SYSTEMS 201

A bit more detail

Feedback Loops

Complex systems maintain themselves through "feedback loops". There are two main kinds of feedback loops to know about – positive feedback loops and negative feedback loops. In this case, "positive" and "negative" are not referring to good or bad, but rather the addition of sometime (positive) or the removal of something (negative). A quick way to know the difference is that negative feedback loops tend to promote stability within a system while positive feedback loops tend to promote change within a system.

Negative Feedback Loops – "More creates less"
Negative feedback loops promote stability by removing something. Think of a thermostat. When it gets cold, it will switch the heater on and then when the room heats up to the desired temperature, it will shut off the heat. This is a classic example of a negative feedback loop. The switching off of the change mechanism when the system is at the desired point is the example of the negative feedback loop. On a physiological level, your endocrine system regulates a lot of its hormones through negative feedback loops. When a particular hormone gets low, your system will begin producing the hormone until it is at the proper level and then "switch off" production of that hormone. Negative feedback loops are great at fine regulation of systems and keeping things consistent.

Negative feedback loops operate in social systems too. Let's say that everytime a child asks a particular question, the parent gives a thorough answer. After awhile, the child will stop asking that particular question.

Negative feedback loops are powerful stabilizing factors and are at the core of a systems adaptive capacity. If you have ever tried a new diet and found the diet worked really well at first and then stopped working after a few weeks, you can thank your body's adaptive mechanisms for expecting and accommodating the new diet. Negative feedback loops are also at the heart of addictive processes. If a person's is using a harmful substance regularly, the body will begin expecting the substance and removing the effects of the substance and the user will need more and more of the substance to get the same effect. The body has adapted to it and created as much stability as possible.

Therapeutically, this is one of the reasons why we need to keep therapy novel. If we provide the same treatment over and over again to a person, they might notice big changes initially, but then over time less and less change. Additionally, in the clinical setting, you can think of the deep relaxation and downregulation of a session as promoting

beneficial negative feedback loops by helping the body maintain stability and peacefulness with minimal effort.

Positive Feedback Loops – "More creates more"
Positive feedback loops promote change. The more of a positive feedback loop there is, the more things change. It is through positive feedback loops that change becomes possible. Whereas negative feedback loops can maintain a great deal of precision, positive feedback loops can be quick and not subtle. Physiologically, childbirth is an example of a positive feedback loop. Once the system begins the process of moving baby from inside to outside, it will not finish until it is completed. Many immune responses would also be examples of positive feedback loops. Once your body determines that there is an infection present, it will trigger a massive immune response that does not end until the infection is gone.

In therapy, where we frequently want things to change, we find ourselves partnering with positive feedback loops. Positive feedback loops can be beneficial, but they can also be destructive. For this reason, we always want to promote change within the system's window of tolerance, otherwise we could end up promoting change that looks like decompensation, adverse responses, or retraumatization.

Never push a system faster than it can integrate the change.

In therapy, we want to align ourselves with positive feedback loops and change mechanisms that are beneficial, within the system's window of tolerance, and in novel ways so that the system doesn't adapt in order to remain the same.

Notes:

Self-Organized Criticality

Self-organized criticality is a fascinating concept that describes particularly interesting aspects of the behavior of complex systems. Mathematical modeling demonstrates that when it comes to change, complex systems naturally organize themselves into "critical states" before change happens. For this reason, therapeutic change tends to happen intermittently with periods of little change. An understanding of self-organized criticality explains both the robustness and resilience of systems as well as the rapid, unpredictable, and sudden changes that complex systems sometimes make.

Sand-pile Analogy
Imagine that you have a square table and you drop a single grain of sand onto the table. That grain of sand will just bounce down and stop on the surface of that table. Now imagine that you drop another grain of sand onto the same spot and continue dropping one grain of sand every second in perpetuity. Over time, a little pile of sand would begin to form. That pile of sand would get bigger and bigger. As it got bigger, there would be little minor "landslides" as the pile corrected itself. Even though there would be numerous small cascades, the pile would continue too get bigger and bigger until eventually the pile of sand covered the entire table. Eventually, there would be a single grain of sand that caused a major landslide and a big spill of sand off the table.

It would be impossible to predict which grain of sand would be the one to cause the major cascade. But it is possible to know that it will eventually happen. This kind of building to criticality is a dependable feature of complex systems. It explains sudden shifts in things as diverse as the economy, earthquakes, or airport system crashes.

In the human body, it also explains why change is unpredictable. Individuals can come for a number of sessions and only make incremental gain and then all of a sudden have a major breakthrough. It also explains how someone can live a relatively unhealthy life for a long time and then a minor accident will occur and cascading problems seem to emanate from that minor accident. The main lesson with self-organized criticality is that change in a complex system tends to be unpredictable with periods of rapid change interspersed with periods of little apparent change. Just because change is not visible yet, does not mean that change is not lining itself up underneath.

Notes:

Lessons from Complex Systems that Describe Our Clients

- Therapy is unpredictable
- Sometimes people change
- Sometimes they don't
- Sometimes there are setbacks
- Sometimes there is rapid change
- The only thing that is predictable is that complex pattern change is not predictable
- Systems prefer stability over change and employ negative feedback loops to maintain stability
- A stable pattern is not necessarily an optimal pattern
- Part of pattern change is adding some "noise" into the system to help with pattern change
- Whatever "noise" we add to the system also upsets the system a bit, which is why it always has to be done within the window of tolerance

Notes:

How Complex Systems Change & Takeaways

The following bullet points have already been alluded to on earlier pages. However, being reminded of key features of pattern change is helpful when trying to make sense of and plan our work with clients:

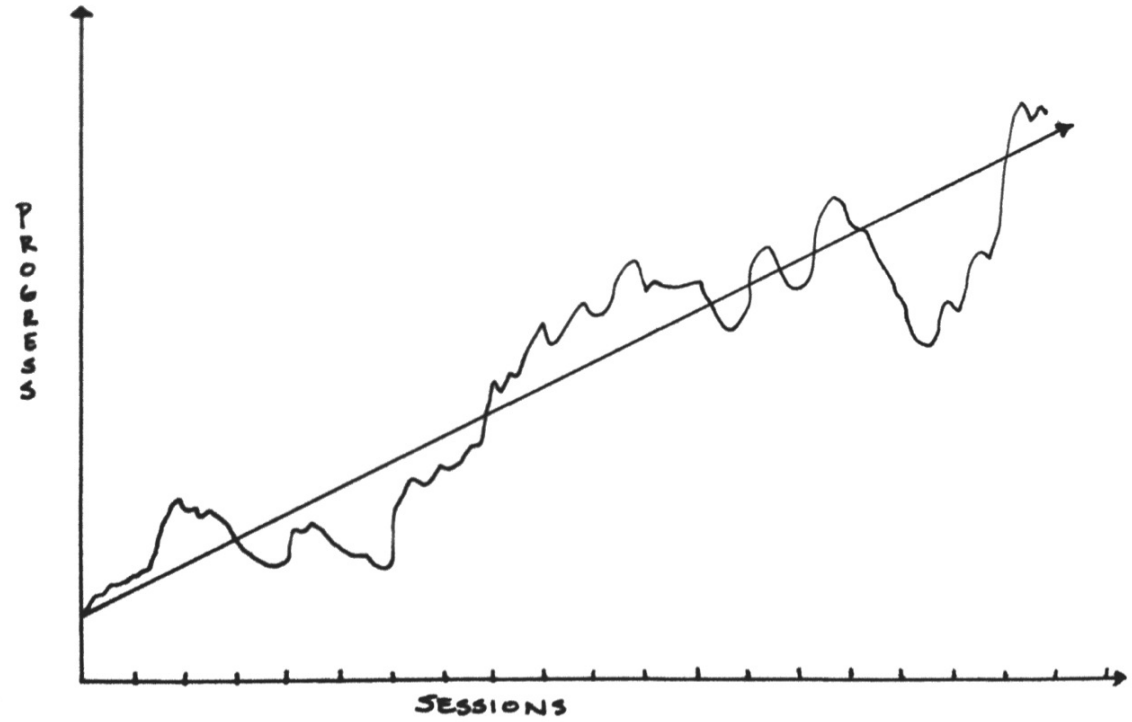
- Patterns and systems don't tend to change gradually.
- Patterns and systems will go through periods of little change and then have rapid change:
    - "Punctuated equilibrium"
    - "Phase shift"
    - Breakthroughs
- During periods of stasis, the system is not still underneath. It is building up tensions, utilizing resources, and weighing the need for change.
- This means we need to develop the skills of hanging in for the tough work as well as the failures and setbacks.
- Change may be distressing to a system until it finds a new stability.
- Understanding and working with system patterns is necessary for long term change.

Notes:

CLINICAL SKILLS

Incorporating Counseling Skills to Highlight Integration Between Sessions

Pattern Change



- Need for the therapist to be able to hold and maintain the bigger picture.
- Need for client education and support.
- A "meta" view that encompasses multiple sessions and the present session simultaneously.
- Successful therapy is going to include setbacks.

Notes:

Negativity Bias

As we contemplate supporting our clients in maintaining change in between sessions we also have to consider what factors slow down the change process. The negativity bias is one of the most powerful negative feedback loops that our systems create in order to maintain the stability of the current pattern.

Research has consistently shown an "attention bias" and "process bias" toward negative (unpleasant) information. It would appear that we are primed to perceive, focus on, and learn negative inputs much quicker than positive inputs. The explanation for this relentless bias is evolutionary. Since survival was a key part of our history, the ancestors who learned from negative inputs were more likely to survive than those that did not.

The implications for mind/body health and chronic depletion are huge. **The cycles that contribute toward chronic depletion are self-reinforcing. The processes that reverse them are more challenging to sustain.** For this reason, our most beneficial work with chronic depletion patients requires us to have treatment goals and to identify supports and progress across multiple sessions.

It is critical for the practitioner to understand that working with chronic depletion is a "marathon and not a sprint."

And the good news: there is something inherently beautiful in realizing that our brains are constantly working to help us adapt and accommodate our environment. **There is also something inherently beautiful in realizing that ultimate responsibility lies with us to provide our mind/bodies the types of experiences that are conducive to health, wellbeing, satisfaction, joy, etc.**

Notes:

Clinical Skills for Supporting Pattern Change

- Charting
- Looking for patterns across multiple sessions
- Attending to multiple contributing factors
- Working patterns – epicenter
- Coaching/sustaining new learning
- Being able to palpate “rev” in a system
- Influence/witness
- Remaining within WOT
- Keep therapy novel
- Hanging through the setbacks
- Motivational Interviewing

As you wrestle with all of this, think of softening tissue as only a first step in the larger healing journey. Sustaining the softness, learning and embodying new ways of being, gaining new skills, experiencing the Self in a different way is critical to long term pattern change. Think about therapy as happening between the sessions, not during the session. Honor the setbacks.

Notes: