Tanner Dean's Scholar Program Summer 2016

Joseph Fridman, College Scholar

“Towards a Normal Psychology: Investigating Explanatory Paradigms in the Cognitive Sciences”
I. Please provide an updated abstract of your proposal (a paragraph or two) and a brief biographical sketch (no more than one page).

We call it the "cognitive revolution" or the "cybernetic moment\(^1\)" or, in mixed company, the "information age". We know that this epoch, initiated by Alan Turing's eponymous conceptual machines, Claude Shannon's "queer algebra"\(^2\), Godel's proof incompleteness, Skinner's stimulus-response doctrine, and scores of other technical and social theorists, marks an inflection point in human and Earthly history. Ever since Aristotle's day, we have used biological and organo-mechanical metaphor to make sense of the mind and mental function\(^3\), but in this era - when we have begun to cross the threshold into actually manufacturing artificial minds, at least in part - we are increasingly prone to understand ourselves in terms of the information-processing machines we have created. As one scholar\(^4\) noted, "consequences of both a moral and an aesthetic nature result from such conceptual differences." I would take this even further: I believe that the collective experiences we are having with artificial minds has kicked off one of the largest paradigmatic changes in the science of the mind, on par with the Galilean and Darwinian revolutions.

To investigate the methodological, historical, and personal aspects of this latest scientific revolution, I intend to use this grant to fund travel and lodging related to visiting laboratories and writing my College Scholar thesis. I hope to explore the development and expression of explanatory mechanisms for habitual behavior, which has been my focus for my Rawlings Presidential Research Scholar project. I'd like to continue making contact with psychologists at various institutions on the East and West Coasts (such as Lisa Feldman Barrett at Northeastern, BJ Fogg and Carol Dweck at Stanford, etc.) and to use my grant funds (in addition to funds I'm seeking through other awards) to travel and tour the attendant laboratories, lecture halls, and archives of these scholars. I'm highly motivated to engage in examinations of scientific inquiry along Kuhnian lines, asking questions about the historical paradigmatic shifts that have occurred in cognitive studies in the past two decades. I'd love to use this opportunity to further develop my understanding and grounding in the topics I've chosen for my College Scholar proposal, to meet professors in whom I see great potential as PhD mentors, and to integrate aspects of my own intellectual heritage, academic training, and interpersonal interest. Ideally, I'd be able to speak extensively with lab members to get some sense of their paradigmatic stance and ideological grounding in their work.

\(^1\) Kline, R. R. (2015). The cybernetics moment: Or why we call our age the information age. JIUI Press.
\(^4\) Ibid, Chapter 1: Psyche's Muse.
Biographical Sketch

My brother, ten years my elder, and I were born about 4649 miles apart. Still, we can agree that the things we remember most from the first summers with our grandparents were the same. Grandpa’s books, whose Cyrillic spines told of chess or the history of the Jewish people in the Soviet empire or the mathematical physics of generalized stochastic equations for flow in porous media, and Babushka’s cherished novels and sheet music. They are familiar. About two years before I was born, on the lucky date of my parents’ anniversary and exodus to the States, they took one bag each, filled with clothes and precious books. Somewhere in our garage, we still have the three-dimensional calculus optimizations my Mom did on the eve of her departure, which maximized the volumes of luggage we could bring from the old world to the new, and allowed me to have the same first words and music as my brother.

Born to two first-generation Jewish-Russian immigrants meant that I would have learned how to quickly adjust, in language and, later, in intellectual tempo and tune. As a child, I learned English and then Hebrew, by necessity first and thereafter by choice. I learned piano, at first an imposed ordeal and later a freeing, expressive outlet. Socially, too, I first played by the book, listening to the TV shows and movies cited on the playground, and then emulating their characters despite not having a set at home. Eventually, I learned how to play by ear too, finding a niche in the neighborhoods we moved around to and the summer camps I was sent to, always gravitating to what Jack Kerouac would call the Mad Ones - those human forces of nature that play in a different key, that spark the world around with curiosity and fervor.

At Cornell, I think I have truly found some of the Maddest Ones. I see them in my housemates in my intentional, experimental self-governing community at Telluride, obsessed with everything from the scholarship of Cold War technological fantasy to the intersection between race and the surveillance state, and all the queer theory, mathematics, psychology, economics and German studies you could fit in between. They are my professors, who are paradoxically some of the most productive in their fields and the most willing to indulge in what often becomes a two-hour free-association session. They are my friends in my Russian and government seminars, and the otherworldly writers and theorists we dissect week after week. I seek to undertake this project because I believe, in many ways, that I have only begun to find these beacons of wisdom and light in my home of America, and would forever regret not taking advantage of the wealth of wisdom and insight available to me from titans in my field right now.
II. Statement of purpose (3-5 pages).

**Statement of Purpose**

A year and a half ago, I wrote in my College Scholar proposal that:

"Whether one studies the networks of the market, the micro-evolutionary patterns of cricket communication, or French intellectual history, it is taken as a fundamental premise of the modern academy that our world traffics primarily in signals. Some of these signals manifest as microscopic neurotransmitters simply trying to cross the synaptic gap, others as vibrations vying for the auditory canal of a friendly mate, others still as packets of data hurtling themselves in gigantic cables underneath the ocean. No matter their origin - the pressures of technology, the tumult of a political revolution, or independent ingenuity and innovation - the arguments, thoughts, and theories that spring up in our massively interconnected global civilization have an unprecedented ability to impact a huge number of lives. This sentiment is not unique and is usually expressed as something like: “more so than ever before, our world is run by algorithms which shape humans who themselves shape more algorithms.” Members of my generation (with roughly equal levels of privilege) seem to naturally intuit and form cognitively intimate load-bearing relationships with these programs, whether it is for choosing what entertainment to consume (Pandora, Netflix), whose life to observe or get involved in (Facebook, Twitter, Tinder), or even, if fawning tech blog posts are to be believed, what medications to take, what colleges to attend, and so on. Typically presented as a normative and hyperbolic claim about Generation Y, this thinkpiece’s observation bypasses a much more interesting set of concerns. Namely, that the rules and regulations we conceive as coming from the natural world have been shaping human behavior, bending free will, and serving as the primary substrate for any thought on the topic."

I have since found that these concerns about the development of embodied thought, echoed in my abstract, are anticipated by many thinkers in the field of evolutionary thought. In a chapter from the seminal collection *The Biolinguistic Enterprise*, Noam Chomsky and Robert Berwick offer a framework for thinking about the types of forces that govern the generation of varied forms. Therein, they claim that:

"[r]econciliation of the apparent diversity of organic forms with their evident underlying uniformity—why do we see this array of living things in the world and not others, just as why do we see this array of languages/grammars and not

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5 Or, *Generation Why*, as it were: http://www.nybooks.com/articles/archives/2010/nov/25/generation-why/
others?—comes about through the interplay of three factors, famously articulated by the biologist Monod in his book Le Hasard et la Nécessité: (1970; Chance and Necessity, 1972).

First, there is the historically contingent fact that we are all common descendants from a single tree of life, and so share common ancestry with all other living things, which apparently have explored only a minute fraction of space that includes a much larger set of possible biological outcomes. It should by now be no surprise that we therefore possess common genes, biochemical pathways, and much else.

Second, there are the physio-chemical constraints of the world, necessities that delimit biological possibilities, like the near-impossibility of wheels for locomotion due to the physical difficulty of providing a nerve control and a blood supply to a rotating object.

Third, there is the sieving effect of natural selection, which winnows out from a pre-existing menu of possibilities—offered by historical contingency and physio-chemical constraints—the actual array of organisms that we observe in the world around us. Note that the effect of the constrained menu of options is of utmost importance; if the options are extremely constrained, then selection would have very little to choose from: it should be no surprise that when one goes to a fast-food place one is usually seen leaving with hamburger and french fries."  

One does need not look too far into history, though, to see that Monod's twin pillars of Necessity and Chance do not hold up equal structural load in the scientific thinking of all societies. That is to say, while evolution has been, in Daniel Dennett's words, a "universal acid" that "eats through just about every traditional concept, and leaves in its wake a revolutionized world-view, with most of the old landmarks still recognizable, but transformed in fundamental ways," many cultures have sought to buffer and burnish their ideological landmarks against the action of post-Darwinian worldview. The most obvious example, of course, is the Soviet bastardization of natural

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selection into Lysenkoism, a politico-social doctrine akin to Lamarckian “inheritance through use” that was also adopted by the agricultural academy in Communist China. When centralized societies make moves like these to obscure the tenets of evolution from their citizenry, they betray the sheer transformatory power Dennett alludes to in his book.

It's no surprise, of course, that the reigning world powers of any era would clash over their understanding of nature. The questions that evolutionary thinking seeks to answer - What are we? Where do we come from? How can we relate to the complex natural world around and before us? How complicated are we? What on Earth (or otherwise) could possibly be responsible for capital-C Complex phenomena? - are the same questions taken up by religion, mysticism, and any mode of thought that impinges on cosmology. Our answers to these questions also constrain any further investigation we can make of ourselves or the world around us. They are like the Autocorrect function on our smartphones, suggesting possible responses to any query that may arise in our minds and prodding us towards them. They delimit the explanatory mechanisms that we can deploy to gain credit and acceptance in our academic community in this generation, and determine the heuristics and critical methods we will impart to the next generation. Moreover, they are the moral foundation for a society; one need only take a cursory glance at Adam Smith's Theory of Moral Sentiments, a foundational text for empathy in modern political science, to see how, for example, demarcating our capacity to suffer as evolutionarily separate from a nonhuman ape's commensurate ability would limit any possible claims to nonhuman animal rights.

I don't believe that this topic should be relegated to conference rooms in various departments of History of Science. These concepts are vital and lively, reproducing themselves within us as readily as the particles of DNA that make up Dawkins' “gene's eye view” of life. Instead, I aim to directly apprehend these topics, by speaking with top scientists and academics in the fields of affective and behavioral cognitive science on the

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East Coast (primarily Boston) and West Coast (primarily in the Bay Area). I want to hear how they understand the impact of the profound technological explosion of the past two decades, and how they connect these events to the questions they pursue in their research, the schools of thought they subscribe to and identify with, and the way their work has been mobilized and translated in American society.

There has been significant previous work examining the impact of the parallel processing paradigm on modern theories of executive control and many interesting discussions of topics of the evolvability of such systems across vertebrate evolutionary time. And, of course, there is no dearth of scholarship on the "queer" ideas introduced into gender and state politics by feminists, technologists, and futurists during the Cognitive Revolution (a la Dorra Haraway). That said, there has been little non-journalistic work done on the contemporary academy, especially in any narrative or constitutive (as opposed to deliberative) form. Therefore, I believe that this summer experience will not only add an invaluable historical, cross-cultural, personal, experiential component to my College Scholars thesis, Rawlings research, and overall educational project at Cornell, but could also prepare me to assume (that is, in my graduate studies) a much-needed and heretofore under-filled niche in our current discourse on these topics. Thank you very much for your consideration.