

Explanation and clinical terminology

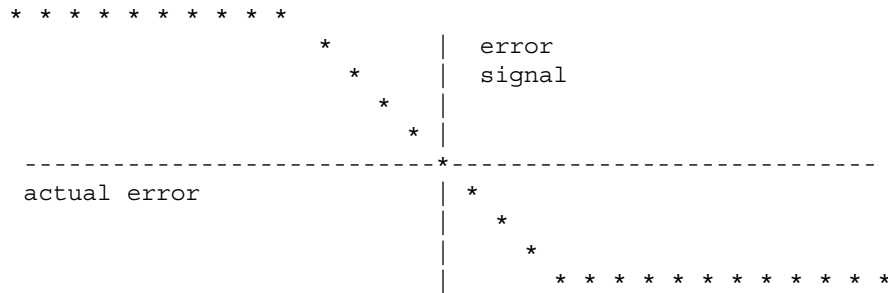
Unedited posts from archives of CSG-L (see INTROCSG.NET):

Date: Thu Feb 24, 1994 11:17 am PST
 Subject: Depression

[From Bill Powers (940224.0915 MST)]

I've toyed on and off with a "universal error curve" that seems to explain a number of phenomena that are hard to explain otherwise. The basic problem occurs with "giving up," which is relaxing one's attempt to correct error when the error gets too large.

The conventional comparator has an input-output curve like this:



In other words, as the actual difference between r and p , the actual error, increases in either direction, the error signal also increases in the appropriate direction. This is clearly not physiologically feasible, because it implies infinite error signal for infinite actual error. In a real system, all signals are limited by the maximum possible impulse rate. So an error signal should increase to some limit and then remain constant, as shown above.

But this implies that for a disturbance large enough to cause the error signal to reach a limit, and for all larger disturbances, the error signal will simply remain maximal, and the output will be pegged at the maximum possible amount. This is not how people behave. When disturbances are clearly overwhelming, people don't waste their energy indefinitely in a futile attempt to oppose the hurricane or the tidal wave or the earthquake; they give up direct opposition and try something else.

This phenomenon could be explained in terms of higher-level control systems, which perceive the futility and turn off the reference signal to the system that has been overwhelmed, sending reference signals instead to some other system(s) that can still operate. While this may be a correct explanation in some circumstances, there are others in which it seems less persuasive.

For example: if you are an ice-cream freak, you don't go around all the time striving with maximum effort to get some ice-cream. In fact when there's no ice-cream around, you pretty much forget about wanting some. There may be a little bit of error signal, but not enough to warrant all-out action. If asked, you would say that you still really, really like ice-cream, but you aren't acting as if you do.

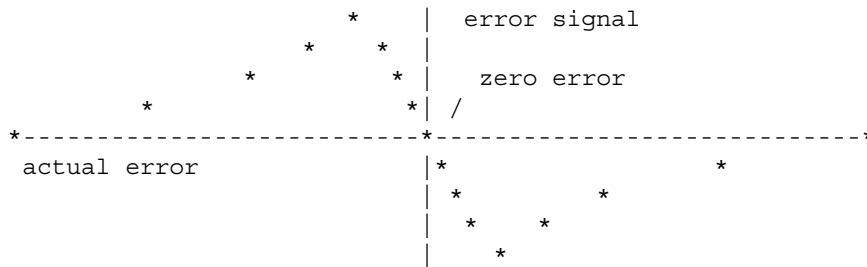
But what happens when you see some available ice-cream? As soon as you see it,

the desire for ice-cream is felt; the closer you get to being able to obtain the ice-cream, the more you want it and the harder you try to get it. The smaller the get-some-ice-cream error gets, as you approach zero error, the more effort you put into getting it.

If you haven't noticed, this is the exact opposite of what control theory would predict. As the error gets smaller, the effort to correct it gets larger. This effect has been observed many times, however, by experimental psychologists; they called it an "approach gradient," and measured it by (for example) measuring the force exerted by hungry rats on a tether that restrained them from approaching a food dish. The force increased as the rats were allowed to approach more closely.

Of course those approach-gradient experiments weren't done right -- the approach distance allowed never reached zero. If it had, the experimenters would have seen an abrupt reversal in the gradient. Within some small radius around the food, the effort must have decreased as the distance to the food decreased. If this were not the case, then an unrestrained rat would have been unable to stop at the food dish to eat: maximum acceleration toward the food dish would have occurred just as the rat arrived at the food. So clearly the curve is the way it ought to be for control in the immediate vicinity of the food -- but outside that radius, the effort decreases as the error gets larger.

All this leads to my "universal error curve," shown below:



In the immediate vicinity of zero error, the curve is the same as in the first diagram: a decrease of actual error produces a decrease in error signal (with appropriate sign for negative feedback), and hence a decrease in output. This is the "normal control range". But if disturbances can push the error past the peak in the curve, in either direction, further increases in error will lead to a decrease in error signal and output. Depending on the stiffness of the connection between the disturbing variable and the controlled variable, the result will be either a smooth decline in output effort with further increases in disturbance (stiff connection), or a positive-feedback effect in which all resistance will abruptly disappear while the disturbance forces the error to some very large value (elastic connection). The actual error will end up large, while the error signal (at the ends of the above curve) ends up small. [Elektronikers will recognize this as describing the slope of the load line].

Now apply this curve to the getting-ice-cream control system. We assume that the reference level for ice-cream remains at its usual non-zero setting all of the time. The conventional error curve predicts maximum effort to get ice-cream when there is no possibility of getting it -- no ice-cream to be had, or no effort that will produce it.

The "universal error curve," however, predicts that when the actual error is

far above some rather small amount, the error signal will be very small, and thus there will be almost no effort to obtain ice-cream. We are far out to the right on the universal error curve. Now, if the difference between the reference signal and the perceptual signal becomes somewhat smaller -- if there is a chance to get some ice-cream -- we will move to the left, toward the intersection of axes, and the error signal will rise, causing a greater amount of effort (and felt desire). This effort will bring the perception even closer to the reference level, further reducing the actual error and further increasing the error signal. The result again depends on how rapidly the perceptual signal changes with an increase in effort -- either the effort simply increases as approach to the ice-cream gets easier, or there is a positive-feedback effect and the effort rises abruptly to a level sufficient to bring the perception within the normal control range.

This has a close relationship to what Martin Taylor proposed as "time-bombs" in the control hierarchy. Some kind of limit or nonlinearity is required to bring it about. It's possible that the universal error curve is apparent only, arising from interactions at several levels of control or between several systems at the same level, but clearly it would also work if it were a characteristic of a single comparator or combination of comparator and output function. In experimenting with a single externally-observed control phenomenon, however, it doesn't matter how this curve arises: the effect is as if it is a property of a single equivalent control system.

I haven't done any experiments with this, but experiments are certainly possible. Another task added to the vast backlog of things that PCT experimenters must get around to some day (a backlog that doesn't decrease any faster while we sit around debating systems philosophy).

So, depression. Depression is giving up, isn't it? With the universal error curve in mind, we can see how depression might result not from abandoning goals, but from maintaining goals but experiencing so much error that the effort to oppose or correct it has dropped almost to zero -- the depressed person is way out to the right or left on the universal error curve. The person still wants love and understanding, or still wants to conquer the world and eliminate all the Jews, but the world has put such a large barrier in the way that the person has ceased to try any more.

Consider one more factoid. My theory of emotion says that affect is a consequence of error signals in the control hierarchy, a physiological preparation for the action that will be used to correct the error. But if the above interpretation of depression is correct, the error signals will be small, because the actual error has driven the person to an extreme on the universal error curve. The result will be not an extreme of emotional arousal, but almost no emotion at all. The depressed person will find the experienced world very different from the desired world, but will not act with appropriate energy to correct the error, and will feel emotionally dead. The depressed person can't get psyched up enough to act.

Curing depression, if it is caused as I imagine above, would probably require some method like the one Hal Pepinski proposes (940223.1000). Somehow the world that a person perceives must be brought closer to the world that the person wants to perceive but is unable to act to bring about. Or, the reference levels must be changed enough to get the perception back into the normal control range, where goals, errors, efforts, and feelings are normally related and feasible in the world that exists.

This can be done in some cases through loving interactions with supportive others, but not all cases are so easy. Hitler became very depressed because the Allies would not let him conquer the world and get rid of the Jews, and in fact the war increased the difference between what he wanted and what he perceived far beyond his capacity to act in opposition. He ranted and raved, and then as he passed over the peak of the universal error curve he fell into depression and committed suicide, the ultimate of giving up. Putting Hitler into a social situation where his goals became achievable might have cured his depression, but the rest of the world would not have considered this humanitarian approach acceptable. The only way the world would have let Hitler become a normal person would be to find a way to change his goals. The only alternative was to destroy him and those who followed him. Shit happens.

Best, Bill P.

Date: Thu Feb 24, 1994 11:28 am PST
Subject: Depression (from Mary)

[from Mary Powers 940224]

Hal P. on depression (940223)

>I diagnose the problem as not having one's own reality and feelings validated by others. Clinical depression is the feeling that one's experience of the world is isolated and apart from others'.

Hal, I think that you are confusing the problem with the cure. Depression is a rotten feeling about oneself and the world. It is aggravated, but not caused, by people saying things like "things aren't that bad, cheer up, look at the bright side, you'll feel better tomorrow" and similar invalidating remarks that lead a person to feel isolated (no one understands me).

A major role of therapists (unless they are into curing depression with a prescription for Prozac) is to understand, appreciate, and accept the depressed person, and communicate this to him - i.e. validate his feelings. This is what Carl Rogers' client-centered therapy was all about. PCT suggests that this helps the client to validate his own reference signal that he himself could not fully accept because it represents one side of a conflict. By doing this, the therapist also helps the client to become aware of the opposing reference signal as well - the part of him that is resisting feeling so bad. Getting both sides of the conflict into awareness is the first step towards resolving the conflict - reorganizing.

What is important about the therapist is that a depressed, conflicted person is unable to think very well about his problem. As he talks about it with a person who is not in conflict in that area, he is able to get his thoughts back in a clearer fashion than if he were trying to run the situation through his own imagination. The therapist doesn't share the client's reference signals, but he is uncritical and unjudgemental, and supports the client through a scary process.

This is as far as PCT and a brief career 40 years ago at Rogers' counseling center takes me. I'd love to hear from Dick Robertson and David Goldstein on this topic. And David, as the only PCT clinical psychologist in captivity (i.e. trapped in this Net) how about getting out your DSM or whatever it's called and telling us what depression "really" is - and what you think it is

after 20 (?) years of PCT.

Mary P.

Date: Fri Feb 25, 1994 9:00 pm PST

Subject: Definition of Depression

From David Goldstein 02/25/93

The Diagnostic and Statistical Manual of Mental Disorders-Revised(the DSM-3-R) has a few entries related to the definition of depression.

Under the heading "Mood Disorders" there is:

296.2x Major Depression, single episode
296.3x Major Depression, recurrent
300.40 Dysthmia
311.00 Deressive disorder NOS (Not Otherwise Specified)

Under the subheading "Bipolar Disorders" there is: 296.5x Bipolar disorder, depressed

The x in the fifth digit could be--1=mild, 2=moderate, 3=severe, without psychotic features, 4=with psychotic features, 5=in partial remission, 6=in full remission, 0=unspecified.

In addition, under the heading "Adjustment Disorder" there is: 309.00 Adjustment disorder with depressed mood.

Furthermore, under the heading "Organic Mental Disorders" one finds: 293.83 Organic mood disorder

Each of the above categories has its own diagnostic criteria. I will give the criteria for major depressive episode.

- A. 5 symptoms in the past 2 weeks from the list--
depressed mood
diminished interest or pleasure
weight gain or loss
insomnia or hypersomnia
feelings of guilt or worthlessness
motor agitation or retardation
energy level low
concentration, thinking, difficulties
suicide ideas or ideas about death

One of the 5 must be diminished interest or depressed mood. Each of the above are described in more detail than I have indicated.

- B. Organic factors or situational factors not causative.
C. Not preceded by psychotic symptoms
D. Not part of psychotic disorder

Mary, this should give you a flavor of the DSM-3-R definition of depression. There is no attempt to theorize in any way in this definition. It takes most mental health professionals a while before they can use this definition with any confidence. I will write about some applications of an HPCT approach to

this topic in a separate post.

For those not familiar with the DSM-3-R, a diagnosis consists of descriptors on 5 "axes":

Axis 1--Presenting symptoms. Major Depression might appear here.

Axis 2--Chronic Personality Disorders or Traits.

Axis 3--Physical Health Conditions

Axis 4--Stress level/condition

Axis 5--General level of functioning now and best in past year.

There will be a new, DSM-4 manual coming out in the next few months. I have seen the progression from the original DSM and have seen the changes. There is a definite improvement from edition to edition.

A person with a Major Depressive Disorder on axis 1 will be/ behave differently depending on the status on the other axes. A person may have multiple diagnoses on each axis. There is no attempt to assign one diagnosis to a person. The diagnoses are treated as descriptions which apply or not.

Date: Sat Feb 26, 1994 10:40 am PST

Subject: DSM-3-R

[From Bill Powers (940226.1115)] David Goldstein (940225.2134)

>Each of the above categories has its own diagnostic criteria. I will give the criteria for major depressive episode.

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diminished interest or pleasure

weight gain or loss

insomnia or hypersomnia

feelings of guilt or worthlessness

motor agitation or retardation

energy level low

concentration, thinking, difficulties

suicide ideas or ideas about death

One of the 5 must be diminished interest or depressed mood.

So to diagnose depression, you must have observed either diminished interest or depressed mood. Since you can't diagnose depressed mood without a diagnosis for depression, that means you have to observe diminished interest. Strike the first item.

The rest of it looks loose enough to allow the diagnostician to call almost anyone "depressed." What it boils down to is that if the diagnostician decides that this guy looks depressed to him, he or she can, if asked to justify this impression, point to the items above. There isn't the slightest indication of what's wrong with a person who shows these symptoms, is there?

This sort of one-size-fits-all diagnosis seems unforgivably crude to me.

Best, Bill P.