

# Generative System for the Synthesis of Audiovisual Narrative

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## Introduction

Narratives supported by hypermedia systems adhere to a series of conventions that render them readable. However, we cannot suggest that a particular writing system entailing grammar and syntax, that could totally condition the creation of digital hypermedia systems, has so far been established. For the time being it would be quite hard to create an analytic and strict writing code in compliance with a linguistics model.

It is suggested that a language of narrative that stems from representation through moving images and is supported by computers can be formed via the combining of existing theories of cinematic language with theories that propose reconsideration or even change-over of conventional forms of narrative.<sup>1</sup> Becoming familiar with the grammar and syntax of cinematic language constitutes the first stage of reading, which is essential for conceiving and further comprehending the message communicated through new media. A person may watch the input and output of information between her and the computer, through a monitor or a projector, which constitutes the visualization field of moving images, accompanied by sound. The projected image follows, to a great extent, the visual and semiotic conventions already known to us, originally from cinema and later from television.

This paper investigates whether individual video fragments belonging to a database may be linked into numerous different successions in order to satisfy fitness criteria defined by the user. The aim is to create optimum sequences in accordance to specific requirements, instead of coming up with a closed predetermined unique sequence, as it is traditionally done by directors.

## Non linear narratives

With reference to interactive narratives and more specifically in the case of interactive cinema, there exists a “live” spectacle, the narrative and duration of which

are activated, controlled and affected by the viewer. The latter does not remain a mere observer: she is simultaneously assigned the role of director, editor and often the lead actor. The computer provides the potential for an interaction process.

Apart from interaction itself, the source of other elements of an interactive artifact, namely the shots and the montage, relate to a certain extent to conventional cinema. Interactive artifacts are hybrid systems constructed by directors as far as their contents and mechanisms are concerned.

New media are still using the cinematic language that recognizes the séquence as the structuring element of the audiovisual transmission system. Cinema differs from other narrative methods in that linear narrative evolves within time and space. The introduction of the time parameter in narrative has imposed a new writing method, able to establish a correlation amongst the protagonists, their surroundings, the story plot and time, via their representation through images and text.

The various potential forms of an interactive play are finite. The creator of the system is in position to forecast in advance the potential forms that the play may exhibit, as a result of interaction with the user. Even in cases when the system has been programmed to pick up an element over a group of elements at random, through the “random” command, it is easy to find all possible combinations that may be applied by the computing system, by means of the probability theory. The number of options for interaction and navigation, as well as the consequent results are predetermined by the system creator.

The computation system that is adequate for exploring evolution as a creative process, entailing any random and indefinite elements of nature and culture, shall be more effective if it operates upon a mechanism simulating natural evolution stages. The discipline that

attempts to simulate nature and living organisms in order to study and comprehend their mechanisms is Artificial Life (AL). Artificial Life is often depicted as an attempt to comprehend complex behaviors through simple rules.<sup>2</sup> The term AL was coined in 1989 by Christopher Langton, who defined it as “the study of man made systems exhibiting behaviors typical of natural living systems”.<sup>3</sup> Genetic algorithms, which are based on Darwin’s theory of evolution, constitute the core method applied to simulate biological genetics through digital computation.

## Creating generative narrative

The creator organizes the database including the audiovisual materials that are to be used for the construction of the final product and also builds up the software mechanism, which will process the composition of the database constituent parts. In a “cinematic” work produced through genetic algorithms, the director’s role is restricted to the shooting and organization of the footage as well as the creation and/or adaptation of the software mechanism of production. Editing is automatically conducted by the system. The role of the director is limited to the “organization” of material so that the computation system can begin and complete the process of narrative composition, without the need of

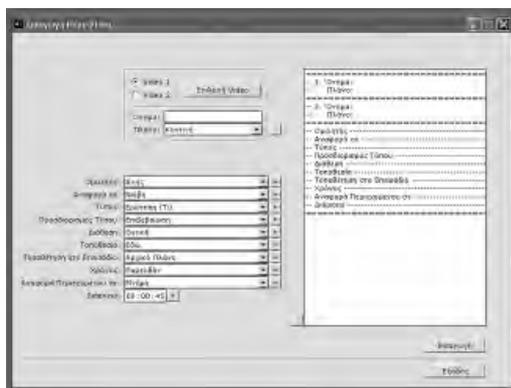


Figure 1: Inserting metadata to a video fragment

any further assistance by the creator. More precisely, the role of the “director” should be appointed to the system, for the creator/organizer provides it with the resources required for the execution of this task. (Figure 1)

The process of a cinematic film production usually results in the creation of a single product. No matter how many times it is screened, the film remains the same. In the system under study, the narrative products that could be built, as a result of the same work functioning, may be countless. Every time the viewer commands the system to start screening, it starts editing the database elements anew. Given the fact that the process is being conducted by genetic algorithms, which constantly alter the produced outcome, the composition of shot is unforeseeable and so is the number of the potential

results. Due to the high complexity of the whole process, there is practically no chance of two outputs being the same.



Figure 2: Juxtaposition of video fragments

The presented system creates narratives starting by the juxtaposition of video fragments. Based on the phenomenon of semantic montage, the viewer attributes causality relationships to the succession of these fragmented micro-narrations which are seamlessly integrated in the sequence. (Figure 2)

In an evolutionary cinematic system, the creator functions as a driving force, a stimulus of a process that goes beyond the scope of the creator’s imagination and may acquire unpredictable forms, in compliance with strict and specific rules. The designer of such a system examines the potential, the limitations and the power of the rules she establishes. She also monitors the formation of the rules she has set.

Systems that “imitate” natural selection processes for the evolution of an entity, set strict rules for the control of the evolutionary process. The results after each stage of evolution may be unpredictable for the constructor but the rules remain unaltered. Computations applied to the management of the genome by transforming it, altering the genotype or handling user interaction remain unaffected by the evolutionary processes.<sup>4</sup>

- 1 Theories that illustrate such an approach were coined in the 1960s, such as Barthes’ and Kristeva’s, concerning the relationships between author–writing and reader–reading.
- 2 Adami C. 1998. *Introduction to Artificial Life*. Berlin: Springer-Verlag.
- 3 Langton C. 1989. <<http://www.vieartificielle.com>>.
- 4 Whitelaw M. 2004. “Metacreation Art and Artificial Life.” The MIT Press, p. 220.