

# Outside the Frame: Modeling Discontinuities in Video Stimulus Streams

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## ABSTRACT

How are we to get beyond the literary metaphor Augst asserts is central problem with film analysis? How are we to step outside the "shot" as the unit of analysis - the "shot" which Bonitzer claims is useless for analysis because of researchers' "endlessly bifurcated" definitions of "shot"?

We have had success with a form of computational structural analysis which incorporates the viewer into the model. Comparing changes in levels of Red, Green, and Blue from frame to frame and comparing the patterns of change with an expert film theorist's model.

We are currently analyzing discontinuities in the entire data stream of a film. We are asking just what aspects of the data stream account for viewer reactions. We are examining distribution of color, edges, luminance, and other components. By modeling changes in the various stimuli over time within a vector space model and comparing those changes with the responses of (at first) an expert viewer, then with a variety of viewers we should be able to make strides in matching forms of representation to the most effective mode of representation for the individual user; and at the same time provide a set of analytic tools that account for the multiple time-varying signals that make up a movie, whether a cell phone video or Hollywood blockbuster.

Significantly, we now step outside the frame as the unit of analysis and look to the possibilities of analysis at the sub pixel level. That is, analysis of one component of a pixel location such as luminance or merely the green component (no red or blue provides a very fine grained level of examination. At the same time, the vector space model provides a way of examining the stimulus effect of multiple threads that do not necessarily change in synch.

As we consider these possibilities, we begin to see a general model of a document as a continuous stream of data that either (as a whole or in part) functions as a stimulus or does not.

Our poster will present graphical representations of changes in the data stream for the "Bodega Bay" sequence of Hitchcock's THE BIRDS and the reactions of Raymond Bellour, whose analyses and modeling of Hitchcock's works and of classic Hollywood film in general are held in high regard. We begin with Bellour and the Bodega Bay sequence because we have already published research on this data and, thus, have a significant foundation upon which to build. We will then apply the same techniques to a set of other works.

## Categories and Subject Descriptors

H.3.1 [Content Analysis and Indexing]: Abstracting Methods

H.3.3 [Information Search and Retrieval]: Retrieval Models

I.2.4 [Knowledge Representation and Methods]

## Keywords

Video, Key Frames, Document Theory, Information Theory, Functional Ontology