1. **When asked to name the object seen in the image (below), the answers range from bird, boat, just irregular shapes, to hanuman. But if someone sees 'snow-covered farm buildings', then it is perception. Now understand a) what can be the possible explanation for someone to 'see' snow-covered farm building? and b) given most Indians have not seen such a scene how will they form it given the clue?**

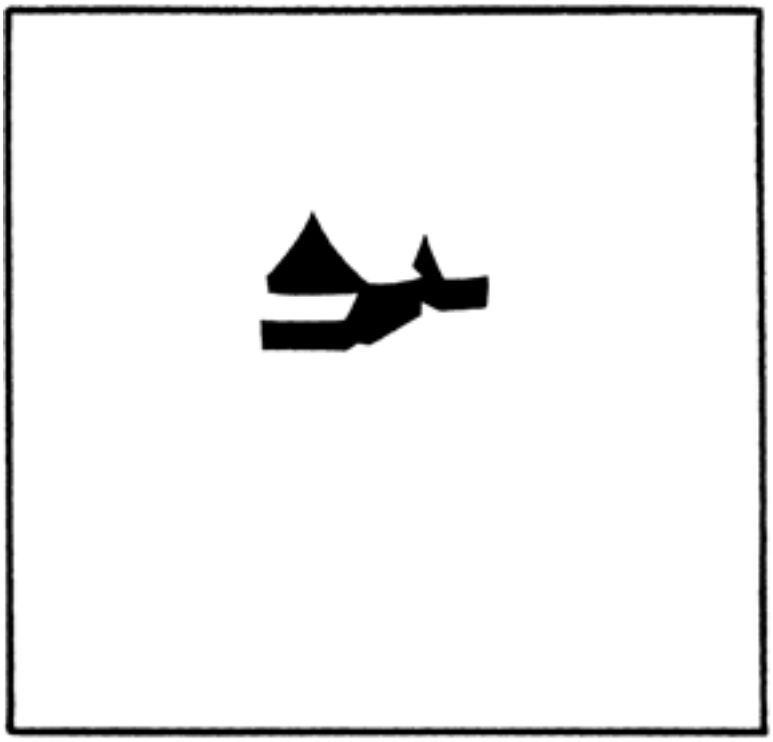

**Figure 1:** Perception experiment

- When trying to perceive an object, there are two general approaches: a top-down approach and a bottom-up approach. Each is triggered differently based on experience (Blakemore & Cooper, 1970) - if the object we see matches our visual experience, then we identify it as such without trying to identify individual components - think of how we see a car rather than a door, a hood, etc. If it does not, we try to identify the object by identifying individual components and trying to make sense of it together, or Recognition by Components, introduced by
    1.
- Especially with limited silhouetted images like this one, identification is done by heuristics. Gestalt principles (introduced by (**???**), and claimed by Todorovic (2008)] as still applicable to modern perception theory.
- Experience of having seen snow covered farm buildings, so recognises the pattern.

Experience-dependent plasticity. (Blakemore & Cooper, 1970)

- A situation would be whiteout, white everywhere except for walls because snow is not sticking on vertical surfaces.
- Indians:
  - Not matching it instantly, so trying to process bottom-up. Does not fit any mental model.
  - Everyone was ignoring the whitespace
  - Lots of answers were dinosaur - maybe inspired by the chrome game? It also has blocky dinosaur, made entirely from simple dark shapes. Whitespace does not play a part in that.
  - Some fun answers:
    - view of distant mountain + sailboat from a jetty (white space considered)
    - Broken sphinx
    - Anime Hair
    - Mountain and valley with river (again, completely ignoring whitespace)
    - 2004 graphics superman
    - When I mentioned "wouldn't see this in most of India" - Robot Dog
  - The person who lives in Boston for 3 years instantly got it.
  - Only one person got it without a "climate" hint
- How it's being formed: bottom up. Trying to identify the big triangle as a wing and that below as a tail (dragon). Or making the upwards-triangles mountains and the other black section river. RBC. (Biederman, 1987)
- Even after getting it one person kept seeing the roof in the front as a garbage dump - like in Tom and Jerry, or the Maguire Spider-man movies - as that was the experience and not a farmhouse.

2. **"Mirror Neuron Theory is a myth." Explain the mirror neuron theory based on Giacomo Rizzolatti's work. What are the criticisms against it and what is your opinion on this debate?**

   - Explanation:
     - Broadly, the mirror neuron theory posits that "motor representation is at the basis of the understanding of motor events" (Rizzolatti et al., 1996). The same neurons react not only to doing an action, but also watching it.
     - (Rizzolatti et al., 1996)'s work noted that mirror neurons exist in the frontal F5 area of the Macaque monkey, and these respond *both* when monkeys make active movements, and when they observe someone make meaningful movements. They also suggested that data of how observation of motor actions activated the posterior part

of the inferior frontal gyrus in humans implied the existence of mirror neurons in humans too, which could be affecting verbal development in humans due to the homology of F5 with Broca's area.

- Criticisms:
  - It is not possible to study individual neurons in the human brain, so all the information for their existence is indirect.
  - Pascolo et al. (2009) claim that it is not clear whether mirror neurons really form a distinct class of cells, as opposed to an occasional phenomenon seen in cells that have other functions.
  - Hickok (2009) argues that "The early hypothesis that these cells underlie action understanding is likewise an interesting and prima facie reasonable idea. However, despite its widespread acceptance, the proposal has never been adequately tested in monkeys, and in humans there is strong empirical evidence, in the form of physiological and neuropsychological (double-) dissociations, against the claim."
- Opinion

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