Berlin Remix

Jim Bizzocchi
Simon Fraser University
250-13450 102nd Ave, Surrey, Canada
jimbiz@sfu.ca

Arne Eigenfeldt
Simon Fraser University
8888 University Dr., Burnaby, Canada
arne_e@sfu.ca

Philippe Pasquier
Simon Fraser University
50-13450 102nd Ave, Surrey, Canada
pasquier@sfu.ca

Jianyu Fan
Simon Fraser University
250-13450 102nd Ave, Surrey, Canada
jianyuf@sfu.ca

Le Fang
Simon Fraser University
250-13450 102nd Ave, Surrey, Canada
lfa17@sfu.ca

1. *BERLIN REMIX* AND THE DADA PROCESSOR

Berlin Remix is a demonstration artwork using the "Dada Processor", a generative documentary system being developed by the Generative Media Project at Simon Fraser University in Canada. The system will use encoded rule sets – called "style sheets" – to sequence and emit an ongoing series of short but distinct documentary "films" drawn from a database of video clips. Each clip has associated metadata tags that indicate the visual content, shot length, and emotive value). The style sheet rules will use this metadata to guide the construction of the sequences for each "film" that is emitted. The system is generative, and will require no user interaction to function. The Dada Processor video sequencing system works in tandem with a generative music system ("MuseBots") (Eigenfeldt 2016). Future versions of the work will be coupled with a generative soundscape system ("Audio Metaphor") (Thorogood & Pasquier 2015).

2. CITY FILM GENRE

Berlin Remix is part of a larger project conceived in the spirit of the historical "City Film" or "City Symphony" movement. The most well-known of the city films is probably *Man with a Movie Camera* (Vertov 1929), but the central film in the genre is *Berlin, Symphony of a Great City* (Ruttman 1927). The form thrived in the 1920s and 1930s, and continues to the present day. Works in this genre present the city not as a simple place, but as a living entity – a dynamic collection of activities, systems, occupations, and classes of people. The genre also supports a computational tractability. Manovich (2001) claims *Man with a Movie Camera* is an archetype for "database narrative". Uricchio (1982) states that *Berlin* is a "catalogue of techniques, structures, and iconography". City films are semantically taxonomic in nature – quasi-ordered sets of visuals that can be shaped into a variety of sequences, combinations, and recombinations. A further advantage for this genre is that the films are typically based on the simpler "montage" editing logic rather than the more specified "continuity" editing logic. The montage construction translates more easily to generalisable algorithmic sequencing.

3. STYLE SHEETS AND TAGGING STRUCTURES

We have broken the original *Berlin* film into its component shots (approximately 940), and tagged each shot for content. The tagging structure is hierarchical. One set of tags is based on nine higher-level concepts: economy, government, people, cultural-social, transportation, buildings, nature, animals, materials, time-of-day. Each of these higher-level concept tags has between 3 & 10 more specific lower-level content tags (totaling 65 lower-level tags). For example, lower-level content tags for "Economy" include: wealth, poverty, commerce, restaurants, industry, construction, shipping, signs. Neither the higher-level concept tags or the lower-level content tags are mutually exclusive. A given shot may contain several tags at either level – depending on what is actually seen within the shot.

Each "style sheet" contains a mixture of content information and sequencing instructions. For example, the "Basic Triplets" style sheet has the following form:

- pick a higher-level tag at random.
- pick three lower-level tags at random
- for each lower-level tag, select three shots at random, and present these shots
- pick a second higher level tag at random, and repeat the operation

- pick a third higher level tag at random, and repeat the operation

Based on these instructions, the system will present a "film" consisting of 27 shots with a reasonable degree of conceptual flow and semantic coherence. Another style sheet ("Acceleration") uses the same logical structure as "Basic Triplets." However, "Acceleration" repeats the Basic Triplets sequencing logic for three complete rounds, with each round consisting of fewer shots per lower level tag, and with each shot cut shorter. The pace for this variation therefore speeds up considerably as the film proceeds.

Not all style sheets will rely on randomised content selection. Some will use an "affinities" logic to select shots. "Nature" shots plus "Recreation" shots will produce a film that highlights the more pleasant aspects of urban life. Style sheets with "oppositional" logic will have a markedly different effect. A film that combines sequences tagged "economy/wealth" with those tagged "economy/poverty" will foreground the urban class structures and contradictions that are implicit within the collection of shots.

4. SYSTEM OPERATIONS

The Dada Processor is an advance from an earlier video generative system for Ambient Video (BIzzocchi 2011). The current demo system needs human intervention to select and input a "style sheet". We are developing the code that will allow the system to autonomously select style sheets from a database of style sheets. The design of the fully operational video system can be seen in Figure 1 below.
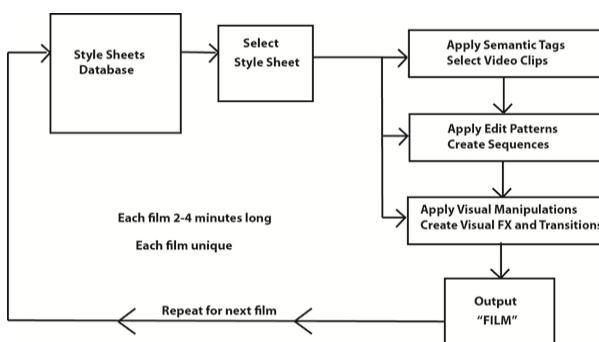

Figure 1: *Dada Processor Generative Video System*

The complete experience includes sound. The system currently works in conjunction with a generative music system ("MuseBots" by Arne Eigengeldt), and the next iteration will work with a generative soundscape system ("Audio Metaphor" by Philippe Pasquier and Miles Thorogood). See Figure 2 below for the cross-system functional design.
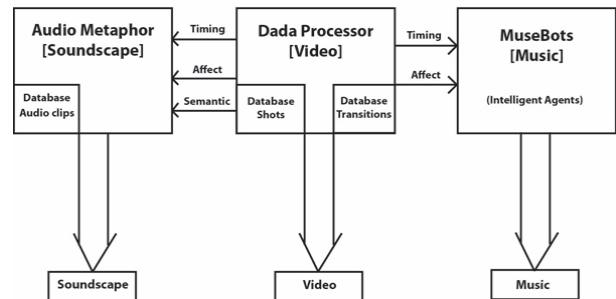

Figure 2: *Cross-system Functionality*

5. REFERENCES

Eigenfeldt, A. (2016) Musebots at One Year, 4th *International Workshop on Musical Metacreation (MUME 2016)*, Paris, France.

Thorogood, M., Pasquier, P. (2013). Computationally Generated Soundscapes with Audio Metaphor. Proceedings of the *Fourth International Conference on Computational Creativity*, Sydney, Australia, 12–14 June, pp. 256–260.

Manovich, L. (2001). *The Language of New Media*. MIT Press, Cambridge.

Uricchio, W. (1982) Ruttmann's "Berlin" and the City Film to 1930 (Doctoral dissertation). New York University, New York, USA. (Copy provided by author.)

Bizzocchi, J. (2011). Re: Cycle – A Generative Ambient Video Engine. In *Entertainment Computing – ICEC2011,* Proceedings of the *10th International Conference (ICEC 2011)*, Vancouver, BC, Canada, 5–8 October, pp. 354–357. Springer, New York.