

R: Hi Su, it's a pleasure to talk to you!

**S: Same here!**

R: First of all, you're a psychology student, right?

**S: Yes I am.**

R: Alright, then let's set up a sort of a base of why we're speaking. What is psychology? What are you studying?

**S: Well... I study what humans do, in the most general sense. Like thought processes, emotions, attitudes, cognition... All those things.**

R: I noticed you mentioned humans. Does psychology focus exclusively on humans, or does it include other kinds of intelligent behaviour?

**S: I would say that it's mostly focused on humans. The psychology that I know and studied has been solely focused on humans, but animal psychology is also a separate area in itself. And of course, psychology also looks at interactions we have with our environments and other tools.**

R: Alright, I think I got it. That's actually precisely what I would like to focus on: interactions with our environment. I've been thinking about the idea of conversing and I wanted to get your perspective, the perspective of someone who studies interactions. How would you define a conversation? According to you, not according to 'psychology'.

**S: Well, I would say a conversation has to be interactive. It has to involve some kind of information transfer between two parties. Or more, of course.**

R: Makes sense. Does it have to be human to human?

**S: Depends on how you would define 'conversation'. When we use the word 'conversation' day-to-day, we usually mean a conversation using language. But if you extend 'conversation' into any interaction, then I guess you could see it as something that happens between humans and animals... humans and computers maybe?**

R: You said before that information needs to be exchanged between both parties. Does that mean that there has to be some sort of insight or meaning as an outcome of those interactions, for them to become conversations? Do both of the parties have to gain insight?

**S:** I think that you are considering too many things with that question. I need some definitions. If I don't understand what it's being exchanged, then i'd say It's not a conversation. But do I need to acquire some kind of new information that I didn't have before? I'm not completely sure. It could be some repetition of what I knew before. But generally, I'd say there needs to be some sort of meaning.

**R:** I really like that process of deconstructing a question. Let me ask you another extremely vague question. What is meaning? How would you define meaning? In the context of an interaction, let's say.

**S:** It has to be something that I can interpret and some how make use of. Wether it'd be through internal thought processes or something I can use when I'm responding to you. Some kind of a useful unit, I would say.

**R:** At some point you used the word interpretation. So can anything that has the potential to be interpreted bear meaning? Does it have to be readable, or clear? Or could it just vaguely suggest meaning?

**S:** No, of course it doesn't need to be clear, a lot of things are not clear. Even you looking at some place with some sort of expression carries meaning. It will lead me to follow your gaze and look where you're looking. But it doesn't convey anything significant. Or, should I say, specific or clear.

**R:** Okay I think I'm starting to get where you're coming from. So now that we established a definition of meaning, let's go back to the idea of conversation.

**S:** Great, can I add something to my definition of conversation before we move on?

**R:** Yeah yeah, of course!

**S:** I first said that we normally define it as using language, but now I'm thinking about following someone's gaze and expression. Those are very natural parts of a conversation as well. Non-verbal communication: expressions, how you act, how close you stand to someone... All of those play a part in the conversation as well. So I wanted to extend my definition.

**R:** That's a great definition. It's actually the next thing I wanted to ask you - if we could broaden this idea of conversing - so it's great that you made that extension without suggestion. Let's say you and me are talking.

We have all those natural extensions, as you called them, such as body language, that add to the conversation. But it's still heavily based on language.

Let's say we completely erase verbal language from the conversation and it relies only on non-verbal expression. For example, when two musicians that are accustomed to play together are improvising in harmony, understanding each other's cues without talking. Would that still produce some form of conversation?

**S: I actually love that example you just gave. Musicians can communicate, converse even, through music. I think that's a property of music in general. When we're listening to a piece, the artist can convey meaning to us even if there are no lyrics, no linguistic element. So yeah, I think conversation can exist beyond language. Even people who don't speak the same language, are able to express many emotions through just actions, gestures and tone of voice.**

R: I think we're ready to go in a little bit deeper, a little bit weirder.

**S: Ahah, okay.**

R: What if we remove one of the living beings from the equation. What if I'm interacting with my phone, playing a game or doing something online other than interacting with a real person? How can I converse this way? Do I need to draw meaning from it? Does it need to draw meaning from me?

When I think of that example, which is a little bit less two-sided, it becomes less clear for me what this form of communication is.

**S: It does become a bit confusing to be honest. With conversation, I can't help but imagine two conscious beings interacting with each other. So when I interact with digital interactive systems, it feels like just another source of stimuli. Even though I am interacting with it, it is automated. It doesn't mean that I'm conversing with an entity. It just means that I'm getting some stimuli from outside and integrating it within my own consciousness. I'm not really 'giving' it anything.**

R: But when you are exposed to this stimuli, you do attach meaning to it, right? Let's say I achieve an objective in a single player game. I do feel some sort of accomplishment. So I would argue that there is meaning. Yet, it is pre-programmed and unconscious.

**S: Some people would argue with you, panpsychists. But, maybe, let's not go into that.**

R: No, please, I'm very curious. Can you explain that very briefly?

**S: Panpsychism is a view on consciousness that suggests that every information processing system can be thought of as a consciousness by itself. So, anything that exists within some kind of information transfer, even just a light bulb that I can turn on and off, can be conscious by itself. It doesn't necessarily show itself as conscious, because it doesn't have the means maybe, but it is conscious. That's what they say.**

**So, in the case of your example, you are interacting with a system that has some information transfer. So you are interacting with a conscious thing, from their perspective.**

R: However, you seem to still argue that that's still short of a real conversation, don't you?

**S: Yeah. I can get a sense of accomplishment from solving a puzzle on paper. But does that mean that I'm having a conversation with that puzzle, necessarily?**

R: Indeed, maybe it's more of an introspective thing. You're kind of conversing with yourself, thinking how you are going to solve it. Your answer kind of touches on the next wormhole I wanted to dive into. Consider the perspective of the designer. When you are interacting with something that's been designed by a person, let's say a puzzle or a game, the one who made is still mediating your experience, in certain ways. From my point of view, you're not only talking to yourself, you're also indirectly talking to the one who made it. I'd like to hear your thoughts on that.

**S: So you're saying that I'm conversing with the maker of the things I'm using.**

R: I wouldn't go that far, but I would say that there are a bunch of layers of human labour, human input, in designing an interactive system. The more complex the tool, the more years of research and thought. I think those systems are a reflection of the humans who made them and human history itself.

\*TEA BREAK\*

**S: I think often when we interact with those systems we forget that there are humans behind it. We view them as something that is devoid of human input, usually. So, from the perspective of someone who's interacting with such a system, I think (the human input behind it) won't consciously affect my reaction. But unconsciously, it**

probably does, because of the workings of the system, I guess. I mean, it is obvious that it works according to how it's been designed. Some views and biases of the creators probably bleed into the workings of the system. So when I'm interacting with it, I'm also interacting with those thoughts that influenced the system.

R: It's nice and surprising that you think that way, not coming from a very technical programming background, as those biases you refer to are one of the big problems haunting artificial intelligence, big data science, etc. It's very hard to devoid an algorithm of human bias, when it relies on human design and human data.

S: When talking about AI. it is true that what you put into it determines what you get. I'm aware that there are people currently working on generating altruistic AIs, by programming 'good' characteristics into them, hoping they could be even more altruistic than humans. Anyways, I'm going off on a tangent.

R: Not at all, I really wanted to make the jump into AI. It inadvertently happens when you're talking about interactive systems and new technology, because in all honesty AI affects us more and more as time passes, and those effects are becoming more visible. So I do want to discuss AI with you, maybe not from a very technical standpoint, more from an ideological, phylosophical one. When working on my current project, I found that AI often emulates human behaviour. Some times as an end goal and some times as a tool to reach a different goal. Do you have any experience with emulating human behaviour?

S: My interest in AI has been from the perspective of computational neuroscience. We look at it as a tool to understand human cognition better.

R: Would you differentiate an AI from a very basic logical yes or no algorithm? In the context of interacting with it. Going back to the example of playing a game, for instance.

S: For starters, I don't think we can really base an AI in general human behaviour, at this time. The AI systems that I'm aware of are very domain specific in emulating humans. They're very focused on specific functions. I wouldn't differentiate (AI vs Non-AI) interactions. Even with AI, it's not like you have this magic or conscious entity making decisions. You just have something that emulates a very basic low-level function. I doesn't feel like I'm interacting with something truly intelligent.

R: Once again, I really like that you say that.

AI, deep learning and all that have become these buzz-words shrouded in complexity, but from my very amateur perspective, I've come to realise that they're actually not magic at all. In fact, they're very easy to debunk. Let me be the advocate of the devil for a final question. Your observations seem to be true from the perspective of someone at our level of understanding. That is, someone who's not a computer engineer or an elite scientist. I think there is a difference between the kinds of intelligent technology that we've been exposed to and top of the food chain algorithms that are being developed by tech giants. Would you consider an interaction with a very powerful and advanced form of AI, that's not so domain specific, any more meaningful?

**S: First of all, even the most advanced self-driving car just drives itself. It can't do anything else and if I change its environment it becomes useless. It can't adapt to a scenario that its engineers didn't consider. I'd still consider the most advanced forms of AI known to me very domain specific. Secondly, in a conversation, my expectations depend on my perception of how the other party is perceiving it. Without reciprocal perception, it's still just an extension of my own cognition, not really with something else. If that makes sense.**

R: Thank you, that's actually great insight. And also, thanks for your time! It was great to speak to you and peek into your brain, I think it will help me move forward with my research.

**S: My pleasure, that was fun! It's nice how having a long conversation in front of the camera makes you think and articulate better about topics that you usually think about, but don't dedicate this much time to.**

R: Ahahah yes! And weirdly enough that also ties into my project so well.

**S: How come?**

R: Well I have this idea of creating meaning, right? And you just made me realise that there's another very important dimension beyond just the system that you design, which is the setting. The situation you're in. Through manipulating that maybe I can suggest a certain kind of meaning, leading the user one way or another. While still leaving the rest to the system I design, of course. Think of interacting with a tool in the browser versus stepping into a stage with lights and instruments. You'd have a totally different experience.

**S: It certainly plays a big part. It reminds me of**

the idea of embodied cognition. It says that cognition doesn't happen just by itself, but within an environment, a context. And even how you're positioned in a room changes that cognition, that perception. If you're filmed by a camera *\*waves at camera\**, or if you're underwater, or on a stage, then that affects your cognition. From a researcher's point of view, playing with people's expectations of your system can maybe make the whole experience more significant to them. The setting you described in a stage sounds kind of like that, as it puts the whole experience in a more emotional context.

R: So, that's called embodied cognition, interesting. That seems like the logical next step for my project. So far, I've developed a tool, now it's time to design the context it exists in. An environment to present it on.

**S: Yea, look into it. Glad I helped!**

R: Well, once again, thank you very much!

**S: My pleasure!**