

Computers and New Models for the Historiography of Art



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An examination of the evolution in art research leads to the conclusion that historiographical models developed in the 19th century became simplistic and obsolete, and art historians have not yet replaced these antiquated models with more suitable ones. Oskar Bächtshmann proposes in the following essay to solve the historiographical problem by an empirical method. With this approach and with the assistance of the computer, more realistic models might be generated.

The following essay may include some suggestions which are difficult to translate into practice. Their value may not even lie in realization. Realizable models are another problem. In this case we are only dealing with suggestions for the development of intelligent models. The following suggestions may be far-fetched; however, the issues remain simple and to the point. I start with two current problems in art history: the one concerning computer applications beyond data acquisition and word processing, the other concerning the absence of valid historiographical models. The problem I am about to tackle may be defined as follows: Is it possible to generate art historiographical models with computers, to determine the necessary information, and furnish the models with data?

1. The Need for a Logic of Historiography

The history of art includes two main areas of theoretical and methodological research: interpretation and historiography. Of course, these two fields must be ploughed again and again, but the imperatives of the endeavour vary. It may be that the preoccupation with one area is sufficient for a certain period of time and that interest shifts to the other area because methodological problems arise. This was the case with problems of interpretation for some time; today it rather applies to historiography, as the criticism of historiographical models and terminology indicates. A new assessment of the term "avant-garde" uncovered the close relationship between its use in art history and the original military concept. (Another example of this would be a term like "break-through of modernism") (1). Simultaneously it becomes apparent that the evaluation of artistic production is not easily disassociated from the idea of progress. Innovation (the new invention) is still valued more highly than repetition or perseverance. Historiography of art is traditionally linked to the evaluation of artistic occupation and its creations. The historiographical

pattern expresses a system of values and, on the other hand, provides a measuring device which can be used objectively. Even though simple models (such as the biological one of growth, maturity and decay, and that of the linear succession of styles) are nearly obsolete, they still, in their run-down condition, control the valuations and perceptions of progress. The dissolution of the linear succession and the discovery of survival and revival of styles led to the interpretation of periods in art history following the astrological patterns of the Ptolemaic system. However, the Copernican hypothesis has not yet been introduced into historiography. The historiography of art follows to some extent the logic of astrology, as the use of the astrological term "influence" indicates. We continuously talk and write about the influence artist A had on artist B, or about artist B being under the influence of A. We hardly realize that in describing a historical relationship between two or more subjects, we use an astrological concept in which the stars exercise power over their subjects. Failing to realize this, we rashly declare our astrological interpretation of history to be a scientific concept.

If we endeavour to take art and its history seriously, we will quickly discard the astrological model as suspicious, just we did with the biological concept, the military terminology, or the idea of linear progress. Nevertheless, developing new concepts is difficult indeed. To merely replace the linear succession of styles with pluralism remains inadequate, since it continues to employ the notion "style". George Kubler suggests in "*The Shape of Time*" (1962) replacing the obsolete iconographical sequences with primary objects and formal sequences. Yet it seems that the rejected concept of history based on iconographical sequences persists in the new configuration (2). We immediately notice a lack of understanding of the historical meaning as soon as we change the subject of history and attempt to change the historical explanation of works of art. Art history

has more or less disregarded the discourse on historical meaning which prevails in history as a science. We analyze the synchronous relation of art and context, but we are unable to interpret our findings. We ignore the reasons underlying the connection between a work of art and the patterns historical evolutions follow, and the degree to which we really are able to explain the characteristics of the works. We use interpretation *ad hoc*, incidentally, by transference through precedence. Just as the discourse of the historical sciences was not acknowledged, neither were the models and the research of the new geography and cultural geography, which are based on a quantitative approach (4). The use of the diachronic construction of history is by far the most ineffective. Its application is therefore usually restricted to a popularistic level. It is perhaps the only approach left which is based on the assumption that history has a subject (art) and that

its continuity and evolution can be explained. But what can be considered the subject of this history? The differentiation of individual periods is based on various formal attributes of the objects. It seems impossible to break down these partitionings as well as to introduce other differentiations which are based on a more complex system for identifying the characteristics.

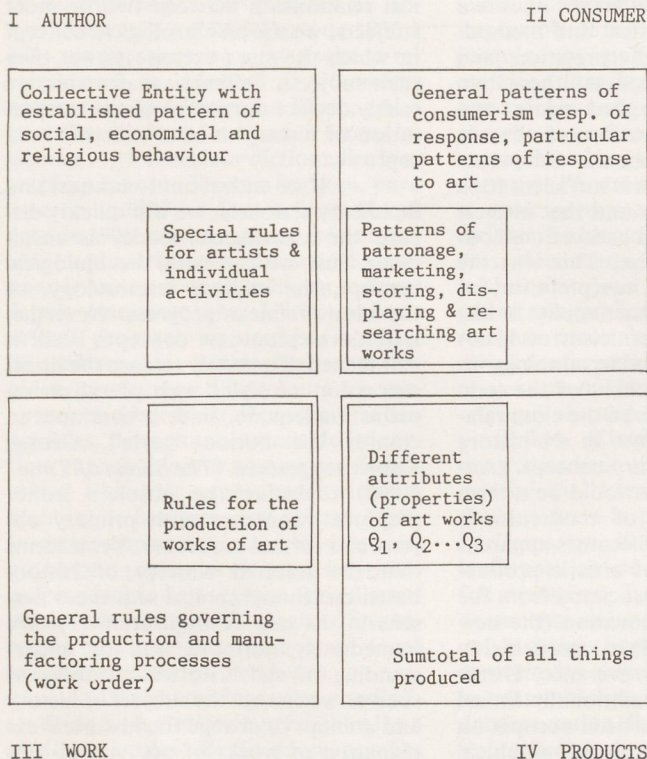
It is not necessarily aberrant to consider the idea of history of art itself obsolete, because we have difficulties defining the subject of this history or interpreting the meaning of its evolution (5). The most valid approach seems to lie in synchronous analyses with a severely reduced diachrony. However, it is not quite clear whether or not this statement merely reflects our experience with contemporary art, simply illustrating our lack of a valid theory of history.

2. Fields of art historical concern

The structure (Ill. 1) in the shape of a double, four-leaf clover represents fields of art historical concern and can be used to explain simple partial models. The diagram is very simple; it includes only those fields which are

considered to be of art historical relevance: the authors, their creations, effective work and the response (the way the creations are used). Each field is subdivided into the total volume and a partial volume; e.g., works of art belong to the total volume of all artefacts produced by men and are identifiable by a variety of attributes. Or: the principles for producing art (objects with the attribute Q_1, Q_2, \dots, Q_n) are part of the general principles for producing anything. The structure is only illustrating the definition of the fields of art historical concern. It bears no indication of time or space. The analysis of the various relationships between total volume and partial volume or between the different fields is the fascinating part of this representation. The first level of investigation would be synchronous (e.g. establishing a series of different attributes of works of art in relation to the entire volume of artefacts at a given place and at a given time). Furthermore, it would be possible to examine the relation of the object displaying the particular attributes with the general principles of consumerism or with the principles of the response to art in particular within a given time frame. It would be equally possible to analyze the different attributes and the different interpretations of attributes in different time periods. In grading the time frames closely enough, trends could be distinguished, changes, continuities or ruptures identified. Regarding contemporary art, it might be possible to establish a valid distinction between art and non-art. Maybe it would become obvious that there is no distinction in the quality of the objects. There is no difference between the attributes of a block of scrap-metal leaving the shredder and those of the block on display at the Ludwig Museum in Cologne. Nevertheless, there is a clear distinction between a ton of scrap metal and a work of art, a distinction consummated by the declaration of the artist, the acceptance of the declaration, the place of display and the sanctioning of patterns of behaviour. In examining the previous distinction it would be interesting to establish at what rate and why the change occurred. These analyses would provide on the other hand quite exact criteria referring to notions such as "change", "transformation", "rupture", etc. The simple configuration of the cloverleaf lends itself to the discovery of a systematic (not historical) correlation. The diagram could be amplified to a certain extent in order to include a more complex model of a historiography of art allowing for evolution over time. It might be im-

Illustration 1:
Fields of art historical concern.



possible to render such a model graphically and a description would be far too complicated. Of course, it would be a model representing a *historiography* (not a history) of art.

In the material construction of art history (objects of art history instead of art and history) the question relating to history and its subject is dealt with in a most unsatisfactory way: it is relegated to the realm of the thing-for-itself. However, even recognizing the necessity of a theory providing for categories of criticism, I see no possibility to reconcile a constructed history with a "history-for-itself". Only a meticulous reading of the individual fields and their correlation, and a clear definition of the terminology through partial models would open the way for this possibility. It remains to be seen whether or not partial models could be imagined and assembled for this purpose. They would have to determine the kind of data required, and furnish the formal prerequisites for processing the data in order to recognize historical evolutions.

3. Partial Models

After having outlined some of the present lack of a historiographical logic and having illustrated the structure of a historical construct, I would like to submit a few charts to give an impulse to developing partial models. In doing so I aim at three goals: to control the gathering of information and the corresponding kinds of data, to explore the possibilities of processing, and to arrive at the historiographical determination of art through the application of modern methods of data acquisition and processing based on formalized methods of historiography. As implied above, not everything will be practicable, but the advantage of such an endeavour is surely a newly-acquired insight into our historical models – an advantage which is not to be underestimated.

I shall first explain a basic Model of Diffusion (Ill. 2) in order to complete the model in the following by introducing a time vector. The basic diffusion model can demonstrate the following: products with certain properties are first manufactured at a place A; consecutively also at the places B, C, D, E, objects with the same attributes are produced. Finally, a majority of places manufacture products with the same properties as characterized product A initially. This process is called *diffusion through expansion*. Cultural geographers differentiate with Torsten Hägerstrand various other kinds of diffu-

sion which I shall not consider in this context (6). The model we are dealing with is the center-periphery model. It is suitable to illustrate the diffusion of the production of objects with known attributes (Q_1, Q_2, \dots, Q_n) and of the response to objects with these qualities; i.e., it may be applied in demonstrating the diffusion of the *Sacra Conversazione* as well as Coca-Cola consumption or denim fashions. The individual illustrations show a particular situation at a particular time. (Ill. 2 represents an initial stage and a final stage). A process would have to be represented by a series of individual stages or by differentiated temporal fields. Ill. 3 serves as an example of the introduction of a time vector into the image of a diffusion process. It should be considered at this point whether a spatial presentation would be better suited to demonstrate the dynamics of the expansion. This would lead to the development of three-dimensional models which would have to be flexible with respect to the dynamics of distances as well. Ill. 4 represents – for better understanding – a section through a structural diffusion-model with a non-linear relation of distance and time.

We are considering here a slow evolution in the beginning with an accelerated expansion following. This axiomatic illustration remains theoretical in comparison with the actual process. The elasticity of the model would have to be amplified to truly represent delays, accelerations, etc. Ill. 5 is based on "normalized" dynamics approximating an improved presentation of the time-space interactions.

The first target of such basic or advanced models is the definition of the kind of information and the volume (or density) necessary in illustrating an actual diffusion. I consider it possible to determine the kind of data required to build the individual models. As soon as this is established it is possible to determine whether it is possible to gather the information for a particular instance. It is possible that in working on the description and cataloging, one or

Illustration 2:
Model of Diffusion
(Diffusion through Expansion).

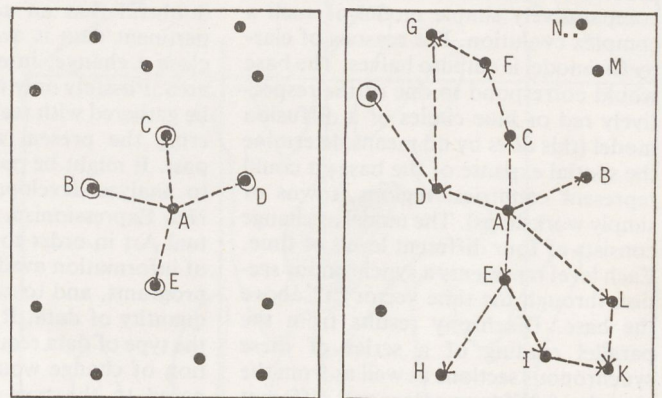
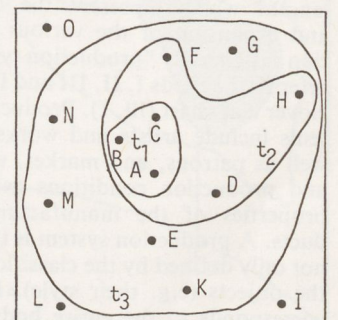


Illustration 3:
Model of Diffusion through the
Time-Periods t_1, t_2, t_3 .



more (easily available) types of information are systematically neglected because it is not obvious that they are crucial for the historiographic evaluation (not for the description!). On a second level, programs are developed for processing the information and its presentation in a series of time frames. Art history will be able to base itself on modern cultural geography, which makes use of quantitative methods.

The time-space diffusion is a comparatively simple process. It should be possible to gather the required data, determine the necessary density, and develop one or more programs in order to start a pilot project testing the potential on selected prototypes. It is difficult to predict the actual value of these prototypes of models, data-acquisition and processing in time frames. The invaluable benefit will most certainly consist in becoming more cautious in making statements about historical evolutions.

However, it seems feasible to expect the possibility of comparing several diffusion processes, particularly in collaboration with cultural geography. The comparisons and differentiations could lead to new attempts at historical interpretation with regard to questions of why a certain evolution took a certain direction. The problems become more intricate if we attempt to deal with the complex process of historical *change* rather than remaining with the more basic process of diffusion. Ill. 6 represents a comparatively simple model of such a complex evolution. For reasons of clarity the model is cut into halves. The base would correspond to one of the respectively red or blue circles of a diffusion model (this does by no means determine the spatial expanse of the base; it could represent countries, regions, towns or simply workshops). The model of change consists of four different levels of time. Each level represents a synchronous section through the time vector "t" above the base. Diachrony results from the parallel reading of a series of these synchronous sections as well as from the strands of different colors and different lengths which represent the duration and expansion of the various production systems. By "production systems" I refer to the fields I, II, III and IV of the clover leaf chart (Ill. 1). Production systems include artists and workshops as well as patrons, and market, working, and production conditions as well as properties of the manufactured products. A production system is therefore not only defined by the classification of the objects (e.g. their style). It rather corresponds to the entire body of de-

termining criteria art history has developed, reducing it to a workable size. In Ill. 6, the production systems, after having passed through several levels of time, generate a new isochromatic field which represents identical systems at the identical place.

Level t_1 shows an initial state: within a larger blue area, several red production systems have begun. Between t_1 and t_2 , new red systems appear or blue ones change into red ones. In the following synchronous section, t_2 , the red production field, has significantly increased in size. Between t_2 and t_3 , new green production strands appear. Level t_3 represents the most complex situation: in the center of its area a new green production field appears, the red one expands towards the edge, and the blue strands cease on this level altogether. In section t_4 , the same situation as in t_1 appears, however with different production systems.

This model of change is admittedly simple; however, when compared to simplistic models, it is pluralistic. It is biased insofar as "innovation" (the change from red to green) takes place in the center of the field, whereas succession and later evolutions are taking place off-center. The model is flexible enough to accommodate developments in the opposite direction.

The critical point of this model is the determination and acquisition of data. Even more than in the establishment of the diffusion model, it seems doubtful that an adequate volume of pertinent data is available to fully disclose a change, in even a very reduced area. Possibly only very recent data may be gathered with reasonable effort, covering the present and the immediate past. It might be possible, for example, to analyze developments which led to New Expressionism succeeding Conceptual Art in order to determine the kind of information available, to develop the programs, and to acquire the necessary quantity of data. It seems obvious that the type of data required for the illustration of change would have to be compared to the type of information required for the illustration of diffusion. In gathering the pertinent data, *all* data would have to be considered.

Finally, it should be possible to imagine a model allowing the representation of diffusion and change simultaneously. I would like to suggest such a model in Ill. 7, which shows the emerging, overlapping and disappearing of production systems P_1 , P_2 , P_3 , along three vectors in a determined space over a continuous period of time.

The insurmountable drawback of this presentation is the unprofessional way it illustrates the diffusion of the production system in time and space. Nevertheless, it still might be possible to detect in the unaccomplished drawing the tentative evolution of a focus at various times and places, as well as to consider the fraying edges of the focal fields or the overlapping of these strange, floating, imaginary shapes.

Illustration 4:
Model of Diffusion in Time and Space.

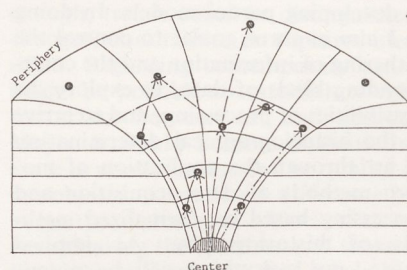
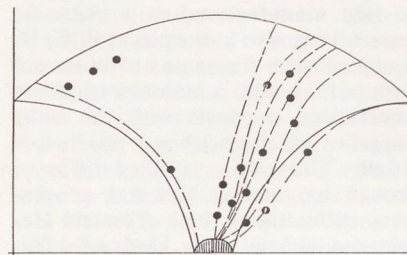
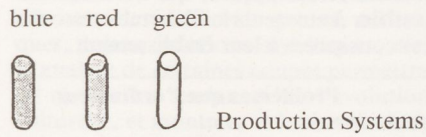


Illustration 5:
Expandable Model of Diffusion in Time and Space.





Notes:

1. See Harold Rosenberg, *The Anxious Object* (New York, 1964), and *The Definition of Art* (New York, 1972); see also Hans Belting, "Das Ende der Kunstgeschichte: Überlegungen zur heutigen Kunsterfahrung und historischen Kunstforschung", in H. Belting, *Das Ende der Kunstgeschichte?* (Munich, 1982), 11-61.
2. George Kubler, *The Shape of Time: Remarks on the History of Things* (New Haven/London, 1962), or the German text, *Die Form der Zeit: Anmerkungen zur Geschichte der Dinge* (Frankfurt a. M./Suhrkamp, 1982).

3. Enrico Castelnuovo and Dario Gamboni, eds., "La Suisse dans le paysage artistique: Le problème méthodologique de la géographie artistique", in *Zeitschrift für Schweizerische Archäologie und Kunstgeschichte*, vol. 41, no. 2 (1984), especially the articles of Jean-Bernard Racine, Claude Raffestin, and Bruno Toscano.
4. See Hans Belting, *Ende*, no. 1.
5. Torsten Hägerstrand, *Innovation Diffusion as a Spatial Process* (Chicago, 1953); see also Enrico Castelnuovo and Carlo Ginsburg, "Domination symbolique et géographie artistique dans l'histoire de l'art italien", in *Actes de la Recherche en sciences sociales*, vol. 40 (November 1981), 51-72.

Illustration 6:
Model of Change.

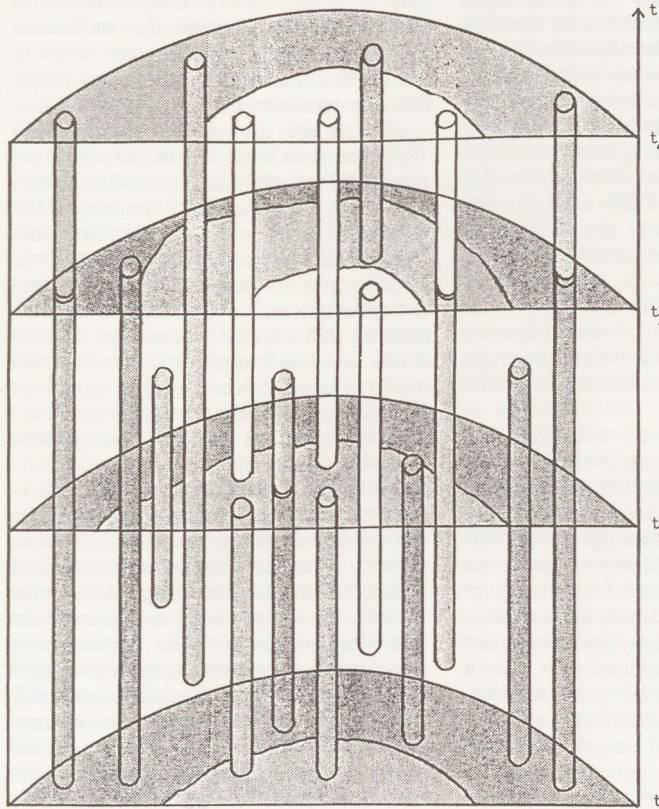


Illustration 7:
Model of Diffusion and Change.

