The Broad Path

May 3, 2023

Many years ago I attended a small, non-denominational church in upstate New York. Every so often someone would spontaneously walk up to the podium and give a prophetic word. At one point toward the end of my time there a man spoke of seeing a vision of a brook of water gently flowing uphill. It did so by the power of God, as naturally water does not flow uphill. He said that at some point the path of the stream separated. That there was one path which was extremely wide but shallow, and another which was extremely narrow and deep. He said that either path was good, but to choose. He added that God slightly preferred the broad path. But to choose one.

Recently humanity has witnessed the emergence of ChatGPT, and similar large language models, which are appearing to have miraculous powers in their ability to read and output natural language, almost as if they somehow understand the meaning of words, and are even able to reason using natural language itself. How do these large language models get such power? How are they able to seemingly reason within human languages, producing poetry, limericks, Python source code, whatever is requested of them? I suspect that it has to do with some generalized sort of epistemic closure. Not that these machines can perform logical deduction to arrive at true statements from a collection of known true statements, but that they are able to effectively arrive at something like this — something like an intuition which can often guess at true statements from collections of likely true statements. That there is some point at which the machine has enough 'knowledge' that it begins to effectively understand.

So what does the preceding paragraph have to do with the first? And what does any of this have to do with science in general? My feeling is that there may be an analogous notion of 'intuitive epistemic closure', but in a much broader sense. A closure over not only logical or even intuitive 'deduction', but over 'ways of knowing'[1] themselves. That, once we 'digest enough natural language', as a metaphor for engaging multiple 'ways of knowing' towards the objectives of science, then we will begin to understand. And not just in a relatively pedestrian sense that we are used to imagining this word to mean[2], but in a

[1] See, for example, `https://changeelemental.org/resources/ways-of-knowing` for a definition.

[2] the first two definitions given in `https://www.merriam-webster.com/dictionary/understanding`

much much deeper sense. A sense which connects to an alternate definition of the word 'understanding', namely that which describes relationships among people[3]. To understand another is to be in a place of empathy with that person or group of people. One might even imagine a sort of resonance — a constructive interference of quantum amplitudes (though this relatively technical description has perhaps too much specific meaning, to the level that it distracts from my intent here).

But I believe that we are extremely far from this point, in science in general. We (collectively, the dominant voices in humanity) have largely taken the narrow path in science. It is good. We understand amazing, wonderful, deep things about all sorts of realms of inquiry, from fundamental physics and mathematics to biomedical engineering to social science. It was a choice, possibly a necessary step in moving away from being slaves to a merely mystical understanding of the phenomena which surround us and envelop our lives. It possibly even frees us from irrational fears, partly realizing the dream of Epicurus over two thousand years ago.

However, I want to invite us to consider, now, taking the broad path. By which I mean seeking breadth even in the manner in which we conceive of the practice of science, and even the definition of science itself. I want to suggest that we might seek a 'generalized epistemic closure' in analogy with that seemingly achieved by large language models. Except that here the domain of content is not merely natural language, with its generic ability to express possibly arbitrary ideas, but something much broader still. Which includes the *voices* of people. And by voices I do not mean merely the content of what they might say, but something more, which may include artistic expression of their lived experiences, of who they *are*, as *people*. My feeling and desire is that we include the personhood of people in the practice of science. And my feeling is that, if we include enough people, a sufficiently broad collection of voices, methods of expression, attitudes, goals, i.e., people themselves, then we can achieve a 'closure' which is beyond our wildest dreams. That we will be able to understand things that we never even imagined that it was possible to understand. I believe that such a broad notion of science will be able to handle, for example, moral questions. It will know how to reason about stem cell research and AI and economic models and government, and so many things that we simply do not even imagine yet, because we, collectively, as humanity, are so mired in our current problems that we cannot see past the end of our noses. My feeling is that the realms that can be understood with such a generalized approach to science will make what we usually think of as 'science' laughable for its extreme narrowness and lack of vision.

And so how to we get there? How to we enter such a new paradigm of breadth in our practice of, and even conception of, science? A first step is to learn to integrate more voices in science. Where voices involves different sorts of people saying different sorts of

[3]the third and fifth definitions at the aforementioned URL

things. In different sorts of ways, with different forms of expression, and media.

My feeling is that this will begin with empathy. With listening and understanding what people have to say out of who they are. Really to understand who people are, and treasure that personhood as something precious to offer the scientific enterprise, not just because someone is smart and therefore may have something important to offer to science, but because they are who they are. Who God made them to be, ultimately. There is so so much wealth out there in terms of who people are, that we are ignoring because our vision and understanding and conception is so narrow, and dry.

Let's switch to the broad path. The numerous real-world human issues which science struggles to address may find their resolution through this choice.

There are a number of indications that this transformation of science is beginning to happen already. Below are four small steps in this direction, which are already happening today, and serve to illustrate the breadth of need and possibilities.

SJSU Library Research Scholars Program

- Library Research Scholars Program: Encouraging Undergraduate Research at SJSU
- `https://libguides.sjsu.edu/LRSP`
- `https://scholarworks.sjsu.edu/lrsp/`

The Library Research Scholars Program at San Jose State University provides an intense mentorship experience for undergraduates in any field of study, to pursue research on whatever topic they find of interest. The students tend to select questions which address social issues which are of direct relevance to their personal lived experience, as opposed to topics which are motivated by the research interests of their supervisor. This has the effect of producing high quality research into niche topics which can be extremely novel, with the potential to open entirely new areas of inquiry.

Tibees YouTube channel

- `https://www.youtube.com/user/tibees`
- `https://youtube.fandom.com/wiki/Tibees`

Toby Hendy (“Tibees”) accurately presents research level scientific content with an emphasis on the scientists as people, who live in a particular historical context, with its concomitant social pressures. This added real-life context is almost entirely absent in our usual presentation of scientific content, and adds an almost essential dimension to the science itself. She will point out issues with famous proofs, suggesting places to look for alternate, often better presentations of the content. The spotlight on the scientists as people is extremely engaging and, in my opinion, conveys a deeper understanding of their results than one would find simply by reading conventional research papers.

Vestertopia

- https://vestertopia.org/LanguagesNumbersCalendarClocks/

Robert Vesterman presents a humorous account of numerous conventions for a place called Vestertopia. Although not directly scientific in intent, there are fascinatingly novel ideas buried in the prose of this document, especially regarding calendars and time. He implicitly advocates for a system which is based on physical astronomical events, which necessarily depend on the perspective of the individual observer. This is refreshingly consistent with time as described in Einstein's theory of General Relativity, arguably much more so than the more common calendars and timekeeping systems that are in widespread use today.

UAP

- https://liminasymposium.vfairs.com/
- http://limina.uapstudies.org/about-us

The question of the origin of various unidentified aerospace phenomena has been around for centuries. One can make broad assumptions about the existence of extraterrestrial life, but to address this question in a genuinely scientific manner is difficult, in part because much of the evidence is anecdotal in nature. The Limina journal is attempting to raise the bar for scientific rigor in this area, by gathering diverse groups of scientists, journalists, and the interested public in genuinely scientific discussions of the evidence. The forum is unique in its ability to bring scientific experts and laypersons to the same table, each relying on the other to make progress.