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The Richness of Flatness

Review of the Mind Is Flat: The Remarkable Shallowness of the Improvising Brain
by Nick Chater
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The Mind is Flat reminded me of the anecdote in which a toddler taking a bath looks down at his genitals, and says to his mother: “are these my brains?” The mother replies, “Not yet.” The author, Nick Chater, might be accused of poking another hole in our Ego and therefore our well-being, or at least how we might feel about our selves. His perhaps disturbing thesis is a simple one: We aren’t what common sense psychology tells us we are. In human-computer design, there is an acronym, WYSIWYG, what you see is what you get. For Chater, the same is true for us mortal beasts. He initiates the conversation with ruminations by famous Tolstoy character, Anna Karenina, in the eponymous novel. Why did Vronsky make such a life-changing impression on me? Could you actually believe that you could live happily without Seryozha, your only son? What factors led to your eventual dismay to lead to your suicide? What caused you to hate your husband? Any answers to these questions must necessarily be only conjectures because “Anna has no mental life.” (p. 6). If the lost heroine Anna were real, Chater claims that the situation would be identical. Although Anna like us could invent many narratives, these have no more meaning than what she or we would impute to the fictional character. Our shallowness is not shallow because of the richness and improvisations of the narratives we can create but because they have very little validity in explaining Anna’s behavior or more tellingly our actual behavior in day-to-day life.

Hold on Nick! You admit I’m a extremely complex biological computational device equipped with discerning senses. The retinas of our eyes are crowded with rods and cones, to enable us to see the smallest imaginable change in a line and the surprising subtle differences in color. In addition, we can quickly move our eyes at will to focus on specific aspects of our visual world. Our other senses are equally impressive. Why evolve this wonderful machinery if we are shallow indeed? Channeling William James and Donald Broadbent, Chater’s answer is that we are limited to serial behavior in that we are equipped to do only one thing at a time. Much of the brain is fully engaged in doing that one thing having the benefit of our sophisticated senses, and those senses can be quickly directed to doing the next thing.

Thus, we appear to be equipped with robust machinery to do that one thing well. Our visual acuity is needed to see that the word we are reading is *casual* and not *causal*, or is *sweet* and not *sweat*. Although being gifted with such powerful analyzers, there is a downside. Psychologists, behavioral scientists, and even individuals outside the discipline have constantly

bombarded the science with demonstrations of the limitations of our perceptual, memory, and decision experience. We are constantly misled in to believing what isn't so. The complete page of text I'm typing seems clear even while I'm attending to the word being typed. My view outside my office window gives me clear picture of Santa Cruz and the Monterey Bay beyond, with trees, rooftops, and sailboats. Yet in both scenarios, I'm nearly blind to much of what I think I see clearly. YouTube videos have now made a cottage enterprise of debunking our perceptual skill, so students no longer have to take an introductory psychology class to be educated about their perceptual limitations.

To hammer his point home more strongly, Chater describes well-known clever experiments to demonstrate salient fallacies in our day-to-day experience. We experience a coherent clear visual world whether it is the natural world surrounding us or simply reading a page or screen of written text. Using eye tracking and changeable displays, we can change the text outside the location of the reader's eye fixation without disrupting their reading or the change even being noticed. Although not described by Chater, about half the people fail to notice a gorilla walking through a bunch of people throwing a ball around, when the viewers' task is to simply count the number of throws by the players wearing a specific color (https://www.youtube.com/watch?v=IGQmdoK_ZfY). A parsimonious interpretation consistent with serial processing is that while we are attending and tracking ball tosses, we easily miss other prominent actions in the scene.

So we are equipped with a spotlight of attention that allows us to impose meaning on what we are attending to in this instant, and to migrate to the next stage of meaning, we have to move our spotlight of attention (or have it moved for us). The experiments he describes are convincing. For example, making sense of an array of blocks of different colors can only be accomplished one color at a time. His notion that we are able to see only one meaningful pattern at a time gels with my idea that we are only able to integrate multiple sources of information when they are structured to represent a potentially meaningful pattern. We naturally integrate audible and visible speech when they occur within a reasonable window of time (200 ms) but not when their asynchrony exceeds this value (in the McGurk effect, Massaro, 1998). Consistent with this behavior, fixating an image on the eye will induce disappearance of parts of the image from moment to moment, and the parts that come and go tend to be meaningful rather than incoherent.

To further convert his audience about a flat mind, Chater pulverizes the layperson's ideas about what the mind can do. Expertise is laid waste by describing how expert systems in Artificial Intelligence failed. According to Chater, asking experts about the intricacies of how they function at an expert level does not elicit sufficient descriptive advice to allow machines perform expertly. We might think that dismissing expert systems might have been a little cavalier given that there have been putative success stories using this type of reasoning (e.g., MYCIN and its progeny CADUCEUS in medical diagnosis, https://en.wikipedia.org/wiki/CADUCEUS_(expert_system). We now know, however, that these systems pale in comparison to data driven systems. For example, IBM's Watson is programmed with a working memory of thousands of patient records, many medical texts, and all the content in the PubMed and Medline databases

(https://www.worldhealth.net/news/ibm-watson-supercomputer-best-doctor-world/). The prominent journal devoted to expert systems with applications (https://www.journals.elsevier.com/expert-systems-with-applications) now consists of primarily machine learning systems such as deep learning and is highly dependent on big data.

In undermining our inner soul, Chater concludes that common sense psychology is wrong. Our mind does not hold a "database of beliefs, desires, hopes and fears that we talk about in everyday life." (p.14). Rather, we rationalize explanations online referring to usually acceptable motives, beliefs, and cultural norms. The Japanese film Rashomon, directed by the clever director, Akira Kurosawa, perhaps gives us a taste of the just so stories we so easily generate. A bandit (played with typical proficiency by Toshiro Mifune) rapes a young woman in a forest, while her husband/protector is forced to watch. The aftermath involves the murder of the husband/protector relayed at an inquiry. The bandit's version of this crime insists that the woman gave herself willingly. Afterwards, he gallantly slayed the husband/protector in a duel to retain some honor. The woman's version asserts her disgrace over the incident (of which she did not partake willingly) and that she killed her husband because of his hatred for her. The husband/protector's version, received through the use of a medium, insists on the wife's betrayal and encouragement for the bandit to slay her husband. The woodcutter's "truthful" perception dresses the woman as a manipulator and both the bandit and protector as cowards. Although most of our improvising occurs in less threatening situations, this story depicts how elaborate and misleading our explanations of our behavior can be.

Chater is not alone in the extant promotion of this thesis of hidden motives for much of our behavior. In the *Elephant in the Brain*, two economists defend the thesis that the motives for much of our behavior are other than they are professed to be. In health care, for example, our motivation is easily defended as the desire to help people be healthy. But, in fact, a more powerful motivation appears to be that we want to show how much we care. Notwithstanding the few exceptions of anonymous donors, our hospitals are prominently adorned with donors' names—an important condition that donors expect to document to the world at large that they care.

Chater would certainly be uncomfortable with Morson and Schapiro's (2018) argument for the need for case-based reasoning (casuistry) in economics research and theory. They use the example of Konstantin Levin in Anna Karenina who is opposed to intervening in the Balkans where the Turks are massacring Bulgarians. Imagine, says his half brother, Sergey Ivanvich, a Bulgarian baby here in this room about to be slaughtered by a Turk. Would Ivan not intervene? No abstract principle will hold across all cases, according to Morson and Schapiro. With respect to their claim of having peoples' narratives to gain insight to our behavior, we question whether Anna Karenina would have had the insight that her behavior might be accounted for by easily falling for short-term gratification at the expense of long-term contentment.

The important research carried out by Nisbett and Wilson (1977) could have strengthened Chater's thesis. Their research not only revealed the limitations of introspection, but they also provided a framework for understanding when introspection can be accurate. For example,

participants revealed a strong position effect when choosing which article of clothing they preferred, and had no knowledge of this bias and even denied it having an influence. Establishing boundary conditions, however, Nisbett and Wislon proposed that introspection to the workings of the mind is limited since we can be unaware of an influence on our behavior but it can be accurate when the causes of the behavior are fairly salient to the perceiver. They claimed that introspective reports are based on “a priori, implicit causal theories, or judgments about the extent to which a particular stimulus is a plausible cause of a given response.” (p. 231). If you’re asked whether you like some new acquaintance after she just insulted you, you are probably able to give an accurate reason leading to your dislike for the person. This proposal might anticipate to some extent Chater’s claim that our thoughts are created anew from our past.

As referred to earlier, behavioral scientists have long known the fallibility of our explanations of our every day experiences. One of behaviorism’s legacies was the futility of our introspections. After having sex one of the participants says to the other, “It was good for you. How was it for me?” A common demonstration in introductory psychology courses involved a staged kidnapping of the instructor, and then after the debriefing asking the students to describe in detail what had happened. This instructive moment for the students revealed how little agreement there was among the spectators and how little of what they claimed they actually observed was accurate. The scientific evidence documenting our faulty observations lay dormant for too long but finally we have law enforcement and the judicial systems concerned about the reliability of eyewitness testimony (e.g., Benforado, 2016).

Chater wants us give up on the unconscious as a supplier of feelings and insights. And I agree with him. He is very adept at presenting convincing experimental evidence for the thesis that he is developing. For example, if the unconscious can really provide information in addition to that supplied by our conscious attention, then we should be able to demonstrate it experimentally. We can ask people to retrieve words corresponding to a given category. For example in one case we might have the participants retrieve words naming foods and another case naming countries. We can also ask participants to simultaneously provide words corresponding to both foods and countries. In this case, people usually name a few words in one category and then switch to the other category. If the unconscious is doing some additional work for us then we should be able to recall more words when we are recalling from two categories rather than just one. The logic being that the unconscious would be working on the alternative category that we are not currently consciously trying to retrieve. The results show, however, that people do not benefit from recalling words from two categories relative to just one.

For Chater, the brain as a biological computational engine is responsible to our conscious experience. To the layperson, this might bring Freud to mind. However, just the opposite is proposed, even though Chater appeared to have a somewhat difficult time responding to a googler’s remark that his thesis was basically a retelling of Freud’s views on the unconscious (https://www.youtube.com/watch?v=vspX6NaLxdc). For Freud, however, the unconscious provided a rich source of influences that made themselves apparent in a person’s behavior. These influences included childhood experiences, dreaming and other hidden motives, which

could be uncovered by therapy, as well as being apparent in everyday behavior such as slips of the tongue. However, dream researchers and a large database on dreams do not provide any support for unconscious motivations arising in dreaming. Similarly, slips of the tongue are much adequately explained by cognitive and linguistic factors than by putative unconscious motivations (Baars, 1992).

For Chater, subcortical structures are responsible for consciousness. We are aware of only interpreting sense impressions, not the processes responsible for them. And a guiding constraint of someone's interpretation is that it be meaningful. The absence of Freudian hidden motives, however, does not preclude other hidden "motivational" influences on our behavior. Our biological computation machinery could prioritize various behaviors that remain outside of our immediate purview. For example, some of our behavior could be influenced by reciprocal altruism (Trivers, 1971) in which our current good deeds are likely to be paid back. Reciprocal altruism might be considered a distal influence on behavior that would be integrated with other more proximal influences.

Although not acknowledged, Chater would find a persuasive compatriot in Feldman Barrett (2017) who organizes a strong case against the idea of hardwired emotions that cause much of our behavior. The accepted dogma of this classical view of emotion is that there are fundamental primary-process mechanisms, built-in capacities, and ancient feeling states that include seeking, rage, fear, lust, care, panic/grief, and even play (Panksepp, 1998). Or the more common idea is that there are 6 or 7 basic emotions: happiness, surprise, anger, fear, disgust, and sadness (Ekman, 1993). Feldman Barrett warns the reader that the classical view of emotion is compelling because it's so intuitive. In contrast, Feldman Barrett proposes that we have affective sensory cues that are given meaning and these cues along with other sources of contextual information afford a meaningful experience. Rather than being hardwired, she claims that emotions are not universal, but indeed vary from culture to culture. Emotions are multifaceted, their production includes not only the physical properties of your body and a flexible brain but also your culture and upbringing. She calls this the theory of constructed emotion.

Also relevant to Chater's inquiry, Simler and Hanson (2018), in their book, The Elephant in the Brain, explore hidden motives in everyday lives in a remarkable number of behavioral domains. Why do we make and collect art, for example. The artist conceptualizes her work as a creative endeavor which could bring material rewards. The collector claims to appreciate art for art's sake but also admits to expecting a reasonable return on the investment. In contrast, the authors provide an argument that the artist (and I imagine the collector) are embodying a fitness display that will have positive consequences on several important dimensions such as status, mating, and admiration.

In the recent book, Morson and Schapiro (2018, p. 286) reason that economics and economic theory would be better served by having peoples' narratives as well as mathematical descriptions in order to predict behavior. One of their points is that Daniel Kahneman evidently admitted that he and Amos Tversky often used introspection to arrive at their theoretical

principles describing the behavior in their experiments. However, I doubt that their principles were derived primarily from introspection. Consider the principle of representativeness. In this case, the perceiver evaluates some event in terms of how representative it as belonging to various categories. It would have been difficult for these innovators to have missed the prominent research on prototype theory, such as that carried out by Eleanor Rosch and others. This research and not necessarily introspection would have led the investigators to hypothesize that people interpret some event as how prototypical it is of some category. In this case, people will decide that Joan is both a bank teller and a feminist more often than simply a bank teller when she is given a liberal personality profile (Massaro, 1994).

A similar precedent can be found for the availability heuristic: Our behavioral response to various situations will depend on which thoughts surface more readily. Memory research had established various influences on memory retrieval, which offered a framework for grounding the availability heuristic (e.g., Tulving & Perlstone, 1966). It would not require a rocket scientist's introspection to devise the explanation of representativeness and availability in terms of contributing to performance on their tasks.

As any respectable cognitive scientist must, Chater ventures into the murky realm of consciousness. Central to this inquiry must be his primary operating thesis that the brain faces a bottleneck that allows its owner coordinating only one thing at a time. When driving, we tend to decrease the radio's volume if we are looking for a specific street or address. Given the centrality of our continuous narrative, he could have cut the game short by conceding à la Daniel Dennett that our online narratives are all there is to consciousness. (In fact, he quotes Dennett at the beginning of the book before his discussion of Anna Karenina.)

Of course, champions of hard problem of the puzzle of how a physical thing can have a non-physical component will likely not be satisfied (Chambers, 1995). For me, however, Chater's solution is perhaps the best we can do because it addresses both sensory and narrative components of our mental life. Chater's online narratives might be conceptualized as integrating bottom-up sensory information and top-down context to impose meaning (Massaro, 1998). Given how sensory and narrative dimensions are so intertwined, locating consciousess at either one alone seems insufficient. Some theorists focus on one or the other. Dennett (1991), for example, on the narrative and Humphrey (2006), on the sensory. For Humphrey, however, Chater's single narrative channel would not have any sensory quality to it because Humphrey believes that the sensory and perceptual components are independent and sensory feel is under the sole purview of the sensory component. A more reasonable view in my opinion would be that the sensory and narrative components function together to produce our stream of consciousness (Massaro, 2008).

Concerning his theme of the flatness of the mind, Chater admits to having struggled "long and hard to swallow this troubling truth" (p. 15). I wonder whether his was truly a Damascus event like the conversion of Paul the Apostle, who, upon a revelatory event, stopped persecuting new Christians and followed the teachings of Jesus (https://en.wikipedia.org/wiki/Conversion_of_Paul_the_Apostle). We could also simply write his

introspection off as nothing more than an illusionary fictional experience similar to any of Anna Karenina's possible narratives that would have no substance. It's clear that he experienced a joyful adventure in writing this book, as I did in writing this review, and I promise you will enjoy reading it.

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