

## A.1. Pilot experiment for determining global properties

In order to ensure that image properties and affordances stated in the literature are relevant to our natural scene image database and participant population, we ran the following pilot experiment with 5 naïve observers. Participants viewed each of the 200 natural landscape images, one at a time for one second each. Observers were given the following instruction: “We are studying how people perceive space in photographs. Describe the kinds of actions that you could do if you were in that scene at that moment, from that viewpoint. You might also mention what you might not be able to do due to environmental conditions”. Observers typed their answer in a free-response prompt, and were given unlimited time.

Observers’ responses were tabulated by one author as to the broad environmental concepts they contained. [Table A1](#) summarizes these concepts (see caption for details). Recognizing the possibility for experimental bias in this method, care was taken to be as conservative with tabulations as possible. The descriptors given are similar to those found in other studies of environmental interaction ([\[Appelton, 1975\]](#) and [\[Kaplan, 1992\]](#)), and of environmental spatial layout ([Oliva & Torralba, 2001](#)). All of the global properties used in the subsequent experiments (*openness*, *navigability*, *mean depth*, *concealment/camouflage*, *perspective*, *transience/movement*, and *temperature*) were conceptually mentioned or described by all participants.

The number in parentheses indicates the number of observers who have mentioned the concept (out of five total observers). *Navigation* refers to self-propelled land or water movement through the scene (e.g. walking, running, swimming, driving). *Exploration* refers to examination or interaction with a particular object (e.g. look at, play with). Although this was mentioned by all participants, it was not included as a global property because it refers to interactions with single objects, and not the entire scene. *Temperature* contains references to the physical temperature of the environment (e.g. hot, cold, warm). *Movement* refers to statements of the scene in change or anticipation of it changing (“wait for car”, “water is too fast to swim”). This is a similar concept to *transience* in Experiments 1, 2 and 3. *Space* includes

mentions of the size or physical geometry of the scene (*openness, perspective, mean depth*). *Camouflage* contains references to either the human being able to hide in the scene or that something/someone could be hidden in the scene (“hide in trees”, “watch for birds”). This is a similar concept to *concealment* from Experiments 1, 2 and 3. *Harvest* contains references to taking something from the environment (e.g. picking flowers, hunting and fishing). *Water* refers to the presence of, or search for water. *Rest* contains repose words such as “sit” or “lie down”. *Animal* contains references to animals that are either present in the scene or could potentially come into the scene. *Ruggedness* contains references to aspects of the environment that make navigation treacherous.