Making causal loop diagrams easier to read – two simple ideas...

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I've just had a couple of ideas that I would very much like to share. I'm not claiming that they're novel, but they've helped me address a problem I've been experiencing over quite some time – a problem that arises when I'm trying to explain my CLDs to other people, especially those who are unfamiliar with systems thinking. Most people I talk to readily understand what I mean when I say, "*A* influences *B*" and "when *A* gets bigger, so does *B*"; "when *A* gets bigger, *B* gets smaller" usually requires more discussion, but becomes clear with an appropriate example. So far, so good. The trouble starts when I add the +'s and the -'s, the *S*'s and the *O*'s: the diagram soon gets cluttered, the font size is too small, and people have to peer hard to determine whether any given loop is reinforcing or balancing. Eyes glaze over, attention falls away, and only the brave ask, "Can you explain that again, please?".

As CLDs become more familiar, the problem goes away, so when I hit this issue with a new audience (as happens every time!), I shrug my shoulders and say "don't worry, you'll soon get used to it" – as indeed they do, after a while.

A few days ago, though, the 'audience' was my wife, who was looking at a new diagram I'd just been working on. "That's all very cluttered," she said. "Isn't there a simpler way of doing it?". Now, I've been married long – and happily – enough to know that "don't worry, you'll get used to it" is not the kind of response that promotes marital bliss. And then I suddenly realised that *I have never asked that question before*: "*Isn't there a simpler way of doing it?*". Those +'s, -'s, *S*'s and *O*'s are so ingrained into my very being that I have never even thought about making things simpler. But my wife's question caused me to think about it, and I'm so glad she made me do that.

Some people, I know, don't use +'s, -'s, *S*'s and *O*'s at all, which is OK for diagrams which have relatively few loops. But for more complex diagrams, these symbols have a fundamental importance – the whole edifice of reinforcing and balancing loops depends on their identification and their integrity. So I'm not challenging the concept, rather their representation. Is it possible to construct a meaningful causal loop diagram without +'s and -'s, without *S*'s and *O*'s?

My first answer was "don't be stupid – of course I need these symbols, for they determine what sort of loop it is!". But then I thought rather harder. What, precisely, are these symbols doing? What they are *not* doing is to identify an attribute of a variable; rather, they are identifying a property of a link between two variables – a link that can one of only two types: a +/*S* link, or a -/*O* link.

Which then raised the question "Is it possible to identify a binary property of a link in some way other than by using +'s, -'s, *S*'s and *O*'s?" To which the answer is "Yes, of course. Hundreds of them! Like using black (or any other colour) for one type of link, and red (or whatever) for the other type." But what if I can't use colour? Wow! Bingo!

So I revised the CLD I was drawing, using **solid** curly arrows for +/*S* links, and **dotted** curly arrows for -/*O* links. What could be simpler?
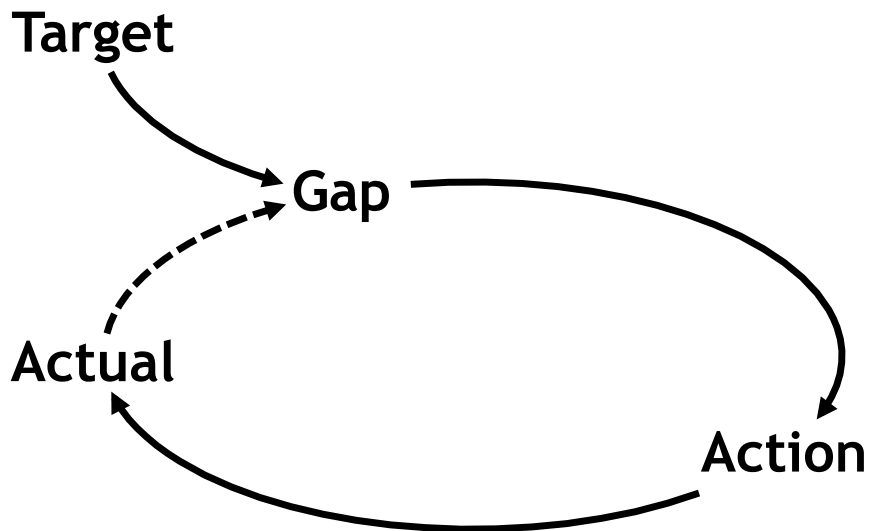
Rather than having a diagram like this

or this

Target

s

Gap

o

Actual

s

Action

s

I now had this:

Target

Gap

Actual

Action
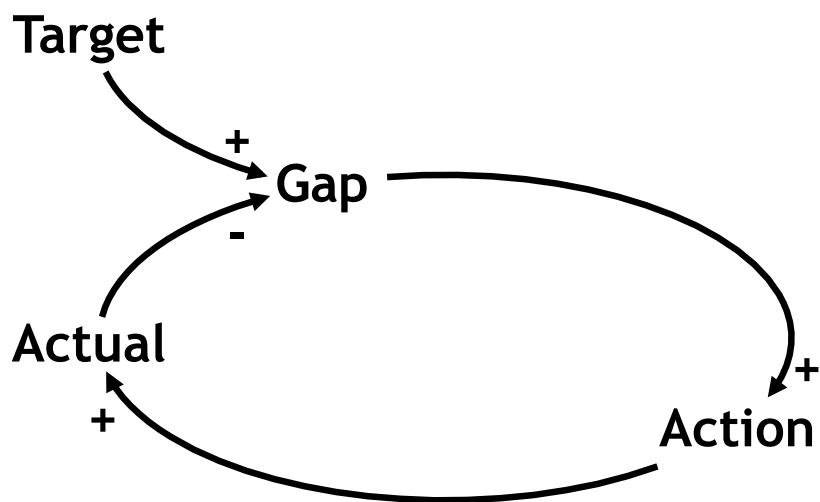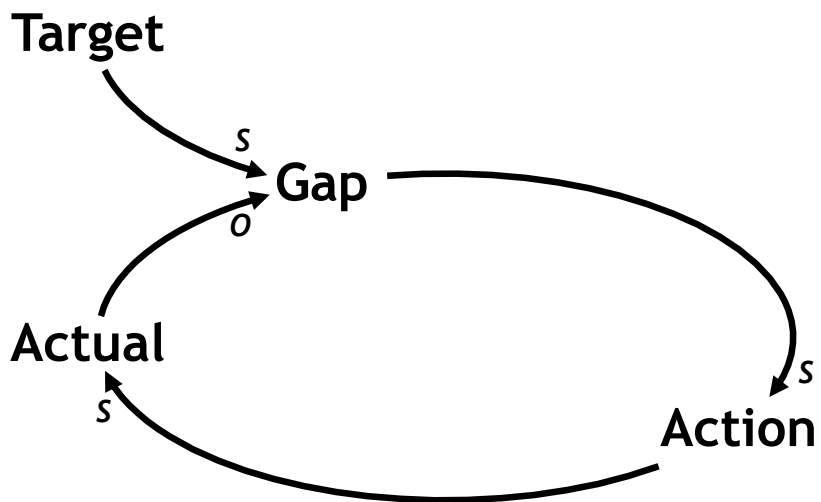
So much less clutter; so much easier to read. And so simple! It's also very much more obvious which loops are reinforcing, and which balancing.

And having changed the way in which I was drawing these arrows, I had another idea – an idea about how to represent influence, rather than directionality. So this diagram
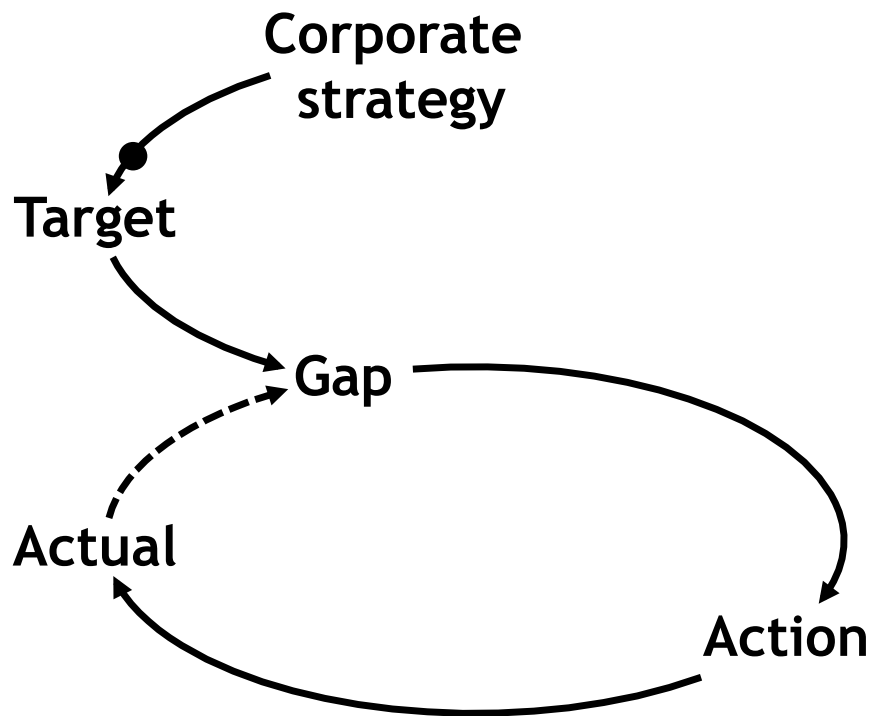
captures my mental model that the *target* is a consequence of the *corporate strategy*, whatever this might be. But it makes no statement as to whether the *corporate strategy* drives high *targets* or low ones; rather, it makes the looser, but nonetheless important, point that the *target* is set in a context, a context of the *corporate strategy*. I've often found it helpful to introduce into causal loop diagrams a small number of variables which have influence, but not directionality, but have never found a satisfactory way of doing it – that is, until now: the 'blob' is an easy way to indicate that this link is 'special' – and that it cannot, of course, be part of a reinforcing loop or a balancing loop.

So, thank you for letting me share these ideas!