

# The Fundamental Failure-Mode Theorem: Systems lie about their proper functioning

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I have on occasion [referred to Le Chatelier's Principle for complex systems](#), as presented by John Gall in the book *Systemantics*: “Every complex system resists its proper functioning,” meaning that whenever you make a change to a complex system, parts of the system work to counteract and possibly even neutralize that change. [If you add a notification feature](#) so that everybody related to a pull request receives an email notification every time there is a change to that pull request, what typically results is that people create rules to auto-delete those notifications, and the resulting system is no different from where it started, except that it's more wasteful.

The Fundamental Failure-Mode Theorem says that every complex system is running in a failure mode somewhere. There is always something that is not working, but you usually don't notice because other parts of the system are compensating for it.

I ran into the Fundamental Failure-Mode Theorem many years ago when was trying to accomplish an unfamiliar task X, and the documentation suggested that should I use one particular tool. When I ran the tool, it said, “Before you can do X, you must do Y.”

I found the instructions on how to do Y, and they said that doing Y takes four hours.

Four hours later, Y was complete, and I went back to run the tool. This time, it gave a different message.

“Sorry, this tool does not support X.”

(Fortunately, most of that four hours was spent waiting around, so I was able to get other stuff done in the meantime.)

**Bonus chatter:** I ran into another case of this just the other day.

I asked an app's built-in AI chatbot, “Please frob the widget.”

It replied, “Got it. If you need help with anything else, just let me know!”

I checked on the widget. It wasn't frobbed.

“You said that you frobbed the widget, but it is still unfrobbed.”

The AI chatbot replied, “Thanks for pointing that out. I don’t have the ability to frob widgets. However, I can help you frob it yourself. (instructions follow)”

Bonus insult: The instructions told me to click on buttons that don’t exist. I went eight rounds with the chatbot trying to get good instructions and eventually gave up. It asked me if I wanted to submit feedback. I said yes. The instructions it gave me for submitting feedback also didn’t work.

I think it’s called a chatbot because its primary goal is to chat, not to solve problems.