

## A dialogue about JAW21

*I agree with the point (stated generally) that “deep truths” do not exist hidden in the mind. Of course, I’m not convinced in the existence of deep truths any more than I am convinced of Santa Claus, so where they reside is about as important to me as how much snow they have at the North Pole.*

And of course I agree with you, whence the scare quotes. But to —needlessly— clarify, the point is that there’s no reason to expect that what our brain comes up with should be helpful, just because we have a hunch. (In fact, I feel the same way —ie I am cautious— about all spur of the moment brain reactions, including emotions, hunches, etc.)

*How are heuristics formed and evaluated for efficiency if not by some element of intuition? Yes, time may prove our conclusions false — or at least not as well-based as we assumed — but sometimes the proof is in the pudding: sometimes we ‘know’ by sensing something not-quite-right and then discover the source of our uncertainty.*

This is a problem that most people have. They suspect that it’s somehow circular to reason about reason, because we’ll never be able to give a solid proof. I look at it much more pragmatically. I’m not out to prove anything, I’m just out to adopt techniques that show themselves to be useful, for reasons that can be articulated and discussed. But there is a science of heuristics, and one of the beautiful parts of doing science is when you realize “why” this or that rule of thumb has been working, or how your heuristics can be refined, made more specific and potent. Heuristics often evolve from “motherhood statements” to defensible positions.

Sometimes we feel we ‘know’ something because of a hunch, I agree. But as I wrote in that paper, following up on a hunch can be a huge waste of time and resources if the hunch turns out to be wrong, and unless we are trained specifically in having really good hunches, I think it’s more likely than not that it will be. Our methodologies are more or less about having really good hunches, and the way we achieve that is being incredibly explicit about what we do, and being incredibly distrustful of that which we cannot be explicit about. (This makes science a slow process, and we think that consequence a Good Thing .) So good hunches are of the form, “I feel like the best way to proceed is XYZ , and here’s why.” .)

*How do we evaluate terms such as “usefulness” and “judgment” in general if not without some sense of intuition? Any sort of comparative (e.g., better, more efficient) relies on perception, which — perhaps sadly — relies on intuition.*

Perception is unavoidable, but intuition is, so I don’t know what you mean by perception relying on intuition. (Certainly intuition relies on perception, though.) If we see time and time again that we are making the same sort of mistakes, if we think we understand why we keep making these mistakes, if we can articulate those reasons, if we can then formulate ways of avoiding those mistakes, if we then follow those ways, if we then find our work to be devoid of those mistakes. . . well, that’s the development of a heuristic. Have we used perception? Yes. Have we used intuition? Never without justification, post hoc though it

may be.

In any case, it is not my goal to avoid being circular, just for consistency's sake. If, in the end, intuition can help in the process of formulating and refining heuristics, so be it. However, that sort of intuition faces the same problems: it cannot be taught —so much for the Science of Heuristics—, it may mislead us, it will not lead us easily to generalizations.

*What doesn't "bear the burden" of our past? Even the 'new' models we apply have a history, and this history is wrought with problems — a sort of intellectual baggage.*

Again, the key is to be explicit. The extent to which our past has a hold of us can only be nullified by realizing that it has a hold of us. Will our past always trip us up and make mistakes? I guess, sure. I don't find that to be such a problem anymore; in fact, I can't think of the last time it was.

*Generalization must depend on intuition, as must abstraction. We don't know when to apply previously encountered theories/methodologies/etc without having some intuition that the two may complement one another. For example, how did you see the relevance of mathematics and computer science to linguistics if not by some 'ah-ha' moment? And what is 'ah-ha' if not an intuition that two things actually do mesh? Grant me this, and I will grant you that it is not enough to say 'ah-ha', you must apply the design and see if it actually fulfils your prediction. Intuition is never enough.*

I disagree with your general point, and with your example. I didn't see the relevance of these methodologies of mathematics and computer science to linguistics by some "aha" moment. Rather, as I said, the most striking aspect of the fundamental ideas of these methodologies is that they are relevant to reason more generally. So it's just a consequence that they apply to linguistics. (In my opinion.)

And in general, I don't see that generalization and abstraction must depend on intuition. Sometimes you don't know which dimension to generalize or abstract over, true. But your best bet, I think, is to try to reason out what that dimension should be, or which is more likely. If you still can't tell, then it's a little up to chance. In those cases, I don't usually like to do the one that's most intuitive, but rather the one that's simplest, so that I've wasted as little time as possible if it doesn't pan out. ( "Being as naive as possible" , put crudely, is one of the tenets of our methodologies.)

As for what you're willing to grant me, sure, intuition is never enough to establish an argument, but that's sort of the trivial point. I think it's important that intuition be minimized or even excluded from the model building process.

*We do not (as of yet) have conscious access into the 'intuitive' process. Perhaps someday we will, in which case our general definition of the process will have to change. Maybe there something systematic to it, but this 'system' currently alludes us. And because we cannot understand its makeup, perhaps we should not attempt to apply it to all situations.*

If I had to bet right now, I'd bet that there will never be any access into the "intuitive

process” because there simply isn’t a process. Intuitions in science are for me the exact same thing as emotions, and I think as we know quite well, there’s isn’t necessarily a method to the madness that goes on in there.

I ascribe to a Hofstadterian model of brain and consciousness, whereby our brain works probabilistically, based on the ever-changing records it keeps on itself, and entities in the world. When we have an emotional reaction, that may be meaningful, but it may not. I think many people assume the former by default, and that is problematic. For example, I think most people assume that when you say something, and then they are hurt, that you have hurt them. I think it’s more fruitful to realize that it’s always you who hurts yourself, sure, because of some outside stimulus, but if stimuli of type X make you feel bad, and there’s no reason you can think of that it should, doesn’t it pay to try to train yourself out of that reaction?

I fully support the idea of “brain farts” , ie slip-ups in the stochastic process described above that yields inappropriate or meaningless emotions. Suppose you’re in a wonderful relationship, but all of a sudden one day you wake up with dread and doubt in your stomach. Does that mean that somehow your relationship has become doubtful? Who knows! There could be a million reasons why your brain decided to react in that way, and all we can say for sure is that the reason is not that your brain secretly knows whether or not the relationship is good. If you’re going to end your relationship, you should do it for a reason, not based on a hunch, and ascribing too much weight to your emotions will cause you to start seeing problems where there are none. (And that’s easy to do.) This has happened to me before, and the decision I took was simply to ignore the emotion, assuming that if there was truly no basis to it, it would go away, and be replaced with “more appropriate” emotions, given the situation I was in. I turned out to be right: the emotions quickly subsided, and I went back to being happy. (As I deserved to be, because I was with a wonderful woman who I had good reason to want to be with.)

*Doing so reminds me of the way many psychotropic drug-uses were discovered. Medicines for schizophrenia and even manic depression (e.g., lithium) were ‘happened’ upon and used because they seemed to help relieve the symptoms of mental diseases. In fact, until SSRI (selective serotonin re-uptake inhibitors, e.g., Prozac), none of these drugs was theory-driven. While even SSRIs have their side-effects and drawbacks, theirs — unlike their predecessors — were predictable and addressable because there had been a theory behind them.*

I know what you’re saying here is “on my side” , but still: I don’t know what to say about this, because I know nothing of so called “hard sciences” , in particular nothing about medicine. I would hope that there would be more of a method than what you’ve described. If there isn’t, I don’t think that’s because there can’t be, but possibly because, financially speaking, it’s been more important to focus on the “what” rather than the “how” . Believe me when I say that the same thing is true for the majority of computing scientists.

*Still, making that initial leap, having the sense that (a) there is something wrong, (b) there is some way to apply what we know about X to Y, and (c) there is a real*

*way of measuring our success or failure depend in some part on our "intuition" .*

Having the sense that there is something wrong depends on perception —and opinion— , but why on intuition?

Having the sense that there is some way to apply X to Y does seem like intuition to me, and it should be used in this case with caution, lest we apply a hammer to a screw. In any case, it sounds like you're saying that more generally "solving problems" depends in some part on intuition, and I have to disagree with this, having had the experience of solving problems using no intuition —and barely any thought!— at all.

Measuring failure is a subjective process, of course, but I think I highly scientific one, not an intuitive one. Investigating what you did, and how that screwed things up is an important way to develop heuristics. (However, one should feel a little ashamed if one discovers that those heuristics could have been developed *a priori* , without making the mistake in the first place.)

*Ultimately, intuition serves a function. It may facilitate the initial phases of inquiry and guide us to potential starting points for addressing our questions.*

I agree. Also, I think intuition is most usefully applied —if we have to apply it— when we are very explicit about how we're using it, or when we let intuition range over a set of possibilities we have consciously selected via a constructive process.

*It is also — in my opinion — useful in discerning when we have reached our limit in pursuit of an answer (where "we" means the individual addressing his or her own particular question — not the field in general, which may continue to explore issues — as it should galldarnit). So intuition as a guide as a gauge of sorts has its usefulness...*

That is a good point. I think it's probably intuition that tells us "things are getting too messy, this is the wrong path to be pursuing" . But again, trying to be as explicit as you possibly can be is a good way of controlling an overexcited intuition.

*... but like all tools, the master knows when not to use it and how to apply it most efficiently.*

I disagree strongly. Intuition is implicit; the master doesn't "know" anything. The master just has years of experience, and that experience can be as harmful as it can be helpful, until it is made explicit.

with Meredith Larson in Evanston, 26 February 2005

Jeremy Weissmann  
11260 Overland Ave. #21A  
Culver City, CA 90230  
USA  
jeremy@mathmeth.com