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Human visual attention is stuck in the past

By [John Timmer](#) | Published: September 25, 2007 - 10:58AM CT

A paper that will appear in *PNAS* this week looks at the issue of how we focus our visual attention, an ability that's essential for everything from task completion through object identification to threat recognition. The authors of the paper propose three criteria for attention, which fall roughly into the following categories: goal directed, or focused on the viewers' interest; experience directed, meaning focused on items that the viewers' past suggests are important; and evolutionarily constrained, meaning directed to items that have helped promote survival during our species' past. The paper goes on to explore the relative role of the last two categories, and finds that human visual attention is still stuck in the evolutionary past, possibly to our current detriment.

The paper used a single test for visual attention, based on color photographs. A photo would be displayed for a quarter second, followed by a quarter second of white screen. The photo would then be redisplayed, with a single object in the photo subtly altered. The sequence would repeat until the subject identified the item that differed between the two scenes or gave up. In the first few tests, the items altered fell into four categories: animals, natural but inanimate objects, human-manipulated objects (like a mug), and human structures.

In pretty much every way the data was sliced, humans are much better at recognizing animate objects. Things like elephants and humans had 100 percent hit rates, while even a pigeon rated 91 percent. In contrast, a stapler was only correctly identified 76 percent of the time, and a mug 67 percent (although caffeine starvation might have changed that result). Typically, animate item identification happened one to two seconds faster than anything else. The effect even showed up in terms of which items failed to attract attention: people were unable to recognize changes in inanimate objects 34 percent of the time, in contrast to 11 percent for animate ones.

The researchers then determined how important the ability to move was in this process by throwing automobiles into the mix. The answer was that motion is not very important at all. The subjects were slightly faster at identifying cars than say, a stapler but, in the end, the difference between the two was only four percent. All types of animate objects, even if they were stationary in the photo, had a success rate that was at least 25 percent higher. Getting back to the elephants, the same photo contained vehicles that were brightly colored and, due to perspective, larger. Compared to the subjects' ability to infallibly identify the elephant, changes to the minivan were only identified at a rate of 72 percent.

As the test subjects were located in the US (this is probably also true for the vast majority of us with the Internet access needed to read this), experience has clearly been that vehicles pose a far more significant threat than an elephant. But, because our minds are still stuck on the African savannah that our ancestors left millennia ago, our experience counts for a tiny, four percent increase in attention compared to something like a telephone.

The paper may not yet be available; it will eventually [appear here](#).

PNAS, 2007. DOI: 10.1073/pnas.0703913104

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