**(Source:** [**Systemic Causality – NTCenter.bg**](https://ntcenter.bg/en/systemic-causality/)26 Jun 2018)

Systemic causality (systemic causation), as opposed to direct cause-effect, is not a naturally occuring learning concept, claims Prof. George Lakoff of University of California, Berkeley. The explanation is simple – the brain is unfit for this task because it is unable to observe it. The brain deals fairly well with simplistic cause-effect relations, e.g. summer > warm, winter > cold, rain > wet, smile > happy, tears > sad, etc.

Let us explore how a baby starts to learn about the world around. The brain turns into memory the models which the baby witnesses: I cry > mom comes and hugs me; I reach for the toys hanging above me > an adult comes and plays with me; I cry (cry #2) > I get food; I cry (cry #3) > I get my diapers changed. The baby’s brain has no knowledge where mom is when she is not in the room. The baby’s brain has no knowledge about mom buying (what buy means?) food from the supermarket (what is a supermarket?), where she goes with the car (what is a car?). In other words, the brain learns by putting together sequences of cause-effects which come from observable situations. The systemic causality which can not be observed – these are the things outside the direct sensory perception through eyesight/hearing/taste/olfaction/touch – can not be registered and perceived. When the child grows up, the adults start explaining some “invisible” links – where the food comes from, who planted the trees, why does the old lady carry a walking stick. This means that the brain can perceive complex, systemic causality, if it is consciously directed to it, if it is trained to do so. (There are other ways for the brain to make connections known as parallel processing, but this is beyon the need of the most basic explanation and example which we need here.)

In reality, most of the disinformation which is propagated through online media is not binary in nature (yes/no, white/black), but systemic. This means that a single fact, which we can observe and on which we can agree, is indeed a result of extremely complex cause-effect relations networks. A good example would be the much-discussed issue of climate change.

An extremely cold winter week in North America or Central Europe triggers a virtual online avalanche of sarcastic comments, which could be summarised as follows:

“Sure, global warming with temperatures of -22… Where are the vocal ecologists and pseudo-scientists now!”

Unfortunately, this rarely receives a matching answer, since such answer would require lengthy explanations into what is climate change, when and how does it occur, what are the factors which determine such change, how are they interlinked and what are the cause-effect relationships behind the complex – and long developing – phenomenon. In short, the simplistic assumption that global warming > everything and everywhere is warmer, is plainly wrong.

And, as yet another example, we chose to illustrate this article with an image by PA Consulting Group/PA Knowledge Limited on the complexity of understanding the situation and its dynamics in Afghanistan, as it stood in 2009. And we could find numerous examples pointing to “quick-fixes” of the Afghan knott, which include only one variable and assume that changing it will lead to an unequivocal better off output.

Thus, understanding of the systemic causality and its interaction mechanisms can be a powerful tool to combat disinformation. While the brain can not “discover” this itself (for reason of not being able to observe and learn from the observation), it can be taught to do so, insists Prof. Lakoff. This means that it is possible to design training, so that learners can distinguish between direct and systemic causality, and when they identify the case as systemic, to be able to investigate the systemic cause elements and their interaction.

**Reading Comprehension Worksheet: Systemic Causality**

**I. Understanding the Main Idea**

1. What is the main point that Prof. George Lakoff is making in this article about systemic causality?

**II. Vocabulary**

1. Explain the term "systemic causality" in your own words.
2. Provide examples of direct cause-effect relationships mentioned in the article.
3. According to the article, why is the brain not naturally suited to understand systemic causality?
4. How does a baby initially learn about the world around them, according to the article?
5. When and how do adults start explaining "invisible" links to children, as described in the article?
6. What is meant by "parallel processing" in the context of the article, and why is it mentioned?

**III. Complex Cause-Effect Relations**

1. Why does the article suggest that most disinformation online is systemic in nature rather than binary (yes/no)?
2. Give an example from the article that illustrates the complexity of systemic causality.
3. Why is it difficult to provide a simple response to sarcastic comments about global warming, as mentioned in the article?
4. In your own words, explain why the assumption that "global warming > everything and everywhere is warmer" is incorrect.

**IV. Application of Systemic Causality**

1. How can understanding systemic causality be a useful tool in combating disinformation, according to the article?
2. Explain how the article suggests that the brain can be taught to understand systemic causality.

**V. Critical Thinking**

1. Do you agree with Prof. George Lakoff's assertion that the brain cannot naturally understand systemic causality but can be taught to do so? Why or why not?
2. Can you think of real-world examples, aside from those mentioned in the article, where understanding systemic causality would be beneficial?

**VI. Discussion**

1. Discuss with a partner or in a group: How might the ability to distinguish between direct and systemic causality impact decision-making in various aspects of life, such as politics, economics, or personal relationships?

**VII. Conclusion**

1. Summarize the key takeaways from this article regarding systemic causality and its importance.

**Answers:**

**I. Understanding the Main Idea**

1. Prof. George Lakoff argues that systemic causality is not a naturally occurring learning concept in the human brain because it cannot be directly observed, and he emphasizes the importance of teaching the brain to understand complex systemic cause-effect relationships.

**II. Vocabulary**

1. "Systemic causality" refers to complex cause-effect relationships that involve multiple interconnected factors and cannot be directly observed.
2. Examples of direct cause-effect relationships mentioned in the article include: summer > warm, winter > cold, rain > wet, smile > happy, tears > sad, etc.
3. The brain is not naturally suited to understand systemic causality because it cannot directly observe it; it deals better with simple, observable cause-effect relationships.
4. A baby initially learns about the world by forming memories of observable cause-effect sequences, such as crying leading to mom's comforting or crying leading to getting food.
5. Adults start explaining "invisible" links to children as they grow up, introducing them to complex systemic causality concepts.
6. "Parallel processing" in this context refers to another way the brain makes connections, but it is not explored further in the article as it is beyond the scope of the discussion.

**III. Complex Cause-Effect Relations**

1. The article suggests that most disinformation online is systemic in nature rather than binary (yes/no) because it involves complex cause-effect relationship networks, making it challenging to simplify into a binary explanation.
2. An example of complexity in systemic causality is the issue of climate change, which requires an understanding of factors, interactions, and long-term cause-effect relationships.
3. It is difficult to provide a simple response to sarcastic comments about global warming because explaining climate change requires delving into the complexity of its causes, effects, and interlinked factors.
4. The assumption that "global warming > everything and everywhere is warmer" is incorrect because global warming involves more than just temperature increase; it includes various complex effects and consequences.

**IV. Application of Systemic Causality**

1. Understanding systemic causality can be a useful tool in combating disinformation because it allows individuals to analyze and critically evaluate complex issues rather than accepting simplistic explanations.
2. The article suggests that the brain can be taught to understand systemic causality by consciously directing it to do so and by providing training.

**V. Critical Thinking**

1. Answers to this question may vary. Students should provide reasons for their agreement or disagreement. For example, some students may agree that the brain can be taught to understand systemic causality through education and practice, while others may believe that individuals have innate abilities to grasp complex concepts.
2. Answers to this question may vary, but examples could include understanding economic systems, political policies, healthcare outcomes, and environmental changes.

**VI. Discussion**

1. This question encourages open discussion, and answers will vary based on students' perspectives. Students may discuss how recognizing systemic causality can lead to more informed decision-making in complex situations.

**VII. Conclusion**

1. The key takeaways from this article are that systemic causality is complex and not naturally understood by the brain, but it can be taught and learned through conscious effort and training. Recognizing systemic causality is important for critical thinking and combating disinformation.

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