Why Do People Stop and Look at Images?

- Using big data to understand visual affordances -

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Why are some images viewed more often and longer than others? Why is one image considered beautiful, while another, superficially similar, is not? Which features evoke human appreciation? And what is the relation between personal characteristics of viewers and their appreciation of images?

In our research we investigate the relation between images and viewing and evaluative behaviour. To do so we make use of enactivist theories, as developed by, among others, Andy Clark, Lawrence Shapiro and Anthony Chemero. In that light images are regarded as affordances eliciting certain behaviours in viewers. As Chemero (*Radical Embodied Cognitive Science*, 2009) has argued, affordances are dependent upon object properties on the one hand and characteristics of organisms on the other. In our case, viewing and evaluative affordances are dependent upon image features and characteristics of viewers. Put more formally in relational terms:

> *affordances-viewing* (human characteristics, image features)
> *affordances-evaluation* (human characteristics, image features)

We concentrate on establishing a link between a set of easy and unambiguously determinable characteristics of humans, and formal, i.e. quantifiable, properties of images. Initially we have limited ourselves to the human characteristics of age, gender, level of arts education, and experience with digital devices. The formal properties of images were determined by means of computational image analysis software (from the *Software Studies Initiative* at the *California Institute for Telecommunication and Information Technology*). In this way properties like colour, contrast, number of shapes and texture of images were quantified. On this basis we can make assertions on the extent to which combinations of image features and human characteristics determine viewing and evaluative behaviour.

To investigate human viewing behaviour when in front of various types of images the *Exposition Game* was developed in collaboration with *Delphica* (Groningen) and *Triangle Studios* (Leeuwarden). In this gamelike environment participants navigate through virtual rooms in which images are being displayed. These images consist of figurative and abstract paintings, and graphical posters. Participants are allowed unlimited time to choose one of the images for whatever reason. The software records all the behavioural data of the participants. Forty participants between the ages of 19 and 70 years took part in this experiment.

We found interesting and quite strong connections between image features of a number of shapes, colour saturation and contrast, and the viewing frequency and duration. We also found that age and level of arts education are a major determinant with regard to viewing and evaluative behaviour. In short, the higher the age of and the more arts education received by a participant the more time she or he takes to look at and evaluate images.

In our follow-up research we will use web scraping technologies to conduct data analysis on the viewing and evaluative behaviour of large scale online image collections. Although such big data analyses in themselves are meaningless, we expect the findings of our *Exposition Game* experiment in combination with enactivist theories to shed light on the questions of *why* people stop and look, instead of just counting *how often* people stop and look.