Automating Semiotic Analysis of Film?

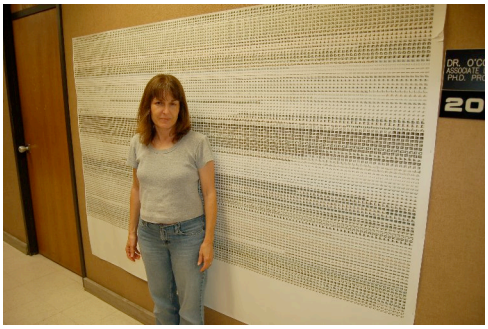
Only 25 years ago even the idea of extracting key frames from film & video documents was essentially unheard of. Today, programs running from freeware to multi-thousand dollar packages will extract key frames and tell you a lot about the film structure. Yet, there has been little advance in automated or semi-automated analysis, especially in the semiotic vein. We are attempting what might seem a pairing of strange bed fellows – a behavior analytic signal detection paradigm and Bellour's analysis of the Bodega Bay sequence from Hitchcock's The Birds.

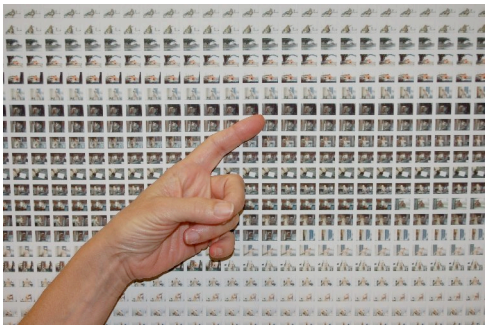
In the mid-1980s O'Connor proposed one of the earliest models for key frame extraction – a method Christian Metz found intriguing and one of the few computer-aided approaches to film analysis that might actually have potential. Continuing discussions with film theorist Bertrand Augst approached little pieces of the possibilities, yet no major model (or refutation of the possibility of such a model) evolved.

Anderson, coming from a behavior analysis background has suggested this question: What dimensions of the data stream of a film are controlling the behavior of a film analyst?

That is, if we consider the red, green, blue, and luminance components of the image track, the audio signal, and the temporal component, can we see a correlation between the physically present data of the text and how the analyst chooses to describe or model the document? Using the frames from the Bodega Bay sequence of The Birds together with the audio signal as a simple signal (no separation of speech, effects, music, etc.) we examine points of discontinuity in the signals and calibrate those to Augst's "Commentary on Raymond Bellour's "Analysis of a segment from The Birds". At this point we feel that we are at a point similar to the early days of keyword extraction from word documents – the actual extraction is essentially mundane – which frames to extract or how to think about structures remains less certain. This is especially the case because the literary metaphor does not hold up well as a basis for film analysis – there are no convenient grammar codes and no easily demarcated units of meaning other than the pixel (generally too low level) and the frame.

Simple entropy measures, Markov analysis, Bayesian analysis (what is the probability of the data stream triggering a Bellour-like analysis?) are first steps.





As a physically present text to goad our thinking and as the beginnings of an experimental apparatus, we have constructed a mural of each and every one of the frames from the Bodega Bay sequence. At first, this was simply a cool ancillary result of preliminary attempts to manipulate the image data stream. It was almost immediately evident that the mural resembles the strips of 16 mm or 35 mm film hung in editing bins. This stimulated discussions of how editors (O'Connor had worked for several years producing documentaries) often looked at the strips of film simply as they hung, seeking a color or "flow" of form without particular regard to the actual objects in the frame. This stimulated discussion of a second set of experiments (not yet conducted) on human viewers looking for patterns and calibrating those with Bellour.

****

This would be presented as a Power Point together with the Birds Frames mural for inspection by participants. It would most likely fit into the Documents in the Arts component of the gathering. We would need standard computer & projector set-up.

Brian C. O'Connor, Ph.D.
Coordinator
Interdisciplinary Information Science Ph.D. Program
University of North Texas
Denton, Texas 76203
boconnor@lis.admin.unt.edu
940.206.1172

Richard L. Anderson, ABD
Coordinator & Senior Analyst
Information Security, CITC
University of North Texas
Denton, Texas 76203
940.369.8372