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Toward a Theory of the History of Representational Technologies

Recent interest in the technology of representational media, coupled with a growing concern to theorize cinema history, has made it possible, finally, to contemplate a history of representational technologies/¹. While recent criticism has succeeded in opening this new territory, however, it has simultaneously staked out claims and established practices which threaten to close off this fertile area before it can be permanently and intelligently settled. The problems which these recent efforts have encountered are instructive in themselves, however. Careful consideration of three such problems will lead me here to a new hypothesis regarding the history of representational technologies.

1. Technique/Technology

Jean-Louis Comolli can hardly be made to carry the full responsibility for the general tendency of cinema theorists to conflate the concepts of technique and technology (though his « Technique et Idéologie » is to be sure complicitous in this affair). The three languages which contribute most regularly to the realm of cinema theory —English, French, and German— are already marked by a certain confusion in those terms derived from the Greek *techne* (skill, art, or craft). In English, the adjective « technical » refers alternately to technique and to technology, while the noun, « technician » has come to replace the more logical « technologist » to designate someone who works with technology.

¹/1. Jean-Louis Comolli's landmark 1971-72 essay « Technique et Idéologie » (*Cahiers du Cinéma* 229, 4-21; 230, 51-57; 231, 42-49; 233, 39-45; 234-5, 94-100; 241, 20-24) is followed by Ron Burnett, « Film/Technology/Ideology », *Cine-tracts* 1, 1977, 6-14; Edward Branigan, « Color and Cinema : Problems in the Writing of History », in Allan, Almandarez, Lafferty, eds., *Film Reader* 4, Evanston, Northwestern univ., 1979, 16-34; Charles H. Harpole, « Ideological and Technological Determinism in Deep-Space Cinema Images : Issues in Ideology, Technological History, and Aesthetics », *Film Quarterly* 33, no. 3, Spring 1980, 11-22; Teresa de Lauretis and Stephen Heath, eds. *The Cinematic Apparatus*, New York, S' Martin's Press, 1980. In addition, the work of Patrick Ogle, Douglas Gomery, and William Lafferty deserves to be cited.

French tends to use the single term « technique » to designate the entire range of meanings. German is still more perverse, often using « Technologie » to mean technique and « Technik » to mean technology/². This potential confusion has been further compounded by the choice of deep-focus photography as the major proving ground of theories regarding the relationship between technology and history, for the production of a deep-focus image—like many other filmic phenomena—depends on a combination of technical and technological concerns. While technological changes in the late thirties (availability of new lenses) make deep-focus photography easier and more economical to achieve, anyone who has ever used a camera knows that a depth-of-focus choice must be made every time the shutter is tripped. The difference between an exposure made at f 5.6 with a speed of 1/250 and another made at f 16 with a speed of 1/30 is a question of technique, not of technology; the latter image may be a deep-focus image, the former cannot possibly be. Indeed, given sufficient light, a cameraman and director may choose to treat any shot with great depth of focus, with or without the technological changes commonly associated with deep focus. It is thus hardly surprising to find that articles which touch on the topic of deep-focus photography characteristically alternate between technical and technological concerns without making any distinction whatsoever between the two.

So what? one might well ask. Why so much commotion over a simple question of vocabulary? Precisely because, I would claim, this is no simple question of vocabulary, but a fundamental problem in the theory of history. As we clearly see from the example of deep-focus photography, the basic configuration is this: when the same result is produced by two recognizably different causes, then critics feel justified in conflating the terms habitually employed to distinguish one of those causes from the other. When we scratch this simple surface we find a logical application of one of the ground rules of semiotic analysis, namely commutation: if substitution of one sound unit (or constituent sense unit) for another makes no difference to the meaning (or higher-level sense unit), then we say that the language (or text) recognizes no difference in the alternate units. Following this reasoning, a generation of film historians has taken technique and technology to be interchangeable notions because they yield similar results. This easy transferral of methodology from synchronic semiotic analysis to the discourse of history simply will not do. We must learn to use the familiar commutation test in a different way when we come to practice history. Whereas

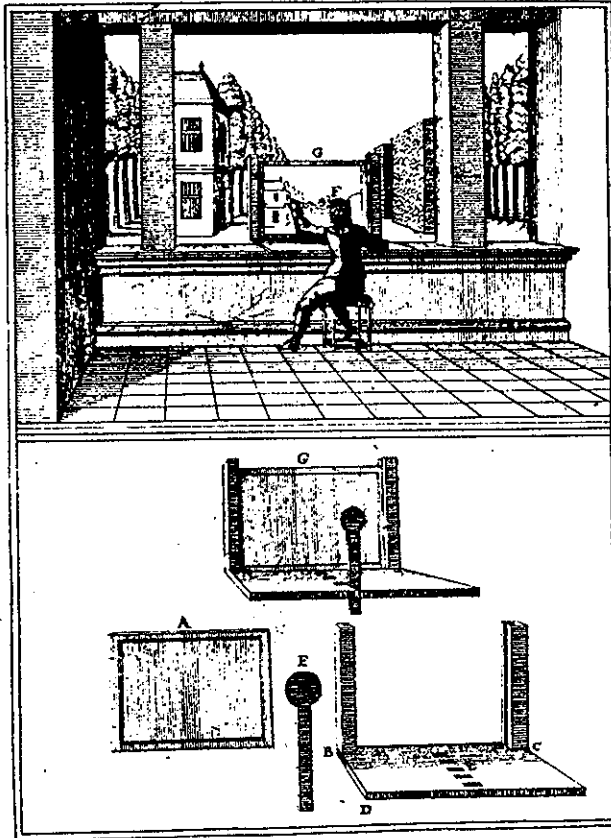
². This confusion is especially evident in the work of Adorno. See Miriam Hansen, « Introduction to Adorno, 'Transparencies on Film' (1966) », *New German Critique* 24-25, Fall-Winter 1981-82, 186-205.

synchronic analysis quite properly takes similarity of effect or sense as an indicator of functional identity, history refuses the hypothesis of synchrony and thus must begin its analysis by recognizing that different causes may produce the same effect. Instead of erasing difference in the name of functional identity, history must ask a different series of questions. Under what circumstances does one cause produce the effect in question? Under what circumstances the other? What relationship obtains between the two?

In short, to conflate the notions of technique and technology is to destroy the possibility of understanding technical/technological history in a fully dialectical manner. If the two domains are taken to be coterminous and ultimately identical, then their effect on each other will necessarily remain invisible to our analysis. This would be especially regrettable given the importance of the technique/technology dialectic throughout the history of representation. It is certainly no secret, for example, that one of the prime movers of technological development lies in the economic interest of automatizing (i.e. reducing the production time of) those techniques which have become consecrated by tradition. Even before the industrial revolution and its camera, the Renaissance had produced numerous contraptions assuring « An Easy Method of Representing Natural Objects According to the Rules of Perspective », as the French Jesuit Jean Dubreuil would have it/³. In fact, throughout the history of the camera, this automatization of accepted technique by new technology continues to operate. During the 1840s, standard procedure called for the photographer to immobilize his client with a head brace. By the end of the century, rapid film stock had transferred the process of immobilizing the subject from an accepted photographer's technique to an automatic part of photographic technology. A similar analysis would show how the development of directional microphones in the 1930s consecrated—and automatized—persistent attempts throughout the early years of sound cinema to limit and concentrate the range of existing mikes/⁴.

³. It is from this work that the frontispiece of Comolli's first installment is drawn. In passing it is perhaps worth noting that Comolli truncates the plate, removing the separate close-ups of the devices which make it possible for the depicted painter to produce a perspective drawing automatically. In other words, Comolli's version seems to refer to the technique of perspective alone, while the complete drawing clearly refers to the technologizing of that technique as well. (See page 110 for a reproduction of the complete engraving).

⁴. It is interesting to note similarity between Gomery's proposed stages of technological deployment and the common pattern outlined here. Whereas Gomery's first stage (invention) is largely technological, however, mine recognizes the possibility of invention through technique. In dealing with the technologization of technique, however, I do recognize the same economic impulse that characterizes the move from invention to innovation for Gomery.



"A Very curious Method of drawing all Perspectives in the most natural manner, without observing the Rules." From *The Practice of Perspective; or, An Easy Method of Representing Natural Objects According to the Rules of Perspective*, written in French by a Jesuit of Paris (London: Tho Boyles and John Boyles, M DCC XXVI).

Jean Dubreuil, the unnamed author, explains that in the engraving (A) is a pane of glass that slips into the frame (BC). (E) is an adjustable sight vane, with a minute peep hole at its top, that fits into the base BD of his instrument. The artist (F) traces the outlines of what he sees upon window (G). "Everybody knows how to take, or copy off, what is thus on the Glass," the Jesuit concludes: "Tis best to draw the Lines and Figures on the Glass with Pen and Ink; then wetting the Back-side of the Glass a little, and laying a moist Sheet of Paper on the Side that has the Design; rub or press the Paper gently thereon with the Hand, and the whole Draught will be impress'd or transfer'd from the Glass upon the Paper. . . . A little Practice will render the Method exceeding feasible and easy."

« The structure of representation is thus that of an infinite mise-en-abyme, with the new apparatus having to represent the old, itself representing the previous one, and so on ». Architecture represented by painting represented by engraving represented by book illustration represented by photocopy represented by journal illustration. (As presented in Beaumont Newhall's *History of Photography*, New York, Museum of Modern Art, 1980).

A dialectical understanding of the relationship between technique and technology opens up a broad range of possible connections. Just as technology often automatizes an accepted technique, so new techniques often appear in reaction to —indeed in compensation for— the introduction of the technologies. Consider the common thirties practice of aiming the mike at the floor, adopted to recover an omnidirectionality lost with the advent of directional microphones. A similar compensatory attempt leads directors in the fifties to break down the wide Cinemascope screen into two or three sections, each of which permits composition in a field more nearly similar to that of the familiar 1:1.33 frame. The industry's use of stereo for dialogue involves the same dialectic once again. Traditional miking techniques, when applied to the new stereo technology, tend to confuse the viewer, for from shot to shot the same character's voice may move about in the new sound space created by stereo. The simple solution to this quandary, already operative in the late fifties and adopted today by nearly all users of the Dolby system, is to record dialogue monaurally and to run it either through the center speaker alone, or through the center speaker at full volume with the same signal down a few decibels through the appropriate side speaker. Once again, history appears through the dialectic of technique and technology, a dialectic which can be fully appreciated only by the historian who maintains the distinction. This is of course not to say that the distinction is always easy to make in practice (e.g. the mid-nineteenth-century use of a head brace to secure sharp focus combines a new technology —the brace itself— and a new technique— the decision to use the brace for some subjects and not for others). Nor does the technique/technology couple have any privileged status which might give it priority over such pairings as technique/subject matter or technology/economics. The important thing to remember is that a dialectical understanding of history is destroyed from the start by any theory which reduces to one those practices that interact as two.

2. Basic apparatus / Historical apparatus

In many ways, descriptive cinema theory of the seventies takes up where prescriptive theory left off in 1930. Concerned to preserve cinematic purity from the threat of « theatrical » sound, Clair, Eisenstein, Arnheim and others reflected for a limited but intense period on the question of cinematic specificity. The seventies revived this concern in the form of speculation on the ideological and/or psychoanalytical ramifications of cinema's basic apparatus. The influential work of Jean-Louis Comolli thus appears in the broader context of work by Pleyne, Baudry, and Metz on the topic of cinematic specificity. Widely admired and imitated, this strain of criticism has never to my know-

ledge been subjected to any of the fundamental criticisms to which its basic strategy opens it/5.

While repeatedly criticizing Bazin for his unilinear realist view of cinema history, Comolli nevertheless regularly reiterates two telltale phrases which reveal his own conception of cinema history as a unified, straight-line affair. From the very beginning of his long study, in an introductory section entitled «The ideological place of the 'basic apparatus'», Comolli borrows from Marcelin Pleynet the notion that cinema «inherits» (I, 6) the code of Renaissance perspective, a notion which implies the fundamental identity of the perspective practiced in the Italian fifteenth century with that which characterizes the standard cinema camera (the question of sound perspective never being brought into play). Indeed, this assumption is perfectly consonant with Comolli's insistence on «the patient accumulation of technical processes» whereby cinema has carried out the ideology's bidding (V, 98). Again, the notion of «patient accumulation» implies a lack of contradiction among all the processes so accumulated. Overall, adoption of this additive approach to cinema history brings Comolli back surprisingly close to the model for which he chides Bazin. Because its «basic apparatus» doesn't change, cinema is by definition throughout its history fundamentally self-identical.

Curiously, in another part of his study Comolli himself provides the counter-argument to this proposition.. The third installment devotes a long passage to the questionable practice of seeking out historical «firsts» (close-up, pan, iris, etc.). Criticizing Mitry's search for the first close-up, Comolli states: «*No necessary equivalence links the close-up of 1913 to those of 1960 because the relevant element of opposition is not the parameter of enlargement in shots, but the network of differences between the forces which determine two different moments of film practice. These differences specifically preclude constituting «close-up» (or traveling shots, etc.) into an historical chain and setting them all on the same level. By founding the close-up in this way Mitry effaces the scene of contradictions where the conditions of cinematographic significance are played out and erects instead an autonomous series of technical processes: these techniques, once «invented», systematized and enthroned by some pioneer (whose practice for this very reason is not necessarily connected to that of later filmmakers), forever remain what they were on first appearance, available once and for all, usable universally and out of time - abstract molds whose nature, function and meaning do not change» (III, 47).*

The argument is well stated indeed. Surprisingly Saussurean in his

/5. I have, however, benefitted greatly from reading an unpublished paper by Noël Carroll on «The Specificity of Media and the Arts».

reasoning, Comolli introduces through the notion of «contradiction» the principle of excluded meanings on which semiotic analysis is based. Because two «close-ups» enter into differing sets of contradictions in different periods (i.e. exist in a context of different excluded meanings, invoke different background sets), they may not properly be said to derive from the same category of expression. But if this is the case, then on what grounds does Comolli recognize perspective across the ages as the «same» thing? Indeed, the very notion of a «basic» apparatus of cinema itself is compromised (quite rightly, I believe) by this argument.

Two important considerations are at stake here. First, there is the fundamental question of the historicity of cinema itself, along with its basic apparatus. Strikingly, Comolli himself argues that our notion of «basic apparatus» needs to be broadened from Baudry's identification of the apparatus with the camera and projector alone, yet he never seems to realize that this very argument compromises the possible existence of an apparatus basic enough to be self-identical from decade to decade. If Comolli can by argument (or if Hollywood can be introducing sound) change the definition of the basic apparatus, then just how much force can the term «basic» retain? Second, as in the case of the technique/technology conflation, continued adherence to the notion of an a historical «basic» apparatus robs us of the opportunity to consider the development of cinema technology dialectically. Notions of inheritance and patient accumulation leave little room for an understanding of history which is process-oriented and which respects the semiotic notion of excluded meanings, itself an underexploited but powerful tool in support of a dialectical approach to history.

What would a non-additive approach to technology look like? How might we write history, all the while respecting the notion that not even the apparatus itself is independent of history? In order to answer these questions I can do no better than to offer as an example of the type of reading fostered by the principles enunciated above a hypothetical account of the beginnings of perspective itself. Borrowing Pleynet's term, Comolli asserts that cinema «inherits» the code of perspective from painting. Whereas some would see an important difference or even a contradiction between the notion of perspective as a technique and perspective as embedded in a technology, Comolli sees only continuity. Faithful to an incremental logic, Comolli simply treats each new state as adding something to the previous one: cinema adds an automatic quality to painting in the same way that a new film stock adds color or an additional track adds sound. If we move back to the «beginning», however, to the initial development on which cinema depends, to what can we say that perspective is added? Is perspective simply an inscrutable point of origin? Is it added to something else?

The master art of the early middle ages, as Henri Focillon tells us,

was architecture/⁶. Sculpture, painting, mosaic, and all the so-called decorative arts gained their right to exist, their meaning, and even their physical support from architecture. Sculpture was thus rarely free-standing but rather an integral part of an architectural edifice, while painting was most commonly an ancillary art, regularly applied to three-dimensional elements of architectural design, sculpture, or ornament. Yet, because it was applied to three-dimensional surfaces, much of the «flat», monochrome painting of the Romanesque period easily, indeed automatically, represented depth, roundness, and a broad spectrum of shaded tones. But suppose that, for whatever reason, one were to transfer the locus of painting from the three-dimensional aspects of architecture to the flat wall between (fresco painting) and from there to movable panels or canvases meant to be hung on those flat walls (easel painting), what then? From a three-dimensional art, painting would be reduced to two. The invention of perspective would then be anything but an addition to a previous art, it would be *a reaction against* the previous art, a compensation through technique for losses sustained in the transition from one support to another, from one technology to another, from one apparatus to another. Take three-dimensionality away from painting, i.e. take away from painting the support which serves as the early middle ages' guarantee of reality, and we find painting imitating that support, attempting by some geometric black magic to recreate three dimensions out of two — and in so doing constantly depicting the architectural monuments, forms, and spaces which made up the earlier support. The excluded element, present by its absence in the early history of wall, panel, and easel painting, is thus the three-dimensional architectural support. By the time cinema automatizes perspective half a millennium later, there is of course no longer any such excluded element; instead there is the significant absence of the immobility of subjects which nineteenth-century photography had labored so hard to obtain.

Though these are but two hypothetical moments in the history of perspective — the invention of perspective and its automatization in cinema — their differences clearly exemplify the historicity of perspective in relationship to its apparatus, i.e. the non-identity of perspective from one historical situation to another. In addition, by placing the apparatus within history, we provide a buffer between technological or technical change and the ideology which Comolli would invoke to explain that change. Instead of relating each change directly to a single set of ideological forces (which in Comolli often appear insufficiently various and differentiated, thus corresponding all too well to his uni-

⁶ Henri Focillon, *La vie des formes*, Paris, Presses universitaires de France, 1942. Nouvelle édition, Paris, Presses Universitaire de France, coll. Quadrige, 1981.

fied notion of perspective over the ages), we are encouraged by historical analysis of the apparatus to recognize as varied that which from an ontological standpoint appears unified. This is of course by no means precludes an ideological explanation of technological change. It only means that such an explanation will necessarily relate to the apparatus as it changes in history, and not to some putative «basic» apparatus which has no historical existence.

3. Codes of representation / Codes of reality

However much Comolli's general statements may imply recognition of a single basic apparatus, his long analysis of the introduction of panchromatic film stock in the late twenties reveals a willingness to historicize technological change in something other than a purely linear, additive manner. By looping back to a «previous» apparatus — photography — in establishing the historical context for the introduction of panchro, Comolli poses the otherwise absent question of the relationship among representational technologies, thus opening the way toward a more general theory of representation as it relates to and is conveyed by apparatuses located in history. The remainder of this section sketches out such a theory.

In his famous essay on «The Ontology of the Photographic Image», André Bazin identifies the «mummy complex» which lies at the origin of representational art. The king dies. In order not to lose him completely, the priests make a death mask of his face. The king goes to his tomb, but the people retain a representation of his features. The king is dead; long live the «king». Art was thus born, Bazin suggests, as «the preservation of life by a representation of life»/⁷. As a theory of *re-present-ation*, Bazin's analysis stresses the extent of which all representation is an attempt to compensate for the loss of something which is no longer present, from a deceased sovereign or loved one to the distant monument of which one brings home a postcard souvenir. Stressing the relatively uncoded iconic mode of representation, Bazin constantly plays up the relationship between the representation and the represented. Comolli, on the other hand, devotes his attention to analysis of the representation itself, revealing its complex coding and its methods of binding the spectator into a particular ideology. A propos of Bazin's death mask he might well have pointed out the conventional reasons for choosing to preserve the face (rather than, say, the arm pit), with its implied function as window to the soul, or the implications of casting the mask in a particular precious metal, symbol of royalty and durabi-

⁷ André Bazin, «Ontologie de l'image photographique», in *Qu'est-ce que le cinéma*, Paris, Éditions du Cerf, 1981, pp. 9-17.

lity. From this point of view the seemingly uncoded nature of the iconic mode nevertheless offers up its potentially complex coding. It is this coding that ensures a sense of reality for the spectator while at the same time bonding that spectator to an ideological position.

On the one side, then, the real; on the other side its representation — less coded for Bazin, more coded for Comolli; leaving Bazin's spectator at liberty, invisibly binding Comolli's. To my mind Comolli's position is a significant gain over the Bazinian stance, yet from another point of view the two critics are surprisingly similar in their views. In both cases the real, that which is represented, appears as a natural fact and not as a coded construct. To be sure, Comolli discusses at length the codes which identify a representation as successfully representing the real, but he never shows the least concern for the codes which mark the real as real. The panchromatic film stock example might well have permitted him to do so, but instead of identifying the photographic codes with which cinema aligns itself as part of the code of reality to which cinema must conform, he treats the photographic codes as a new component of the code of representation. As in the case of the coming of sound, cinematic technology is seen as responding directly and nearly automatically to some new ideological development.

Yet the real is no less coded than representation. Let us take the extreme example, already evoked, of perspective painting. It seems that the rise of perspective corresponds to a desire to imitate the three dimensions of nature on a two-dimensional plane. Yet where is it said that nature has three dimensions? And why is it that the earliest perspective paintings are nearly without exception of religious subjects, usually including architectural decor? From Giotto to Lorenzetti, the pioneers of perspective always refer to the reality that is coded by their world. Actions have reality to the extent that they are recognizable as deriving from a limited number of accepted texts; building have reality to the extent that they appear to possess the three dimensions which can be traced back to the Temple in Jerusalem; people have reality to the extent that the culture ascribes to them that reality. Thus Virtue and Vice exist, as do Good Government and Bad Government, but individual portraits and townscapes of Siena as Siena will have to wait a century. Well known individuals and cities may serve as models for disciples or principles, but only later will their success as representations depend on the personal resemblance rather than resemblance to a well coded, previously established category (at which time the very notion of « personal resemblance » will be subjected to a coding particular to its age).

But what difference does it make that reality should be coded? And what is the source of that coding? The answer to the latter question is obvious and would no doubt have occurred to Comolli had he not

limited his attention almost entirely to a single expression of Western ideology. Only by stressing perspective nearly exclusively is Comolli able to make the history of Western apparatuses from the Quattrocento to the twentieth century seem to nearly straight-line. For if each apparatus defines a particular version of reality, codifies the systems required for successful representation, thus establishing the necessary and sufficient conditions for representing the real, then we must conclude that each apparatus establishes the code of reality to which the subsequent apparatus must adhere. Perspective painting imitates architecture and sacred narrative, for those are the privileged apparatus — Focillon's master art — of the early middle ages. With panchromatic film and the addition of sound, film is responding to the definition of reality propounded by its three most immediate predecessors and early competitors — photography, radio and the theater. In order to represent properly, each new technology must therefore succeed in representing not reality itself, but the version of reality established by a previously dominant representational technology.

In other words; there is no such thing as representation of the real; there is only representation of representation. For anything that we would represent is already constructed as a representation. The structure of representation is thus that of an infinite *mise-en-abyme*, with the new apparatus having to represent the old, itself representing the previous one, and so on. Each new apparatus might thus be likened to a translation. Expressive of an ideology different from that of the former apparatus, the new apparatus must simultaneously find a way to express that new ideology and — in the same words, as it were — seem to be expressing the old. For only with this appearance of translation can the new apparatus be taken as representing the real. The new system must thus — at least provisionally — speak with two voices or risk failure. It must sound like the old, and yet be new. When a change of apparatus appears to involve nothing more than an addition to the old, as in the case of sound film, the operation is carried out with little help from the techniques deployed by the texts for which the new apparatus serves as vehicle. When the change of apparatus is as radical as the move from architectural three-dimensional painting to a flat surface, then only by extraordinary technical developments, like that of perspective, can the new apparatus retain its right to representation.

Now the process of translation, as everyone knows, can never pretend to completeness. From the very fact that each language is an independent semiotic system, it would appear that every translation is by definition partial. Part of the message may be retained, but part will also be left behind. This essential characteristic is perfectly visible in the development of photography. In order for a photograph to serve as an adequate representation in nineteenth-century Europe, it had to satisfy

the codes of the real developed by painting and drawing; that is it required a strong iconic resemblance, a sense of depth, and a treatment of light consonant with that depth, as well as a certain palette of colors. But a photograph also had to satisfy the codes of representation imposed by an industrialized bourgeoisie; that is it must require minimal human talent, it must be produced mechanically, and it must be of such a size and durability to encourage rapid and continuous sales to a large group of modest customers (as opposed to the small group of rich customers associated with painting). Photography succeeded because, with one exception, it satisfied the (previous) codes of reality as well as the new codes of representation associated with a current ideology. As effort went into satisfying the one remaining requirement—color—further shortcomings were noted, such as lack of durability as compared to painting. But this feature, which appears as a drawback in the reality code, turns out to be an advantage in the throwaway market of the representational code. Graininess, blurring, lack of depth of focus—all are slowly «corrected» as the century goes by, thus increasingly aligning photography with the reality codes of painting.

The transition from painting to photography might thus be likened to an imperfect translation-in-progress. Unable to express exactly the reality codes of the preceding medium, photography is characterized by a constant effort to make up for this lack. *For the lack of color is felt as a lack*, and not in comparison to nature, but in comparison to painting (as well as tinted engraving and other related technologies). As long as the new medium appears to society as in some sense competing with the old, then the imperfection of the translation becomes a sign within the translation itself. In any semiotic system the meaning of a given term is defined by its actual syntagmatic relations and its potential paradigmatic relations. Now, it might seem that the colorless character of early photography remains uncommuted as a textual sign by virtue of the absence of a color paradigm in photography, but this would be true only in the limits of photography in fact the limits of the signifying system in question. In fact, I would claim, the appearance of a new apparatus and textual system always introduces a period, which might last for days or decades, when the semiotics of the new system must be seen as including those of the old system, which it translates. In short, the lack in the new system—say color in early photography—must be read as a sign in that system even though it appears only by its absence. Looked at in another way, color might be considered as a signified inherited from the previous system of representation (now serving as the new code of reality), but for which the present system provides no signifier. This imbalance in the system creates a pressure of two kinds; 1) to adapt the apparatus so that it can signify in the desired way, and 2)

to adapt the texts deployed by the new apparatus to the desired signification.

When cinema was invented, for example, it had at least the photographic tradition to contend with, itself the representation of a representation and thus encapsulating the remnants of prior systems as well. To reduce the problem to its very skeleton, we might say that cinema produced a supplement of movement while relinquishing the possessibility of the representation—a trait which photography intensifies as compared to the rarer ownership of paintings, which were in turn more commonly owned by individuals than the early medieval art work. Now cinema adapts to this lack in two ways. First, unable to offer possession of the apparatus to the consumer, cinema offers *tales* of possession, the dominant plot concern of early cinema. Second, the cinema industry spawns a secondary market of possessible artefacts: fan magazines, pictures of stars, autographs, souvenir programs. Only with the video medium will it finally become convenient and common actually to own one's feature film.

Indeed, the full-scale quotation of one medium by another (exemplified by the feature film video cassette) leads me to a final point. The easiest way to prove that a new medium meets the reality demands defined by the old is simply to quote the old, verbatim, as it were. Perspective painting quotes architecture, printing quotes speech, early printed stories portray oral story-telling, Renaissance theater uses a perspective set, early film records theatrical performances, and so on. As a special and particularly obvious case of representation's perpetual status as the representation of a representation, these examples remind us of the extent to which Octave Mannoni's celebrated description of the dynamics of spectatorship apply as well to the dynamics of the history of representation. «Je sais bien, says Mannoni, I know that this text is only a representation; «mais quand-même», but still, I have my own reasons for believing. The same mechanism operates in the play of representational systems. I know that this new medium is not the same as the old, but it flatters my needs, it does what I need it to do. In short, the reality codes may be slightly off, but the ideology—the representational code—is right.

Consider RCA's recent videodisc commercials. We watch a family choose which film they want to watch, implying that the magic videodisc box can quote the film verbatim. Now we know that a reduced-size film is not a real film (it's cropped, it has low fidelity, and so forth). But we also know that we—as the TV family members are quick to point out—are watching the commercial while they are watching their chosen film. And so it happens that we come to desire an RCA videodisc player. This constant process of quotation and erasure, as

Jane Feuer has called it⁸, serves alternately to point out the similarities between the two media and then to erase them, in the process aligning the new representational mode on the old codes of reality, then offering an ideological plus which forever sets the new mode over the old. I know it's not a pristine 35mm print, but what the key, there are no commercials and I can stop for a beer whenever I want.

The straight-line model assumed throughout this paper is of course used here only for the sake of presentational convenience. There is no single straight line from the Ark of the Covenant passing through Assisi, Quattrocento perspective painting, Renaissance and neo-classical theater, photography, cinema, and TV. Instead, there is a complex web of constantly changing relationships among representational technologies. The challenge of the history of representation, as I have sketched is here, is in the task of identifying the return of one repressed representational system in another, and thus in observing the unceasing pressure to which media subject each other. Seen as a system with its own history and internal dynamics, the ideology of representation opens itself up to the kind of historical analysis in which the system itself, once launched, must be seen as retaining a certain life of its own. Changes in external ideology occur as pressures on the system, especially in the form of new codes of representation, but external ideology is no longer the only thing driving the system. New ideologies cannot simply generate new representational systems without taking into account the reality codes established by previous and/or competing representational systems. Once again, we are led to a type of history which remains fundamentally dialectical. Instead of seeing a straight line between an initial ideological impulse and an ultimate technological development (as does Comolli), this new approach considers that every ideological force must by necessity grapple with the residue of another ideological impetus embodied in competing representational modes. To write the history of representational technologies is thus to trace the dialectic which grows out of the confrontation between representational and reality codes.

⁸Jane Feuer, *The Hollywood Musical*, Bloomington, Indiana Univ. Press, 1982.

Revenant sur les rapports technique/idéologie dont l'analyse avait été initiée en partie par J.L. Comolli à partir des travaux sur l'appareil de base de Jean-Louis Baudry et Marcellin Pleynet, ce texte vise à ré-historiser et à dialectiser ces conceptions qui relèvent d'une histoire par trop linéaire et accumulative. Revenant sur l'opposition, la plupart du temps neutralisée entre technique et technologie, il introduit la notion d'appareil historique. Il étudie la nature des liens non seulement entre les codes de représentation et l'appareil de base mais aussi entre celui-ci, les codes de représentation et les codes historiques qui définissent l'appréhension de la dite réalité.