Research Internship

Quantitative aesthetics – from statistical physics to pictural art

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Subject

What makes a beautiful image? Although it would be absurd to aim at building a fully consistent theory of pictural art, we believe there is some room for a quantitative analysis. An aesthetically appealing image often results from a subtle balance between regularities and surprises. Indeed it seems reasonable to think that while one might find dull a too regular image (no surprises), one may also feel lost in front of an image with no recognisable shapes (too much surprise). This suggests one can design an entropy to quantify this subtle and complex equilibrium.
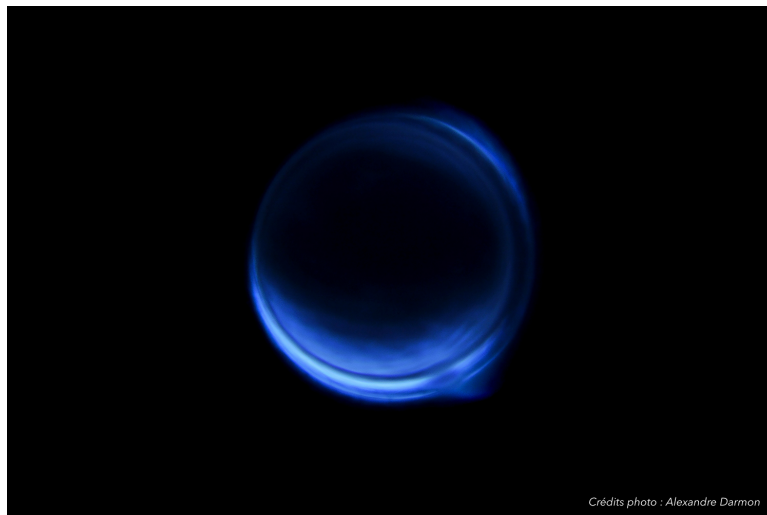

Figure 1: *Frozen Sun*, by Alexandre Darmon (`www.artinresearch.com`). *It's the end of the day. Alexandre decides to leave the microscopy room after some long hours spent observing his microdroplets of liquid crystals. He turns off his microscope as the last rays of the winter sun enter the laboratory. The urge takes him to take a last look at his sample. He witnesses a moment of harmony that he will not let slip: the natural, grazing light, that of the setting sun, gives to this micrometric droplet the appearance of a frozen sun.*

The internship will be devoted to building the theoretical framework to address this question. We will focus first on simple binary sequences and move on to black and white abstract pictures in order to avoid – as much as possible – idiosyncratic and cultural biases. Finally we will design the ideal human experiment to confront our theory and also explore wether already existing databases can be used in this purpose. The internship will be held at Ladhyx laboratory at Ecole Polytechnique in close connection with Jean-Philippe Bouchaud (Chairman and head of research at Capital Fund Management) and Alexandre Darmon (Co-founder of AiR - Art in Research, the first art gallery devoted to scientific photography). A strong background in statistical physics and/or information theory would be a plus.