

Kevin Kvalvik in Response to Society of Mind discussion with Marvin Minsky

Suitcase words:

Within the context of this paper I have used the words listed below in much the manner that Merriam Webster endorses. I understand that words, which are defined too generally, become imprecise to the point of being useless. I will try to be more specific in my use. Creativity and imagination are concepts that are so large that they may be indistinct in conversation. It is with that said, that this paper has relied on the definitions listed below.

calculate:

to determine by mathematical process, to reckon by mathematical process,

estimate

to design or adapt for a purpose

to judge to be true or probable

create:

to bring into existence

to produce using imaginative skill

creative:

marked by the ability or power to create;

having the quality of something created rather than imitated

creativity:

the quality of being creative

estimate:

to judge tentatively or approximately the value, worth or significance

estimation:

the act of estimating something

envision:

to picture one's self

invent

to devise by thinking : FABRICATE

to produce (as something useful) for the first time through the use of the

imagination or of ingenious thinking and experiment

imagine:

to form a mental image of something not present

imagination:

the act or power of forming a mental image of something not present to the senses or never before wholly perceived in reality

a creative ability

I will point out the differences that I perceive between the wholly mechanical process of calculation, which computers do well, and the human process of creating at will, which humans do by nature and machines do not seem to do.

If a computer is given a mathematical problem and set of rules for addressing that problem it is most certainly uses "calculation." If it is given what we might consider a word problem and includes determining the best method of getting from point A to B including opening a door and not bumping into chairs, this is still calculation. If some uncertainty is added, strict calculation may be replaced by estimation, but this does not seem truly imaginative, rather, this is number crunching. This computer is being manipulated as to what problem to consider and what is an acceptable answer. In a human context this would seem the opposite of an imaginative environment.

This is not "imagining" on the level of envisioning (as there are no visual images being used as intermediary) and it is not imagination on the "creative/unique" level because it can only use the data that it was given and operate within the strict constraints of the programmer.

When using the term imagine when discussing the human mind I believe you oversimplify several distinct actions that can all lead to arriving at inference independently or in concert with one another.

Of the three the one, which seems most obvious are "accessing memory and considering likelihood." This is not imagination but something like data analysis. If I close my hands and feel the touch as my finger contacts my palm no imagining has gone on. If I stop and consider it, one could call that imagining only in the roughest definition. I would argue that this is memory alone. There is no effort to consider new variations on that theme.

If I have a memory of my hand on the keyboard and have no memory of my hand on the side of a bear I can visualize this with little effort. I know what a bear looks like through memory. I know what my hand looks like. I then estimate what one image would look (and feel) like juxtaposed against another. This takes no discernable energy and seems more similar to estimation than actual imagination.

The third and what seems highest order creativity is generating some type of art or creating something that is truly unique. It may be argued that there is nothing new under the sun, but it is simple to demonstrate that this is metaphorically true but not literally so. You take the mathematical theorems of Einstein, the interpretations of Picasso, or the stories of my seven year old and you are in a different world of imagination than the other two. If this program could access previously stored data of success that were enjoyed by other room walkers in a given scenario and it could then calculate the predicted likelihood of going one route or another then it can be argued that it is doing more "thinking" if you define thinking loosely, and it would be using memory to arrive at probable outcome and choice, but it is not imagining what it is "intending" because it has no intentions.