

ON THE CLAIMS OF JORDAN PETERSON'S COMPLEXITY MANAGEMENT THEORY

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ABSTRACT

Dr. Jordan B. Peterson's ideas have been digested by millions of people around the world. He's been described by the New York Times as "the most influential public intellectual in the Western world right now." (Brooks, 2018) He covers a lot of ground, from Disney movies to Nietzsche to Biblical narratives, but connecting all of these is a golden thread: Complexity Management Theory. Complexity Management Theory is the name given to a neuropsychological framework for describing human perception and meaning in an overly complex world. While the name hasn't stuck, the model itself has been refined and rearticulated several times since then. If it's accurate, such a comprehensive framework has undeniable utility, if it's inaccurate, then the most influential public intellectual in the Western world has based a great deal of his lectures on a false premise. This essay summarizes and critiques Complexity Management Theory as it stands today, contextualizing and critiquing its central tenets as they relate to their respective fields. The results of this inquiry indicate that Complexity Management Theory is both well-substantiated and useful, but it requires further elaboration on its views of perception.

INTRODUCTION

Complexity Management Theory (CMT) was introduced in an article published in *Cortex* in 2002, written by Jordan Peterson and Joseph Flanders (2002). Or at least that's when it was expressed by that name, its ideas were certainly present in *Maps of Meaning* (Peterson J. , 1999) which Peterson published 3 years earlier. CMT posits that the world an individual encounters is too complex to process in its entirety, so they formulate conceptual structures in order to simplify the world. For Freud, these conceptual structures were lies which were told to protect the conscious brain from the

truth of reality (Freud, 1928/1991). This was extended to ideology by Ernest Becker, who believed that these lies were necessary in order to navigate such a terrifying world (Becker, 1973). Peterson and Flanders acknowledge the existence of conceptual structures as simplifications of reality but push back on the idea that they are lies used for shields against terror and are instead the result of "profound intrinsic limitations on our perceptual and cognitive processing power." (Peterson & Flanders, 2002, p. 431) We are incapable of processing all of the information that's presented to us, so we

must form structures in order to make sense of the world.

The structures we form are founded on ad-hoc categories and are called “determinate worlds.” These determinate worlds are the schema with which we perceive the world and are organized hierarchically. These mental maps of the world are sufficient until they’re faced with emergent complexity, a novel occurrence which could possibly disrupt the structure we’ve set up to understand the world. We can either be thrust into unknown space or seek to update our schemata through exploration. The key to a meaningful life, according to CMT, is through voluntary exploration of the indeterminate – to face the unknown by our own free will.

AD-HOC CATEGORIES AND DETERMINATE WORLDS

In CMT, the structures which we use to organize the world “emerge in relationship to goals and begin in an ad-hoc manner.” (Peterson & Flanders, 2002, p. 437) Peterson and Flanders utilize Barsalou’s (1983) ad-hoc categories as the foundation of their theory. His work showed that motivation is “an axiom or a predicate of experience” which “provides the current state of being with boundaries and values.” (Peterson J. , 2008, pp. 2-3) For example, if someone is hungry, an ad-hoc category will be formed such as “things to eat,” and this motivational category precedes their perception of the object itself. If they encounter a chair, the order of the process is not “that’s a chair, which I can’t eat although I’m hungry,” but rather, “I’m hungry, that’s a thing I can’t eat because it’s a chair.” The motivation to eat becomes the framework within which the perceived objects are contained. The process of perception described by CMT is that there is an overly complex world, a goal is set to

filter out the complexity, a category is created in relation to that goal, and an object is perceived in relation to that category, summarized as “complexity → goal → category → object.” (Peterson & Flanders, 2002, p. 438) The categories which are perceived as stable enough to be considered objects are those which are those which are “sufficiently conventional, given the needs (or values) of particular organisms.” (Peterson & Flanders, 2002, p. 438) This principle is supported by Vecera and Farah (1997) who showed that “object based attention is stronger for highly familiar shapes... than for unfamiliar shapes that benefit from the same grouping principles.” (Behrmann, Zemel, Mozer, & Bavalier, 2002) Where “convention” refers to categories which have emerged from the shared goals of individuals, which accumulate into cultural worldviews and ideologies (p. 438). Though it may seem like a leap from visual perception to cultural worldviews, Barsalou argued that “cognition is inherently perceptual, sharing systems with perception at both the cognitive and the neural levels.” (Barsalou L. W., 1999) This implies that a perceptual axiom, such as motivation, is also a cognitive axiom.

At each moment, we are in the process of identifying goals which will form conceptual structures. These conceptual structures become the lens by which we perceive the world, these are “determinate worlds” (Peterson J. , 2008), worlds which are fixed, with definite boundaries. They can be conceptualized as “motivation, action and perception (MAP) schemas.” (Peterson J. , 2013) Often, we will be faced with multiple goals, such as “I’m hungry” and “I want to be a bodybuilder.” In this situation, a value judgment is made which results in one being subordinated to the other (pp. 6-7). If you place being a bodybuilder at the top of the hierarchy, then the food you choose to eat when you’re hungry will be subordinated

perceptually to that goal. While a donut and a bland piece of chicken could both be categorized as “things to eat” in a MAP schema whose primary goal is satisfying hunger, but if that world is nested within a world whose primary goal is being a bodybuilder, then the chicken would be categorized within “things to eat” while the donut would be categorized as “things not to eat.” The inclusion or exclusion from “things to eat” is in relation to the functional utility of the food with relation to the goal (Simon, 1956). These MAP schemas are nested into a hierarchical superstructure (Peterson J. , 2008; Peterson & Flanders, 2002) which constitutes a worldview.

An example of this process of hierarchical categorization takes place in the target selection process of visualization. When faced with a complex array of visual stimuli, selection of a target of visual attention “facilitates the emergence of a ‘winner’ from among many potential targets.” (Berhmann & Haimson, 1999, p. 158) In deciding what to target, there is competition within visual processing streams and cooperation between them (Duncan, 1996). For example, lower-level regions are influenced by external (exogenous) factors such as attribute salience, so a particularly novel phenomenon will garner attention; in turn, these regions affect competition in higher-level regions. However, the higher-level regions are influenced by internal (endogenous) factors like goal-driven activities and task relevance, so they have a top-down influence over the competition in the lower-level regions (Berhmann & Haimson, 1999, pp. 158-159). This interplay between endogenous and exogenous influence suggests a need for a change in language within CMT, instead of the conclusion that all our perception is fundamentally goal-oriented, it should be said that perception is the result of interplay between exogenous and endogenous factors.

This, however, is likely still an incomplete picture as well since “a full understanding of the factors that bias the outcome and the mechanism by which this occurs remains to be determined.” (p. 161) This additional layer of complexity, while demanding a conceptual shift from “motivation is everything,” mostly affirms the overall structure of CMT.

EMERGENT COMPLEXITY

The fact that goals can suppress exogenic factors such as object salience, while also being subject to modulation by a sufficiently novel phenomenon affirms Peterson and Flanders’ description of emergent complexity. We can ignore most of reality until it becomes troublesome, disrupting “the ongoing sequence of goal-directed activity and conceptual schema that is part and parcel of that sequence.” (Peterson & Flanders, 2002, p. 439) The safety of our MAP schemas can only last so long, since we can’t possibly account for all eventualities with a single worldview. The emergence of an anomaly which is sufficiently novel to threaten our MAP schemas is called by Peterson (2008, p. 8), “emergent complexity.” Emergent complexity strikes in many forms: a flood, a war, a new belief (Peterson J. , 1999), there’s no predicting it and it’s always looming on the horizon. Therefore, perception being based on the interplay of exogenous and endogenous factors is an affirmation of emergent complexity, because were there not such cooperation, there would be no basis for emergent complexity to disrupt our MAP schemas. It’s for this reason that anxiety is considered by Peterson and Flanders to be “our default position in the world... brought under partial control, in consequence of effortful learning, and not something added through learning to a normative background of calm competence and security.” Here, Peterson and Flanders are in polemic against those who believe

that fear and anxiety are to be seen as abnormal aberrations. This is likely the most controversial idea within CMT, with others (Gordon & Adhikari, 2010) claiming that “Any effort to understand the causes of anxiety disorders must begin with an important conceptual assumption: anxiety disorders arise from a disturbance in brain function.”

ANXIETY BY DEFAULT

While innate anxiety is uncontroversial, there are many studies of it in relation to learned fear (Martel, Hevi, Friebely, Baybutt, & Shumyatsky, 2010; Caliskan & Stork, 2018). The distinction between anxiety and fear is taken from animal literature (Gordon & Adhikari, 2010, p. 183):

When faced with an environment suggestive of a potential threat, rodents engage in approach/avoidance behavior. An actual threat (such as the presence of a predator) evokes an escape response; an immediate threat (such as a predator about to strike) evokes freezing behaviors. The animal literature tends to classify approach/avoidance and other responses to potential threats as “anxiety,” and freezing and other responses to immediate threats as “fear.”

Peterson is affirming the existence of innate anxiety, while denying that fear can be learned. According to Peterson and Flanders (2002, p. 443), “The typical and functionally appropriate default response to unexpected plan-and-goal violation appears to be behavioral inhibition, and the accompanying emotion of anxiety.” So, where Gordon and Adhikari (2010, p. 182) would say, “a mouse will avoid a room where it has previously received a shock; it has learned to be afraid of that room.” Peterson and Flanders (2002, pp. 445-446) would say “Anomaly – complexity – appears first in the form of anxiety,” so when a mouse is

shocked in a room, it hasn’t “learned fear” it has returned to its original anxious state, which it possessed prior to coming to believe that the room was safe, and while in this state, the behavioral inhibition being defined as fear is expected. Instead of learning fear, a fearful mouse learned the environment and was, as a result, less fearful. They substantiate this argument by pointing to neurological evidence that the amygdala produces the affective marker for the unknown (Damasio, 1994; Davis & Whalen, 2001; LeDoux, 1996), then proposing that one function of the septal-hippocampal system is to “disinhibit the function of the integrated amygdala/right-hemisphere systems responsible for anxiety... when the current goal-oriented ‘map of the environment’ fails.” (Peterson & Flanders, 2002, p. 446) This is part of an effort to bridge the findings of O’keefe and Nadel (1978) who propose that the hippocampus is a cognitive map with Gray’s proposal that the septal-hippocampal system plays a key role in anxiety (Gray, *The neuropsychology of anxiety: An enquiry into the functions of the septo-hippocampal system*, 1982). However, Peterson and Flanders’ effort to bridge the two involved a modification of Gray’s theory, which they don’t believe is correct in its assertion that the septal-hippocampal system tracks the expected desire and then inhibits behavior, they instead believe that its function is to disinhibit the innate anxiety substrates. Gray’s collaborator McNaughton made the same effort to bridge the cognitive map (O’Keefe & Nadel, 1978) with Gray’s proposal that the hippocampus is central to anxiety (Gray, *The neuropsychology of anxiety: An enquiry into the functions of the septo-hippocampal system*, 1982). McNaughton’s solution was to propose that septal-hippocampal hyperactivity could lead to anxiety (McNaughton, 1997). While this seems to be supported by the data which

indicates that inhibition of the septal-hippocampal system causes a reduction in anxiety (Degroot & Treit, 2004), it doesn't undermine the notion that anxiety is the "default response to the unknown, inhibited by learning." (Peterson & Flanders, 2002, p. 446) Rather, it would require, as with Gray's, a shift from thinking of the septal-hippocampal system as producing dysfunction via negative associations, and instead thinking of it as activating existing anxiety substrates which have been inhibited by learning.

This assertion about anxiety is central to CMT, because without such a default response to emergent complexity, there is a substantial weakening of the argument that our entire experience of the world is involving either protecting, expanding, or recapturing our MAP schemas. One problem is that learned fear is so widely accepted and well understood, with contextual fear conditioning being called "one of the simplest and most rapid behavioral paradigms for studying learned aspects of defensive behavior." (Iruirita Ballesteros, de Oliviera Galvao, Maisonette, & Landeira-Fernandez, 2014) However, this could be overcome and said to be an incorrect *a priori* assumption to studies involving fear and anxiety. The hippocampus is of particular importance to CMT, since it's responsible for cognitive mapping and has connections with anxiety. But Degroot and Treit (Degroot & Treit, 2004, p. 60) demonstrated that "control of specific anxiety reactions is functionally segregated within different aspects of the septal-hippocampal system." The significance of this is demonstrated by the fact that within the septal-hippocampal system "there are many different types of arousal, only some of which appear to contribute to the generation of anxiety in normal subjects." (McNaughton & Gray, 2000, p. 161) The veracity of the claim that anxiety is the

default state is difficult to discuss without it turning into a "chicken and the egg" dialogue, but if the connection between MAP schemas and anxiety has been established on the basis of a connection between the cognitive map of the hippocampus and the anxiety activation function of the septal-hippocampus, then it seems to have been weakened by the fact that the septal-hippocampal system can be aroused in multiple sections without triggering an anxiety response. This possibility has been accounted for, because Peterson and Flanders acknowledged that the proposed septal-hippocampal function could occur only peripherally (Peterson & Flanders, 2002, p. 446), which leaves room for other, disconnected functions which can be aroused without affecting the anxiety systems.

Another potential problem is that the substrates which process fear and anxiety are distinct, with only partial overlap (Babaev, Piletti Chatain, & Krueger-Burg, 2018). The reason this may be problematic is because if learned fear responses could be elicited without activation of the anxiety substrate, it would undermine the idea that learned fear is simply a return to the default anxious state. However, Peterson and Flanders (2002, p. 446) cite Davis and Whalen (2001) who point out that, even in the absence of fear conditioning, electrical stimulation of the extended amygdala produces a fear response. This suggests that "much of the complex behavioral pattern seen during a state of 'conditioned fear' has already been 'hard wired' during evolution." (p. 17) So, it seems that the *a priori* assumption of learned fear warrants a reconceptualization, just as Peterson and Flanders proposed, though it's possible that "disinhibits" is overstating the case, and "activates existing substrates" is more precise. The second part of their proposal is that failure of the cognitive map is what

leads to this activation. This is much less controversial and is evidenced by the fact that novelty can elicit fear and anxiety responses (Gray, 1987; Michalikova, Ennaceur, & Chazot, 2006).

THE INDETERMINATE WORLD

When exposed to emergent complexity “any given phenomenon is first encountered in a very primitive low-resolution manner.” (Peterson & Flanders, 2002, p. 448) Here, Peterson and Flanders include a helpful illustration from LeDoux (1996, p. 166):

The visual stimulus is first processed in the brain by the thalamus. Part of the thalamus passes crude, almost archetypal information directly to the amygdala. This quick and dirty transmission allows the brain to start to respond to the possible danger signified by a thin, curved object, which could be a snake, or could be a stick or some other benign object.

This initial low-resolution model elicits a quick reaction to potential danger, in this case jumping out of the way of a potential snake, instead of wasting valuable time processing the specific phenomenon and potentially reacting too late. When this occurs, goal-oriented actions cease (Gray, 1982), this momentary abandonment of goals implies that there’s been a disruption in the axiom of all your experience (Barsalou, 1983) has been disrupted, you’ve been thrust out of your superstructure of MAP schemas and into the indeterminate world, the world of unknown complexity.

The indeterminate world is “essentially unbounded in its potential implications and, therefore, in its potential for generating negative affect.” (Peterson & Flanders, 2002, p. 450) Therefore, negative emotion is an expected reaction. This is not to suggest that infinite anxiety is produced with every instance of emergent complexity, the affective response is proportional to the

“size” (p. 450) of the MAP schema which has been disrupted, it’s “far more devastating to fail an important examination or to miss a long-sought-after promotion than to stumble into a chair that someone moved into your office.” If you had planned on getting that promotion and had staked a lot on it, its disruption could cause a revolution of your MAP schemas, whereas the chair would be considered non-revolutionary because it was contained within the overall MAP schema that makes up your worldview (Peterson J. , 2008, p. 9). The encounter with the snake elicits a very strong response very quickly because it has the potential to destroy the entire hierarchy of schemas, but this response also ends quickly once the snake has been circumvented.

Suppose that you end up stumbling down a hole and discover an underground cavern full of gnomes. What do you do? You’d likely freeze, slowly stand, and then look around. Presumably, you didn’t believe in gnome caverns before the fall, so now you’ve plunged into the indeterminate world fully. From here, you can either respond by doubling down in order to avoid revolution (think of the person who says “this isn’t real, this is all a dream” to themselves repeatedly), or you can accept that your existing MAP schema is insufficient and seek to improve it, you’ve got to get back to some sort of MAP schema, otherwise you’ve got no cognitive map (O’Keefe & Nadel, 1978) of the world. In this case, it means trying to understand this world of gnomes. A new MAP schema has been created with the beginning point being the “insufficiency of present knowledge” and the end goal the “functional classification of the presently anomalous emergent phenomenon.” (Peterson J. , 2008, p. 13) Say that while mapping out the gnome world, you abandon your previous goals as a surface-dweller entirely. If you did so, you’d

be abandoning that which defined your world up until you encountered your first gnome. One obvious problem with this method is that it's very possible there's another hole lying around gnome world which will drop you into mole-people world if you don't take the lessons from the surface and learn to avoid falling into holes. There is no MAP schema which is wholly representative of the world and capable of protecting you from all emergent complexity, so if you entirely abandon every MAP schema that proves insufficient once you enter the indeterminate world, you'll end up in a constant state of revolution, recovery, and revolution again (2008).

REINTEGRATION AND VOLUNTARY EXPLORATION

The solution, therefore, is to reintegrate the insufficient MAP schema into the new one: "I'm going to use these secret gnome herbs back on the surface to help with my bodybuilding," or "I'll stay in gnome world and become the best bodybuilder around!" This process of reintegration is necessary for development. Recall that a MAP schema is a simplified version of the world based on a goal, if every time we encountered emergent complexity we simply moved on, we'd end up hopping from one extremely simple schema to the next. For example, you wouldn't want to quit your job every time you had a bathroom emergency that required you to drop everything immediately. C.S. Lewis summarized this state in an oddly pertinent quote: "My point is that those who stand outside all judgments of value cannot have any ground for preferring one of their own impulses to another except the emotional strength of that impulse." (2014) To put it in more precise CMT terms, "those who would rather abandon an insufficient MAP schema than make a value judgment which involved determination of priority with the new schema and reintegration of the old will continually jump into whichever

indeterminate world elicits the strongest reaction." However, the solution of clinging tightly to our MAP schemas without ever declaring them sufficient is limiting as well. An individual or society which does so is at risk of self-deception and degrading its relationship with complexity (Peterson J. , 2003).

So, if the MAP schemas must be overturned without abandonment, what is the solution? For Peterson (2008) it's "voluntary determinate world eradication and exploration-predicated reconstruction." This is the transformational process which he associates with Campbell's "hero's journey." (Campbell, 2008) It is the leaving of the known, the existent MAP schema, journeying into the underworld, the indeterminate world, and then renews the world, reintegrating the insufficient MAP schema (Peterson J. , 1999, p. 25). In the absence of literature connecting the CMT model to a beneficial transformation process explicitly, the core principles have been applied therapeutically numerous times in the form of exposure therapy. In CMT terms this would consist of an individual who has been thrust into the indeterminate world and has either not returned to a stable MAP schema or has not integrated their experience into it. The process of exposure therapy consists of gradual voluntary exploration of the phenomenon which elicits the negative affective response will reliably yield results (Siehl, Crombach, & Robjant, 2021) which are positively transformative to the patient. This is because the patient has risked facing the complexity and brought back useful information which corrected their previous schema. Peterson (2008, p. 19) summarizes this as, "Error must be recognized, and then eliminated, as a consequence of voluntary exploration, generation of information, and update or reconstruction of skill and representation."

THE MEANING OF MEANING

Peterson's exploration and articulation of CMT has a purpose: to provide a framework for a meaningful life. Because of the value judgments we make in our perception, we "perceive *meaningful phenomena*, not the objective world." (Peterson J. , 2008, p. 3) He divides meaning into three classes: the known (MAP schemas), the unknown (indeterminate world), and the conjunction between the two. The key to a meaningful life is to aim to live within the third class, identifying with the hero and conducting voluntary exploration in order to transform your MAP schemas into more accurate representations of the world.

This courageous goal-oriented approach aligns well with Viktor Frankl's logotherapy, whose principles got him through the horrors of Auschwitz (2006). Which, although it's been studied relatively little compared to other forms of therapy (Schulenberg, 2003), has produced informative results which can help us to understand meaning. Meaning is hard to define empirically (p. 309), but one conceptualization is in relation to goals or projects (Emmons, 1999; Little, 1983). Research in this area has shown that meaning can be derived from striving toward goals which are chosen based on their perceived value relative to other goals (Schulenberg, 2003, p. 311). Moreover, "Personal projects provide lives with structure and meaning, and therefore life without goals results in deficiencies in these areas." (Schulenberg, 2003) While this isn't framed in the same terms as CMT, the pursuit of goals which provide structure and meaning coincides with its overall model. Although pursuit of goals could take place within an existent MAP schema without transformation, if we accept the idea that no MAP schema can last forever, the necessity of aiming the goals out of the schema becomes apparent. However, it doesn't seem to be an obvious way to substantiate the

notion that this is the key method of deriving meaning from life, since there's a multitude of different studies in the field of meaning research.

SUMMARY OF CMT

CMT is a model which is built upon the axiom that our perception is based upon motivations based on goals. The reality which we perceive is contingent upon the goal we have and serves the function of simplifying the overly complex world for us. We cannot perceive the entire world, so we say, "what's important for me to know, given my current goal," and ignore the rest. This determinate world we live in is conceptualized as a MAP schema, and when two of these schemas conflict, a value judgment is made, and one is either discarded or subordinated to the other. Multiple occurrences of this process form a hierarchy of schemas which are nested within our overall MAP schema, which forms our worldview. All the world manifests before us within that context. However, all MAP schemas are necessarily insufficient, so eventually we will inevitably encounter emergent complexity which will challenge our current schema. If this occurs, we feel some level of affective response and then are forced to either circumvent it, ignore it, or if it's sufficiently disruptive to our MAP schema, declare the schema insufficient and begin to map out the indeterminate world which it has plunged us into. During this mapping, we can abandon the insufficient schema entirely, or reintegrate it. This reintegration is transformative and serves to update the comprehensiveness of our schema. If our aim is to have a MAP schema which has as much functional utility as possible, we ought to engage in voluntary exploration into the indeterminate world regularly, consistently reintegrating our previous schema. The purpose of CMT is to identify a model for meaningful human experience, with the key

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to a meaningful life being the voluntary exploration that leads to transformation.

CONCLUSION

The weak point of CMT is its reliance on motivation as the catch-all for perception. A review of current visual processing literature seems to indicate that this is a reductionistic, perhaps fatally so, view of perception. This reliance is, unfortunately, axiomatic to the whole theory, underpinning the MAP schemas and their organization. However, there's no doubt that perception is the process of reducing the complexity of the world and therefore there are determinate perceptual worlds which we inhabit. The literature seems to affirm the assertion that anxiety is the default state, and exposure to the indeterminate world elicits an anxious response, so there seems to be good reason to accept this part of the model. Finally, the logical extrapolation of the model toward the transformative process of voluntary exploration and reintegration has functional utility in a clinical setting. While there doesn't seem to be an obvious way forward in determining whether this is the best way to live a meaningful life, there's certainly support for it being at least one way to derive meaning from life.

Going forward, CMT ought to either integrate the breadth of visual processing literature or be regarded as presenting a model within a limited subcategory of perception. However, the rest of the model presented by CMT seems to hold up to scrutiny, and ought to be regarded as a useful neuropsychological model for describing human experience.

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