

4. (a) - via 'The Argument from Consciousness': A denial of the validity of the Turing test as a measure of intelligence / understanding. Mere symbol manipulation cannot be sufficient for consciousness or understanding (says Searle); but it may suffice to pass the Turing test.

- Response was that it logically leads to a solipsist position: we cannot be sure of consciousness / understanding / thinking of any creature but ourselves. It suggests there's no third-person way to access consciousness. Turing suggests that a machine which could converse naturally and fluently with a human could hardly be regarded as 'artificially signalling' its responses, could hardly be said to lack 'understanding'.

(b) - Turing and Pinker, both being overall proponents of the computational theory of mind. Turing responds to the anticipated Searle critique as above; Pinker responds to the actual Searle critique saying that Searle is appealing to intuition about machines which may break down if they are sufficiently fast or complex. Searle is on the other side

of the First AI debate, and believes that computers or symbol manipulators alone can never possess understanding, just like the imagined person in the Chinese room.

- 5.
- Initial layers: would capture small-scale, localised patterns due to local receptive fields. e.g. edges / gradients, orientations, light vs. dark patches
 - Later layers gradually integrate the lower-level representations, and cover ever-larger portions of the image via subsampling. They might go through a hierarchy of representations, e.g.
 - Basic shapes \rightarrow rectangles, triangles, circles...
 - Arrangements of shapes into patterns like the human face, hands, or a piano keyboard
 - Further combination into larger patterns like entire human body, or piano
 - At the highest level, the interaction between human and piano, representing the overall concept of 'human playing a piano'

6. Chaotic dynamics: time evolution unpredictable, highly sensitive to initial conditions (e.g. butterfly effect). 'Edge of chaos' idea allows for combination of flexibility and predictability: can respond to many specific things, ^{but} not chaotic.