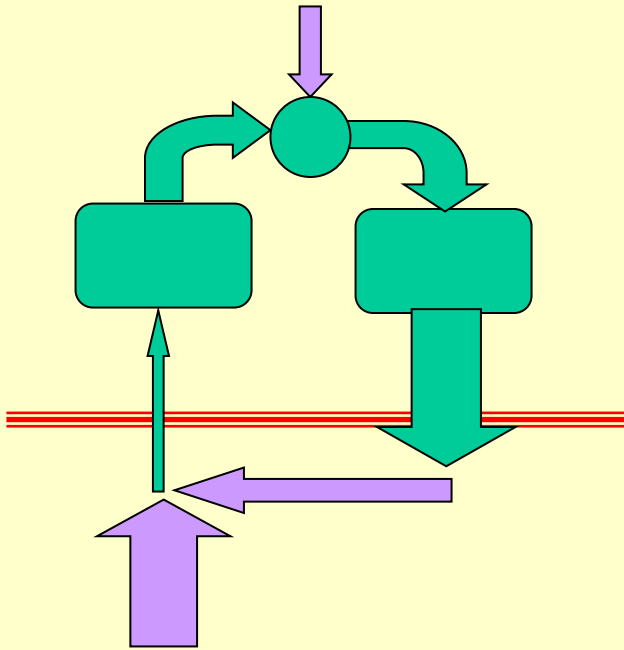
# What makes a control system?



*The canonical diagram*

1. The specific organization (a **loop**).
2. **Separation** of “inside” and “outside”
3. “**Channelling**” of influences in the inside (signals).
4. Ability to transform specific states of the outside into a signal on the inside (**perceptual input**).
5. **Power** to influence the outside in a way that affects the perceptual input more consistently than by pure chance.
6. A **reference** or goal state for the internal state produced by the perceptual input.
7. A way of **comparing** the reference state with the perceptual state.
8. **Asymmetry** between its ability to affect the outside and the outside’s ability to affect it (usually this refers to the power levels at input and output).

# What is NOT required to make a control system?



*The canonical diagram*

1. Specific materials.
2. Physical layout.
3. Single-valued “signals”

A control system may be embodied in physical materials, or in the logic of a computer program.

If it is physical, its materials may be biological or inorganic, nanoscale or megascale.

The perceptual states it controls may be scalar or vector, nominal or numeric, fuzzy or crisp.

There is no restriction on the way it influences the “outside” environment.

# Where are the social control systems?

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*Mary Powers, 1991*

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While in a society certain individuals may be construed as having certain control functions (input, comparing, specifying standards, acting), the consequences of such "functions" are communicated to other individuals only as perceptions, not as signals from one function to another as in an actual control system.

*Mary Powers, 1991*

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# The “Parts” of a control system can be other control systems

**Input:** There must be a way of transforming some condition in the outer world into a state that can be compared with a desired state.

Could independent control systems do this? **YES**

**Comparison:** There must be a way of comparing a perceptual state to a reference condition.

Could independent control systems do this? **YES**

**Output Action:** Given the result of a comparison, there must be a way for action to be evoked.

Could independent control systems do this? **YES**

**Conclusion:** The “Parts” of a control system could themselves be independent control systems. (The HPCT structure uses independent control systems this way).

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# The “Parts” of a control system Could they be human?

**Input:** There must be a way of transforming some condition in the outer world into a state that can be compared with a desired state.

Could a human or humans do this? **YES**

**Comparison:** There must be a way of comparing a perceptual state to a reference condition.

Could a human or humans do this? **YES**

**Output Action:** Given the result of a comparison, there must be a way for action to be evoked.

Could a human or humans do this? **YES**

**Conclusion:** The “Parts” of a control system could be humans



# Organizing the Parts into a functioning control system

While in a society certain individuals may be construed as having certain control functions (input, comparing, specifying standards, acting), the consequences of such "functions" are communicated to other individuals only as perceptions, not as signals from one function to another as in an actual control system.

*Mary Powers, 1991*

What Mary says is undoubtedly true, but is it relevant? Humans do communicate with each other, certainly as perceptions. Does this mean that those communications cannot serve “as signals from one function to another as in an actual control system”?

Usually, when one person communicates with another, the intention is to disturb a perception that the originator believes the recipient to be controlling, so as to generate an action that the originator wants to perceive.

If the originator has judged correctly, the communication is effectively a “signal” and the recipient a transducer “function”.

I argue that there are many situations in which “correct judgment” of at least one controlled perception is probable, and that this allows communications to serve as signals input to, and output from, “functions” that could be parts of control systems.

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# Organizing the Parts into a functioning control system

The idea that social control does not exist is simply that it isn't floating there between people. It does exist, in reference levels, in individuals, where it is constructed during learning and growing up. The people who have not incorporated the rules of their society into their control hierarchy are called children ... or sociopaths.

*Mary Powers, 1991*

In a social organization, there are many justifiable assumptions about what people may be controlling. Mary has pointed out some very general ones (and I presented a mechanism at the CSG 1993 meeting).

In a structured organization such as a commercial company or an army, one might be more specific: in particular, it is probable that most people will be controlling their perception of a superior's opinion, with a reference that the superior be pleased with their performance.

To be yet more specific, in such an organization, **if a person is assigned a role, it is likely that they will perform the function defined by the role.** For example, a professional shopper might reliably report the prices at which the company's product sells, as compared with the prices of competing products (a perceptual input function).

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# Organizing the Parts into a functioning control system

If the “Parts” are individual humans or groups of humans, could they be organized to form a control system?

Could a human input transformer communicate the state it computed to a human comparator? **YES**

Could a human comparator communicate to a human action executive the difference between the desired state and the state computed by the human input transformer?  
**YES**

Could a human action executive influence the world “outside” so as to affect the state reported by the human input transformer? **It depends on the powers available to the human action executive, but there clearly are situations in which the answer is “YES”.**

**Conclusion: The signal and action pathways required to form a control system could exist when the “parts” are human.**

# Where are the social control systems?

*If all the parts required to form a control system can be human, and all the signal paths and action paths can be organized in such a way as to form a control system, then social control systems can exist.*

Do they?

A commercial company seems likely to be an example. There are people who look at sales figures and report them to decision-makers who compare the figures to targets. They command action, such as advertising, product redesign, price changing ..., and those actions affect the sales figures reported by the people responsible for doing so.

**No one person is the controller. The company is.**

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# What do the human “parts” need to know?

*One presumes a neuron knows nothing of the function it performs in the control system. Even less would an electronic filter know its function. Do the human components of a social control system need to know their function? Can they?*

Humans can perceive more than one thing at once. It would be quite possible for the professional price-shopper to be a social analyst and to perceive the control system of which she is a part. But that knowledge does not figure in her efforts to learn the selling prices of the product and to report the results. **She CAN know, but she need not.**

More insidiously, demagogues often can disturb the perceptions of large numbers of people so that they become the action component of a social control system in which the demagogue acts as the comparator whose output is the error signal. In this case, the demagogue probably is aware of his function in the control system, but he need not be.

**No one person is the controller. The company is.**

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# Are all social systems control systems?

Almost all interactions among people involve feedback loops. Does this mean that almost all social systems are control systems? Not at all.

Control systems require:

1. The specific organization (a **loop**).
2. **Separation** of “inside” and “outside”
3. “**Channelling**” (signals).
4. (**perceptual input**).
5. **Power**
6. A **reference** or goal state
7. A way of **comparing** the reference state with the perceptual state.
8. **Asymmetry**

# Are all social systems control systems?

Control systems require these properties. Do most social systems have:

1. The specific organization (a **loop**). **YES**
2. **Separation** of “inside” and “outside” **NO**
3. “**Channelling**” (signals). **YES**, *but many don't; they distribute signals.*
4. (**perceptual input**). **MAYBE** (*it often happens that one person reports an interpretation of the world to other people, but seldom is that a responsibility of the person within an arbitrary social structure*).
5. **Power** **MAYBE**
6. A **reference** or goal state **NO**
7. A way of **comparing** *the reference state with the perceptual state.* **N/A**
8. Power **Asymmetry** **YES** (*in most social structures, some people are more powerful or influential than others*).

**Conclusion: Most Social systems are not Control Systems**

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# Where are the social control systems?

There are lots of them. Armies and gangs clearly conform to the requirements of control systems, as do commercial companies and stage companies.

A social control system is NOT a system for controlling society or other people — or at least, not necessarily.

Many social structures that might seem like control systems are not, because they fail the test of having an inside and an outside that is to be sensed and influenced. Most clubs are not control systems, though some may be.

An angry mob might be a control system, but it probably would fail the test of having channelled signal paths and separately responsible sensors, comparators, and executors. A mob is more likely to be a collection of individual control systems than to be a control system. But it may be the action component of a control system.



# Conclusion

Social control systems are control systems in which the functioning elements are, or include, humans.

They can and do exist.

Functionally they are like any other control system, neurological, mechanical, electronic, or whatever.

Most social structures are not control systems, despite having many important feedback loops that control their dynamic behaviours.

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