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Paper: **TOWARDS A MODEL FOR ARTIFICIAL AESTHETICS**

Abstract:
This paper proposes the development of an analytical model, and associated terminology, for computational aesthetic artifacts. Faced with the growing presence and the widespread usage of computational media, studying how they quantitatively transform previous media by remediation and the qualitative transformations induced by their procedural and computational properties, we try to grasp the creative potential and the uniqueness of computational media and to develop a framework for their practice.

As a starting point we resort to Espen Aarseth's typology for cybertexts, studying its adequacy for the analysis of ergodic visual and audiovisual systems and adapting it with new variables and associated possible values. The model is then tested in a set of samples representative of diverse approaches to procedural art, design and other contemporary clusters of activity. A control analysis is developed to assert the usability and usefulness of the model, its capability for objective classification and the rigor of our analysis.

We demonstrate the partial adequacy of Aarseth's model for the study of artifacts beyond text-based systems and expand it to better suit the objects in study. The resulting model produces a good description of the pieces, clustering them logically, reflecting stylistic and procedural affinities between systems that, if studied from their physical or sensorial properties or from their surface structures alone, would probably not be found to be very similar. The similarities revealed by the model are structural and procedural, attesting the importance of computational characteristics for the aesthetic enjoyment of the pieces. We also verify our initial conjectures about the importance of procedurality, not only in the development and implementation stages of the works but also as conceptual grounding and aesthetic focus in artistic creation and appreciation, as an aesthetic pleasure in itself.

Topic: Software Art

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References:
[1] Espen Aarseth, "*Cybertext: Perspectives on Ergodic Literature*", Johns Hopkins University Press, Baltimore, 1997

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Towards a Model for Artificial Aesthetics

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Abstract

This paper proposes the development of an analytical model, and associated terminology, for computational aesthetic artifacts. Faced with the growing presence and the widespread usage of computational media, studying how they quantitatively transform previous media by remediation and the qualitative transformations induced by their procedural and computational properties, we try to grasp the creative potential and the uniqueness of computational media and to develop a framework for their practice.

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1. Introduction

The growing presence of computational media and tools in many areas of contemporary life has brought about a series of changes to be faced by all those that interface with these systems, either as consumers or producers. Any quick survey of contemporary art and design creation allows us to understand that the production of computational aesthetic artifacts is very widespread and that, in spite of contextual variations inherent to each particular field, and regardless of each artifact's function, context or setting of production, there are several similarities to be discovered among them. These new artifacts are created by practitioners originating from very diverse fields that bring with them project methodologies and terminologies that are not always compatible, thus creating obstacles to mutual understanding, cooperation and effective criticism. Besides this, several of the phenomena that are being discovered with or through these media are genuinely new and unprecedented, lacking clear references in other arts or fields of study and consequently also a clear nomenclature, which results in a serious disadvantage for their practice and study.

This work proposes to contribute to the creation and establishment of a terminology for computational media and to the development of a framework for their study and critique that is versatile, plastic, and adaptable enough to accompany the ongoing transformation of these media.

2. Aarseth’s Model

As a starting point we resorted to Espen Aarseth’s model for the analysis for cybertexts [1]. Providing seven variables and their eighteen possible values, this model is able to accurately classify a diverse set of texts selected by its author but it has other advantages: 1) it is not focused on the surface of the artifacts, rather on their structural, functional or procedural traits; 2) it is broad enough to encompass different media and expressions; 3) its emphasis is on common features found across most of the artifacts and not on specific aspects particular to some of these; 4) it recognizes the interactive potential of the media without establishing its precedence over other characteristics; and 5) it is workable, with only two to four possible values for each variable, defining a space of 576 unique positions that is easy to navigate.

While Aarseth’s model focused on the analysis and description of ergodic texts, we aimed towards the study of ergodic visual and audiovisual systems. We tried to assert the efficacy of Aarseth’s model for the analysis of these new artifacts, and to adapt and expand it in search of a better and more comprehensive description of the works under consideration. We tested the seven original variables for suitability, and adapted them whenever necessary, ultimately managing to use all but one in the new model.

3. Data Collection

We compiled a set of samples that could represent diverse approaches to procedural creation, focusing particularly on visual aesthetic creation and communication. We collected a series of pieces of our own choosing but we were aware that a personal selection could be biased towards the model in development. This was avoided by requesting an external selection of works from three artists with teaching, critique or curation experience in media or digital arts. After being informed about the nature of the project, we were provided with 36 works to be added to our original list for a total of 54 pieces:

1. Raymond Queneau, *Cent Mille Milliards de Poèmes* (1961);
2. Magnus Bodin, *Cent Mille Milliards de Poèmes* (1997);
3. William Gibson, *Agrippa (a book of the dead)* (1992);
4. Christa Sommerer & Laurent Mignonneau, *A-Volve* (1994);

5. Karl Sims, *Evolved Virtual Creatures* (1994);
6. Olia Lialina, *My Boyfriend Came Back From the War* (1996);
7. John F. Simon Jr., *Every Icon* (1997);
8. Matthew Lewis, Sketch (1998);
9. Roman Verostko, *Seven Sisters: The Pleiades* (1998);
10. Camille Utterback & Romy Achituv, *Text Rain* (1999);
11. Golan Levin, *Yellowtail* (2000) and *Merce's Isosurface* (2009);
12. Soda, *Soda Constructor* (2000);
13. Marius Watz, *Amoebaabstract 01*(2002);
14. Marius Watz, *Amoebaabstract 02* (2002);
15. Marius Watz, *Amoebaabstract 03* (2002);
16. Andy Huntington and Drew Allan, *Cylinder* (2003);
17. Jared Tarbell, *Substrate* (2003);
18. Mark Napier, *Black & White* (2003);
19. Andreas Müller, *For All Seasons* (2004);
20. David Lu, *Droom Zaacht* (2004);
21. James Paterson, *Page 0* (2004);
22. Jared Tarbell, *Happy Place* (2004);
23. Meta, *Emeral* (2004);
24. Jan Robert Leegte, *Three Buttons* (2005);
25. Leonardo Solaas, *Dreamlines* (2005);
26. Mario Klingemann, *Ornamism* (2005);
27. Miguel Carvalhais, Pedro Tudela, and Lia. *30x1* (2005);
28. Alex Dragulescu, *Extrusions in C Major* (2006);
29. Boris Müller, *Poetry on the Road* (2006);
30. C.E.B. Reas, *Process 16* (2006);
31. Jonathan Harris & Sep Kamvar, *We Feel Fine* (2006);
32. Oliver Laric, *Moving Pixel Portraits* (2006);
33. C.E.B. Reas, *Process 18* (2007);
34. Eno Henze, *Der Wirklichkeitsschaum* (2007);
35. Golan Levin and Zach Lieberman, *Reface* (2007);
36. Lab[au], *Pixflow #2* (2007);
37. Meta, *Folia* (2007);
38. Michael Kontopoulos, *Inner Forests* (2007);
39. Andreas Nicolas Fischer, *A Week in the Life* (2008);
40. Andreas Muxel, *Connect* (2008);
41. Brandon Morse, *A Confidence of Vertices* (2008);
42. Karsten Schmidt, *Enerugii* (2008);
43. Karsten Schmidt, *Print magazine cover design* (2008);
44. Universal Everything & Karsten Schmidt, *Nokia Friends* (2008);
45. Universal Everything & Karsten Schmidt, *Forever* (2008);
46. Erik Natzke, works from the *Colors of Nature* exhibition (2009);
47. FIELD, *Animations for Aol. Rebrand* (2009);
48. Golan Levin, *Merce’s Isosurface* (2009);
49. Julius von Bismarck and B. Maus, *Perpetual Storytelling Apparatus* (2009);
50. Lia, *phiLia 01* (2009);
51. Paul Prudence, *Talysis II* (2009);
52. Zach Gage, *temporary.cc* (2009).
53. Auriea Harvey and Michaël Samyn, *Vanitas* (2010);
54. Hans Hoogerbrugge, *The Inability To Solve a War at a Cocktail Party* (2010).

4. Variables

4.1 Dynamics

The first variable in Aarseth's typology describes the contrast between the behavior of signs in a *static* system, where they are constant, from that observed in dynamic systems, where either surface or deep structures can vary. Two of the original possible values for dynamics were repurposed from the original *intratextonic* and *textonic dynamics* to the more adequate new values of *surface* and *deep unit dynamics* (SUD/DUD), following the nomenclature proposed by Barrat [2].

4.2 Determinability

Determinability concerns the stability of an artifact's traversal function, i.e., whether multiple interactions with the same artifact will result in exact repetitions of the same experience or if, on the contrary, they will evolve differently. *Determinable* systems will repeatedly behave similarly and will allow the reenactment of previous experiences, while *indeterminable* systems may lead the traversal function as much as, or even more than the users themselves, driving the experience into unknown territories and forcing users to adapt or react to new usage scenarios.

4.3 Transiency

Transiency is related to the temporal existence of the artifact. If the mere passing of time causes changes in the outputs of the artifact then it is *transient*, otherwise it is *intransient*.

4.4 Perspective

Aarseth's perspective focuses on the text requiring the user to play a strategic role as a character in its diegesis, in which case it is *personal,* otherwise being *impersonal*. Although our analysis included some narrative pieces, their inclusion was motivated by form, structure and behavior, not by narrative aspects. This resulted in a universal classification of perspective as always being impersonal. A complete model of procedural media must address narrative properties but, recognizing that their study would add a layer of complexity to this work, we chose to leave it outside the scope of this study, hoping to reincorporate it in the future.

4.5 Access

This variable describes whether the entirety of the artifact or its outputs are available to the user at all time, in which case the access is *random,* or if alternatively, the access is *controlled*.

4.6 Linking

Linking describes the existence of devices or rules that lead the user through the traversal and whether the access to these is *explicit* or *conditional*.

4.7 User Functions

The last variable in Aarseth's typology describes which user function is present in each system, besides an omnipresent *interpretative* function. In the *explorative* function the user is free to define which path to follow along the traversal of the artifact, while in the *configurative* function the user may be able to arrange or to create new surface or deep structures. The original *textonic* function was initially replaced by a new *structural* function, not limited to textual forms, but it was eventually concluded that the previously existing *configurative* function already described this behavior, therefore we reduced the number of possible values to three: *interpretative, explorative* and *configurative*.

The original variables of dynamics, determinability, transiency, access, linking and user functions proved to describe relevant aspects of the pieces, while perspective was demonstrably not contributing to the new model. In an attempt to achieve a more complete description of the artifacts under study, we introduced three new variables to the model: *modes, autonomy* and *class*.

4.8 Modes

Modes attempts to quantify how many levels of perception are involved in the reading of a system's outputs. Quantifying modes is not the same as quantifying the number of physical dimensions in which the output of a system is produced; it rather concerns the reception of the system's outputs. We followed a physical and sensorial definition of modes, bound to the regimes of human perception, as proposed by Whitelaw [3]. Following Strickland [4], we expanded the definition of mode to include the perceptions (and derived aesthetic pleasures) of mathematics (or logical procedures and structures) and motion, thus raising the total number of possible modes to five: visual, audial, haptic, movement and procedural.

4.9 Autonomy

Autonomy is included as a descriptor of a system's capacity to generate novelty, or to be creative to some degree, without resorting to external inputs (whether machinic, human or both). *Autonomous* systems are those that either contain or generate all the data that they need to work and that, in doing so, produce novel outputs. All other systems, fed by external sources of information, are classified as *data-driven* and regarded as systems where the author or user keeps a good measure of agency.

4.10 Class

This variable classifies the computational class — understood after Wolfram's definition [5] and Rucker's interpretation [6] — to which a system's output belongs. From various possible understandings of this variable, we chose to classify the outputs according to which class of computation they may develop or represent. Consequently, most static intransient outputs are classified as class 1, most of the static transient outputs as being class 2, and all those that exhibit complex behaviors as being class 3 or 4, the structure of the outputs determining whether the system is classified as class 3 (random, totally unpredictable) or class 4 (structured, at least locally, and at least partially predictable).

Table 1: The nine variables and their possible values.

Dynamics	static, SUD, DUD
Determinability	determinable, indeterminable
Transiency	transient, intransient
Access	random, controlled
Linking	none, conditional, explicit
User functions	interpretative, explorative, configurative
Modes	1-5
Autonomy	autonomous, data-driven
Class	1-4

5. Analysis

Still following Aarseth's methodology, we used the R environment for statistical computing and the CA package [7] to develop a Multiple Correspondence Analysis on the data.

Table 2: Multiple correspondence analysis results.

Number	**Eigenvalue**	**Inertia**	**Cumulated**
1	0.342199	54.1	54.1
2	0.054562	8.6	62.7
3	0.032972	5.2	68.0
4	0.023009	3.6	71.6

This allowed us to plot the results of the analysis as a two-dimensional graph, using the first two synthetic axes produced by the MCA and describing 62.7% of the data variation.

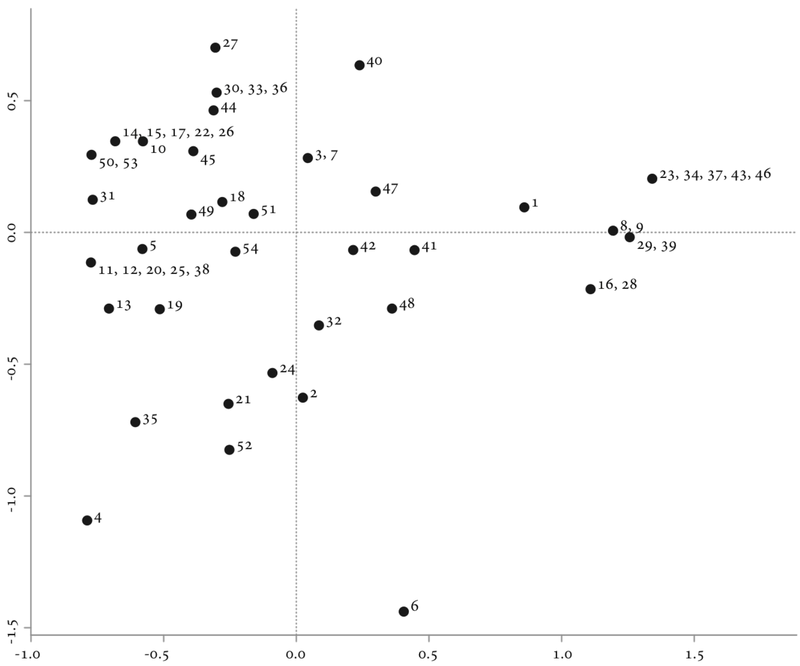

Figure 1: Plot of the first two synthetic axes of the MCA, showing only the systems.

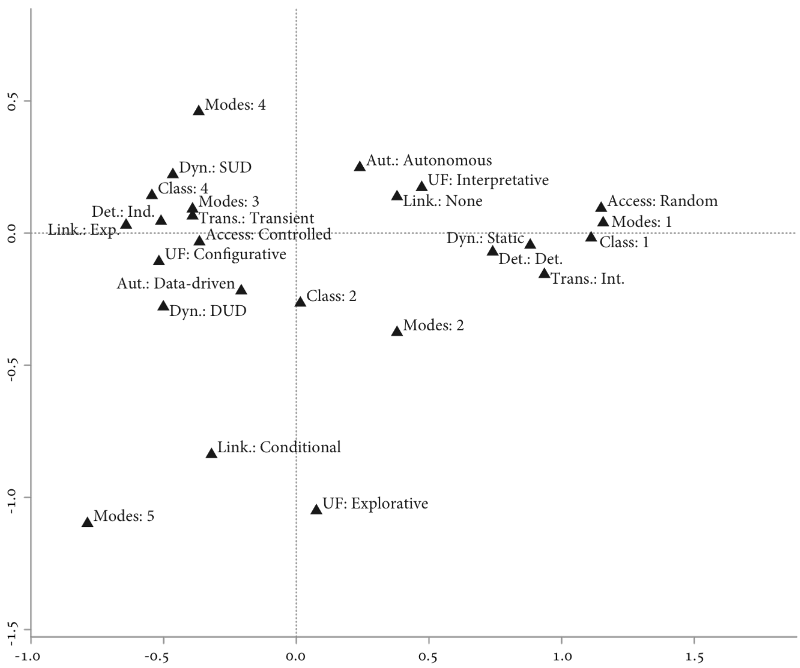

Figure 2: Plot of the first two synthetic axes of the MCA, showing only the categories.

Table 3: Classification of the 54 systems.

Piece	Dynamics	Determinability	Transiency	Access	Linking	U. Functions	Modes	Autonomy	Class
1	Static	Determinable	Intransient	Random	None	Configurative	3	Autonomous	1
2	DUD	Indeterminable	Intransient	Controlled	Conditional	Configurative	1	Autonomous	2
3	SUD	Determinabl	Transient	Controll	None	Interpretati	3	Autonomo	2

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4	DUD	Indeterminable	Transient	Controlled	Conditional	Configurative	5	Data-driven	4
5	DUD	Indeterminable	Transient	Controlled	None	Configurative	3	Data-driven	4
6	Static	Determinable	Intransient	Controlled	Conditional	Explorative	2	Data-driven	2
7	SUD	Determinable	Transient	Controlled	None	Interpretative	3	Autonomous	2
8	Static	Determinable	Intransient	Random	None	Interpretative	2	Autonomous	1
9	Static	Determinable	Intransient	Random	None	Interpretative	2	Autonomous	1
10	SUD	Indeterminable	Transient	Controlled	None	Configurative	4	Data-driven	4
11	DUD	Indeterminable	Transient	Controlled	Explicit	Configurative	3	Data-driven	4
12	DUD	Indeterminable	Transient	Controlled	Explicit	Configurative	3	Data-driven	4
13	SUD	Indeterminable	Transient	Controlled	Conditional	Configurative	3	Data-driven	4
14	SUD	Indeterminable	Transient	Controlled	Explicit	Configurative	3	Autonomous	4
15	SUD	Indeterminable	Transient	Controlled	Explicit	Configurative	3	Autonomous	4
16	Static	Determinable	Intransient	Random	None	Interpretative	2	Data-driven	1
17	SUD	Indeterminable	Transient	Controlled	Explicit	Configurative	3	Autonomous	4
18	SUD	Indeterminable	Transient	Controlled	None	Interpretative	3	Data-Driven	2
19	SUD	Indeterminable	Transient	Controlled	Explicit	Configurative	2	Data-driven	2
20	DUD	Indeterminable	Transient	Controlled	Explicit	Configurative	3	Data-driven	4
21	SUD	Indeterminable	Intransient	Controlled	Explicit	Explorative	2	Data-driven	4
22	SUD	Indeterminable	Transient	Controlled	Explicit	Configurative	3	Autonomous	4
23	Static	Determinable	Intransient	Random	None	Interpretative	1	Autonomous	1
24	DUD	Determinable	Transient	Controlled	None	Configurative	2	Data-driven	2
25	DUD	Indeterminable	Transient	Controlled	Explicit	Configurative	3	Data-driven	4
26	SUD	Indeterminable	Transient	Controlled	Explicit	Configurative	3	Autonomous	4
27	SUD	Indeterminable	Transient	Controlled	None	Interpretative	4	Autonomous	4
28	Static	Determinable	Intransient	Random	None	Interpretative	2	Data-driven	1
29	Static	Determinable	Intransient	Random	None	Interpretative	1	Data-driven	1
30	SUD	Indeterminab	Transient	Controll	None	Interpretati	3	Autonomo	4

		le		ed		ve		us	
31	SUD	Indeterminable	Transient	Controlled	Explicit	Configurative	3	Data-driven	4
32	Static	Determinable	Intransient	Controlled	Explicit	Configurative	3	Data-driven	2
33	SUD	Indeterminable	Transient	Controlled	None	Interpretative	3	Autonomous	4
34	Static	Determinable	Intransient	Random	None	Interpretative	1	Autonomous	1
35	DUD	Indeterminable	Transient	Controlled	Conditional	Configurative	3	Data-driven	2
36	SUD	Indeterminable	Transient	Controlled	None	Interpretative	3	Autonomous	4
37	Static	Determinable	Intransient	Random	None	Interpretative	1	Autonomous	1
38	DUD	Indeterminable	Transient	Controlled	Explicit	Configurative	3	Data-driven	4
39	Static	Determinable	Intransient	Random	None	Interpretative	1	Data-driven	1
40	Static	Indeterminable	Transient	Random	None	Interpretative	4	Autonomous	4
41	Static	Determinable	Transient	Controlled	None	Interpretative	2	Autonomous	2
42	Static	Determinable	Transient	Controlled	None	Interpretative	3	Data-driven	2
43	Static	Determinable	Intransient	Random	None	Interpretative	1	Autonomous	1
44	DUD	Indeterminable	Transient	Controlled	None	Interpretative	4	Autonomous	4
45	SUD	Indeterminable	Transient	Controlled	None	Interpretative	3	Data-driven	4
46	Static	Determinable	Intransient	Random	None	Interpretative	1	Autonomous	1
47	Static	Determinable	Transient	Controlled	None	Interpretative	3	Autonomous	2
48	Static	Determinable	Transient	Controlled	None	Interpretative	2	Data-driven	2
49	DUD	Indeterminable	Transient	Controlled	None	Interpretative	3	Data-driven	4
50	SUD	Indeterminable	Transient	Controlled	Explicit	Configurative	4	Data-driven	4
51	DUD	Indeterminable	Transient	Controlled	None	Interpretative	2	Autonomous	4
52	DUD	Indeterminable	Transient	Controlled	Conditional	Configurative	2	Data-driven	1
53	SUD	Indeterminable	Transient	Controlled	Explicit	Configurative	4	Autonomous	4
54	SUD	Determinable	Transient	Controlled	None	Configurative	3	Data-driven	2

6. Control Analysis

We tried to devise this model to allow for objective classifications, reducing the subjectivity of the classifier to a minimum. It is however impossible to ignore the influence of subjective factors in the classification. Trying to test both our analysis as the definitions of the variables, we decided to elaborate a second analysis, providing documentation of the systems and a description of the model to an independent analyzer, in order to assess whether (and to what extent) their classification would match ours. A colleague of ours, lecturer in communication design, who is working on a doctoral thesis on audiovisual interactive media, developed the control analysis. The sharing of a repertoire of references was an influential aspect in the selection of the analyzer but it did not mean that the understanding of the model was straightforward.

Most variables were swiftly understood and their analysis (developed independently and without a prior knowledge of our results) was largely uneventful. The modes variable was that which presented a greater challenge, especially in the classification of the procedural and haptic modes. The control analyzer tended to classify as haptic all those systems where there was a level of interaction, independently of the devices used in the process (standard controllers such as a computer mouse or keyboard or, alternatively, dedicated controllers that can be considered to heighten the haptic awareness and involvement of the user). It also tended to identify the procedural mode in more instances than those found in our original analysis. We believe that this happened because the control analyzer regarded the outputs of a system as always being part of the system and not as independent artifacts that may or may not be procedural or able to communicate the procedurality of the system that produced them.

After conclusion the control analysis revealed a divergence of 7.4% of the total number of variables analyzed: 36 differing classifications in a total of 486.

Table 4: Divergences between our analysis and the control analysis (total and percentage).

Variable	**Total divergences**	**Percentage**
Dynamics	3	5.55%
Determinability	0	0%
Transiency	0	0%
Access	0	0%
User Functions	1	1.85%
Linking	2	3.70%
Modes	23	42.59%
Autonomy	0	0%
Class	7	12.96%

The modes variable was where a greater divergence was identified. This is not, as it may seem at first sight, a sign of arbitrariness in the classification. It is rather, we believe, the effect of differences in the understanding of the nature of the procedural and haptic modes and on their positive identification in more instances than those accounted in our analysis. When comparing both analyses of the modes variable, we find that in almost all cases the divergence is explained by the extra classification of procedural (in 8 cases) or haptic (in 12 cases) modes for a given system. Only in three of the divergences the control analysis identified a lower number of modes than the original analysis. Should we choose to disregard the extra modes found in the control analysis as consequences of a vague definition of the modes, we can interpret the divergence in modes as being much lower, around 5.5%. It should be noted that divergences in the simultaneous classification of two of the variables were only found in six of the systems.

7. Findings

Somewhat predictably, the periphery of the graph plotting the artificial aesthetic systems was taken by works such as *A-Volve* (4), *30x1* (27) and *Connect* (40), which originally stood somewhat apart from the rest of the selection (as well as from each other) due to their physical characteristics. The most isolated system is *My Boyfriend Came Back from the War* (6), which also happens to be the only narrative hypertext in the lot. Although isolated, it is nevertheless plotted in a logical location. In the east edge of the plot we can find a population of printed or otherwise static outputs, while the west area is predominantly populated by interactive systems. If we circumscribe the areas occupied by interactive and non-interactive systems, we find that they do not overlap and create two well-defined islands in the graph.

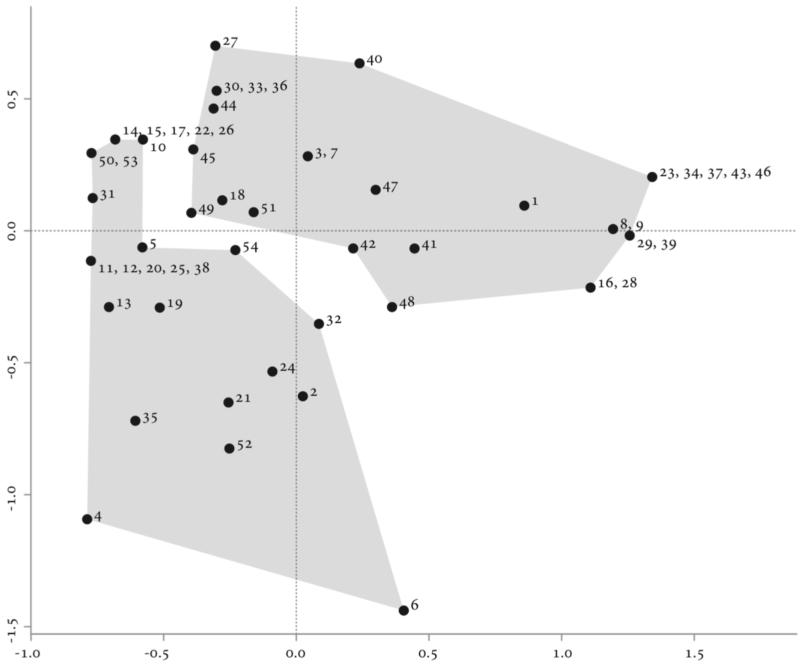

Figure 3: Interactive (south-west quadrant) and non-interactive (north-east quadrant) systems.

A closer look at the determining categories encompassed by each of these areas may allow us to understand which values are most typically associated with each group. In the east quadrant we find that the non-interactive pieces are mostly static, determinable, intransient and randomly accessible, with no linking, and characterized by an interpretative user function. Deep unit dynamics, conditional linking and explorative and configurative user functions characterize the interactive systems in the west quadrant, that also tend to concentrate more modalities and to develop higher computational classes.

The only book among the pieces, *Cent mille milliards de poèmes* (1), sits in the middle of the non-interactive island. Its placement raises the question of whether books can be seen as interactive devices or if they are simply configurable artifacts. Following the definition proposed by Schubiger [8] of an interactive system as one that supports communication in both directions, from user to system and back, or that by Lippman, who sees interaction as "mutual and simultaneous activity on the part of both participants, usually working towards some goal, but not necessarily" [1], it becomes clear that regardless of which particular reconfigurations may be developed, a book should not be seen as an interactive system.

A circumscription of the systems producing computer-based outputs also allows us to understand a clear division between two groups. This is not simply a split between class 4 systems and class 1 and 2 systems, it can be seen as a separation between systems that produce outputs that are real-time computations from those that do not.

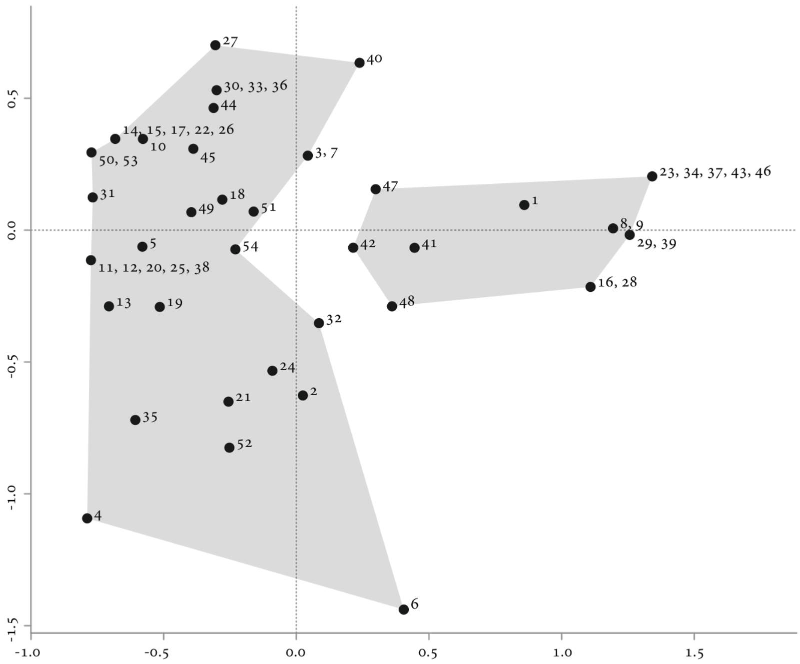

Figure 4: Computer-based (west) and non-computer-based (east) systems.

The plot does not allow us to infer much about an eventual genre partitioning of the systems, and we wonder whether this can be seen as a shortcoming of the model or if, on the other hand, genres are simply too undefined, broad, or blurred in computational media to be able to recognize encompassing genre definitions that can be applied to such a varied group of pieces. If we look at groups of pieces plotted in coincident coordinates, we discover that even when trying to fit traditional genre descriptions such as sculpture, painting or drawing, the boundaries are not clear. We can for example find two of the most rapidly identifiable sculptural works, *Cylinder* (16) and *A Week in the Life* (39), plotted near each other but nevertheless in different coordinates, and sharing their respective positions with two visual-only outputs that can be classified as drawings or illustrations. We do find that all linear videos are plotted in neighboring positions but still not necessarily sharing the same exact coordinates, something that is far more common among printed or plotted outputs. It is also interesting to discover that two of the pieces where a certain directionality (and irreversibility) of time is patent — *Agrippa* (3) and *Every Icon* (7) — share the same coordinates and are therefore plotted in the same location, although at first sight they may seem to be very different systems, working in somewhat different media and belonging to different genres or artistic typologies.

7.1 Future research

We intentionally bounded our analysis to aesthetic systems that could be classified either as visual arts or as communication design, preserving a few works that were also analyzed by Aarseth and that can be classified as literary. We recognize that a broader field of analysis would be desirable, incorporating works from other fields of design or art. Although this was not done in the present work, the common characteristics discovered among the analyzed works lead us to believe that such a follow-up study should be developed. Future research will hopefully allow us to refine this model, further developing the study of the procedural and haptic modes, as better definitions are necessary to eliminate as much subjectivity as possible from the classification.

All artificial aesthetic systems are actions and processes and these always constitute some sort of narrative. A complete study of procedural media thus needs to include their narrative properties without loosing sight of the remaining procedural aspects. Although we can imagine a partition between the study of rule-based and story-based aspects of the systems, we long for a dialectic model to be used in the study of narrative procedural systems, where one can manage to reincorporate *perspective* as it was originally defined by Aarseth. In the future we hope to further develop the model, studying narrative as a phenomenon that emerges from procedurality, particularly from the procedural modality and from the human desire to witness the unfolding of processes.

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