Taking a Line for a Walk

In all these examples the principle and active line develops freely. It goes out for a walk, so to speak, aimlessly for the sake of the walk.

—Paul Klee

Undecidability

The poetry of sheer movement in the Sortie, still potent after all these years, could not maintain itself. Cinema had to move from the sensation of the event to the perception of objects, from nonidentical immersion to the proliferating unities of navigable space-time. The cut brought the principle of representation: of delineating commotion as discrete objects in space-time. To that extent, and to the extent that it implies a subjection of the perceiver, the cut is always lacking, always inadequate to the plenum it depicts. Its unity not only implies multiplicity; it exists in a dialectical relation to the flux of pixels without which it has nothing to organize, but which to it is always only nothing. Out of that dialectical construction of object and subject a third principle arises: communication. Immersion in the pixel's commotion corresponds to Peirce's finitness, the Lacanian Real; the cut to Peirce's secondness, the Lacanian Imaginary. The early history of animation gives us a privileged glance at the transition to Peirce's thirdness, the Lacanian Symbolic, to concept and meaning, socialization, the paradigmatic axis of film. In deference to its digital destiny, I will refer to it as the vector.

A vector is any quantity that has magnitude and direction. Computer imaging uses vectors to define shapes by describing their geometry rather than allocating an address and color value to every pixel. For example, in- stead of specifying every point on the surface of a sphere, it is far more economical to instruct the computer to draw a circle and rotate it about its diameter. In graphical terms, then, a vector is a line moving through time and space. In the zero of raw movement that first amazed the patrons of the cinematograph there is at base only the invisible motivation of the black frame-line. In a strict sense, the unities produced by framing, compositing, and editing make the cinema visible, lifting it from the undifferentiated immensity of the nonidentical to the "being" of the object. The vector takes us one step further: from being to becoming, from the inertial division of subject, object, and world to the mobile relationships between them.

In La Sortie, the motion inherent in the instability of the frameline acts as a given, as something that, since it sums all movement as equilibrium, is perpetually new. Cutting literally puts an end to the eternal now of the nonidentical. Constructing objects by defining their spatial and temporal limits, it endows objecthood in the same way it orders time into linear progression: retrospectively. Terminal (but not final) the cut defines the term and the terms of objection, transforming raw perception into an object for consciousness, establishing the object as a perception of which an "I" is conscious. Even though both object and subject come into existence in the same instant, the perceiving I perceives the cinematic object as something that preexists its consciousness of it (since, from the subject's point of view, the object has always been there) and that is therefore always already over. Where the cut instigates endings, the vector enacts beginnings. It gives the moving image a future, the possibility of becoming otherwise than it is. The pixel grounds us in the film as a present experience, the cut in the preexistence of the filmstrip to consciousness of it, the vector in the film as the
becoming of something as yet unseen. It is the principle of transformation, the quality of changing what we expect from moment to moment.

Causality, logic, law, interpretation, and dialogue belong to this emergence, though they are only historically specific modes of the vector, which is the openness of thinking to the as-yet unthought, the connection as yet unmade. In the purest form we have available, the early animations of Emile Cohl, the principle of cinematic thinking is transformation governed only by analogy. Debating Umberto Eco’s fictional (1989) and theoretical (1990, 1992) counsels against analogy, Barbara Maria Stafford argues that analogy not only has the potential to provide sudden and vivid insight, as in the works of artists like Joseph Cornell; it is also a principle other than causation or identity that allows us to make connections within and between media (Stafford 1999: 8). Analogy is moreover intrinsic to the paradigmatic axis of substitutions, where ostensibly unrelated words (love, dinner, pots, hay) reveal unforeseen relations when added to the end of the phrase “Let’s make...” The analogy between a question mark, a cat’s tail, and a fishing rod may not be apparent—until you have seen old Felix the Cat movies, where they are liable to turn into each other on the sole basis of visual similarity. John Canemaker catches this quality of the early 20s Felix: “Dissembling and reassembling his form, Felix is a Cubist cat, a symbol of post-war modernism... Felix (especially before Bill Nolan redesigned him) is full of angles that fragment and juxtapose in exciting new ways” (Canemaker 1991: 75). As in Braque and Picasso’s analytic paintings of the 1900s, the graphical code works on the basis of likenesses that shift constantly with our perspective on them, so we see a mark as at one moment a tail, at another a question mark, and simultaneously as nothing less magical than a line in motion. The vector thus refines movement as a function of relations and interactions. Reversing the polarity of the cut, the vector temporalizes space.

The philosopher de Selby of Flann O’Brien’s comic novel The Third Policeman examines “some old cinematographic films which probably belonged to his nephew,” and that, a footnote informs us, he described “as having a strong repetitive element and as being tedious.” Apparently he had examined them patiently picture by picture and imagined that they would be screened in the same way, failing at that time to grasp the principle of the cinematograph” (O’Brien 1967: 50).

De Selby’s film theory builds on the ancient paradox of Zeno, according to which Achilles, racing against a tortoise, can never catch it because, having given it a start, he must first run half the distance between him and his competitor, by which time the tortoise has moved on. So Achilles runs half the new distance, while the tortoise advances another fraction of the distance, and so on ad infinitum. The ad infinitum is the critical point. Seeking to prove that the universe is stable, Zeno hit on the concept of the infinitesimal, the ever diminishing approach toward zero that, however, never reaches it: the concept of the infinitely small. Just as you can add a digit to any cardinal number to make it bigger, so you can add digits to a decimal to make it smaller. In Zeno’s example, the gap between Achilles and the tortoise reduces from 1 to 0.5, to 0.25, to 0.125, to 0.0625, and carries on reducing, always adding more decimal places, toward a zero that it never reaches. When plotted on a graph, this gives an asymptote, a curve that plunges toward zero but gradually flattens out, never quite arriving at origin.

This asymptotic curve is not composed of points and the distance between them. The real numbers, the infinitesimals that form the “real” line, are more geometrical than arithmetic. They cannot be counted and are often better described as goals toward which the line trends than as numbers. For the mathematics that dominated the first quarter of the twentieth century, undecidability and infinity are inextricably intertwined. According to Alan Turing, founding figure of computing, some arithmetical procedures go on for ever. Turing addressed the “halting problem” through the analogy of an imaginary computer, itself extraordinarily like a machine for drawing animations, being composed of an endless strip of paper tape and a read-write head that would make marks or erase them according to mathematical rules. In the case of an uncomputable sum like the square root of two, the machine will never stop. The finally undecidable numerical value of a point on the real line is the infinite transformational power of the graphic line in cinema. The infinitesimals adds to cinema the unfinished, unending, undecidable metamorphoses of expectation so poetically manifested in one of the earliest of animated films, Emile Cohl’s 1908 Fantasmagorie.

Spectator, Author, Animator

James Stuart Blackton, one of Cohl’s few predecessors, performed The Enchanted Drawing for Edison (copyrighted in November 1900) and Humorous Phases of Funny Faces for his own Vitagraph company in 1906, both based
the process. The evidence shows that the phosphorescent compounds in the reaction zone are not the direct cause of the observed phenomena. Instead, the reaction appears to be initiated by a different set of chemicals, possibly related to the organic components present in the reaction mixture. Further studies are needed to elucidate the exact mechanisms involved in this intriguing phenomenon.
The page contains text, but the content is not legible due to the quality of the image.
The film's innocence of narrative coherence is a function of its innocence of key frames. Later, more industrialized animation studios would direct their leading animators to provide frames that defined the beginning and end of a motion. Junior staff would then be hired for "in-betweening," drawing only the frames required to provide a smooth transition between key frames. In Cohl's case, there are no key frames: no line of action is ever complete, but metaphors into the next without the stability and unification afforded by key framing. At the same time, these are not just doodles but drawings in the process of becoming pictures of something. The distracted, dreamy reverie of the pixel immerses us in the Real, the referent in Saussure's semiotics. The syntax of the cut transforms these sensations into signifieds, representations, the chain of cinematic objects. The vector is the dimension of the signifier: "Pierrot" becomes the wending line. The signifier is the material of signification, and its task is not to represent but to be exchanged. Because Cohl's line is a line, a material signifier, it can exchange signifier for signifier, on the principle of analogy. It is the token of exchange between object and object in metamorphosis, and so adumbrates the exchange of subjectivities that is communication. Cohl's line is not his consciousness materialized, but the medium of social exchange. It does not represent: it communicates.

At every moment, Cohl's paradigmatic signifiers may become other than they are in the present. The meaning of this shape depends on the substitutions and transformations to which, as material signifier, it is open. The vector of Fantasmagorie is never complete. So it has to change interminably—and so does its interpreter. It is as if the vector's subjectivity is constantly launching itself outward, like a child playing, or even more like a playground full of children racing from game to game, persona to persona, utterly invested in what happens next. The cut anchors motion in destiny, in the necessity of an ending. In the vector, there is nothing behind—everything is in front. Mathematically, the pixel is perfectly symmetrical: the same in any direction. The cut breaks that symmetry by establishing the principle of being: what has become. The cut is teleological, determined by its ending. The vector breaks it on a different axis, treating what is as the beginning of becoming. The vector is eschatological: its future is open, governed only by hope.

Fantasmagorie is not, then, a simple stream of consciousness. Instead, that stream is the raw material for a job of work, subjecting the preconscious firstness of undifferentiated sensation to the machinery of production. If we try to imagine Cohl's stream of consciousness, we have to imagine him contemplating how the public and, differently, the producer will respond; how to get around the constraints of his technology; submitting to fatigue and the economic imperative to stop. In all these moments, our imaginary Cohl inhabits a nexus of exchange, with living customers, with networks of trade, with the dead labor embodied in chalk, chalkboard, camera, and rostrum. Mere firstness would produce nothing but a chaotic scribble. Mad scrabbling would merely flag a pretended liberation from individuation, but one in reality still governed by the rational image of individuation: a resistance that depends on the dominant that it resists.

Cohl's animation, however, neither succumbs to the administrative principle of the cut (secondness would imply simple depiction, in the mode of Winsor McKay), nor pretends to a schizophrenic loss of subjectivity. Instead it reaches out from the unhappy mismatch between the universality of preconscious differences and the particularity of ordered unity, toward a freedom they cannot achieve separately or together, but toward which their struggle necessarily points. This is not the freedom of the "free" market or "free" choice, terms that scarcely mask the monopolistic character of contemporary capitalism. Rather, it is a capacity to exist otherwise than under those conditions. Only by accepting the subjective role of individuality in authorship can we understand how it can be overcome: not by regression to infantile states, nor by the simple negativity of rationalism, but by constructing semantic behaviors that at once expose the social failure to reconcile chaos and order, preconscious and reason, and at the same time produce techniques for another way of making that is subservient to neither and that, although it can neither reconcile nor negate them, poses the possibility of meaning.

It is easier to make this case for Cohl than for most subsequent filmmakers. As an artisan, he had far greater control over the processes of filmmaking than any studio-based producer. But there is a third level to the subjectivities involved in the making of Fantasmagorie that makes it an especially fruitful study. It is possible Cohl had seen the Blackton films. Certainly he was fascinated by cinema, and as an active participant in the Bohemian life of Paris for thirty years prior to his first films he would have been technologically and scientifically literate. Nonetheless, his practice in making Fantasmagorie must have been almost purely experimental. What
In the digital era, where we are constantly surrounded by information and data, it is crucial to understand the nature of information and its role in our lives. The explosion of information, the growing number of media outlets, and the increasing access to digital resources have made it easier for us to access and consume vast amounts of information. However, this abundance of information can also lead to information overload, where we are overwhelmed by the sheer volume of content.

In this context, it is important to develop critical thinking skills and learn how to evaluate information effectively. This involves being able to recognize the sources of information, identify biases, and determine the credibility of the content. By developing these skills, we can become more informed citizens and make better decisions based on the information we consume.

Additionally, it is essential to recognize the impact of information on our daily lives. Information can influence our beliefs, attitudes, and behaviors, and it can shape our perceptions of the world. Therefore, it is crucial to be aware of the role that information plays in our lives and to critically evaluate the information we encounter.

In conclusion, the explosion of information and the increasing access to digital resources present both opportunities and challenges. By developing critical thinking skills and recognizing the impact of information, we can make better use of this abundance of information and make informed decisions in our lives.
Figure 4.3

Reproduced from Caffin (1960) with permission.
video *Black or White*. By contrast, the struggle to recognize and name the metamorphosing line in Cohl, always incomplete, never settles in identity but constantly remakes the relation between subject and object as that between self and other. In this way it cannot, as the Jackson video does, suborn the technology of morphing to commit to a color-blind ideology of liberal multiculturalism (Sobchack 2000; on multiculturalism, see Zizek 1997; Araeen 2000). Instead it confronts the uneasiness of the viewer with its status as object of the view, forced by its endless mutation to recognize its autonomous existence, an autonomy that at once confronts the viewer with the limitations to control and with her own instability.

The autonomy of the line in *Fantasmagorie* is, as we have already seen, a product of the relation between Cohl and his apparatus. On a certain understanding of the technological relation, for example, that voiced by McLuhan (1964) when he describes tools as extensions of the hand, the relation between human and machine is purely one of control. The machine is an instrument of humans, and that instrumental relationship defines the user and the tool as subject and object. What Cohl’s practice reveals is that another relation is possible, one in which the privilege of subjectivity is abandoned in favor of granting an autonomy to the machine equivalent to that assumed by the user. The new relation between human and machine is then no longer instrumental but, in the sense advanced by Emmanuel Levinas, since it demands a mutual recognition of each other’s right to be, beyond the relationship itself. No longer dependent on Cohl’s authoring control, the machine is free to collaborate in the creation of the work—or to refuse, as is so often the case when we try to enlist the aid of a recalcitrant computer in some task we are unsure of. This is not to ascribe intelligence to the machine, but to emphasize that it is capable of rich and complex relationships with humans. The pacing of the transformations in *Fantasmagorie* is one such example of machinic contributions to creativity; another is the possibility of animated drawing.

The last remnant of the older lightning-sketch acts in Cohl’s film is the appearance of his hands. The very appearance of the hand in the opening shot of the film is a conundrum. According to Crafton (1990: 121, 140) and Abel (1994: 286), Cohl drew the bulk of the film in black India ink on translucent white paper over a lightbox and then printed the film in negative to achieve the white-on-black effect. The effect of the hand drawing the *fantauche* in the opening frames must have been shot by another method, and differently printed, so that the hand would not appear in negative. So the moment at which the hand withdraws and the drawing comes to life is also a moment in which the film process is reversed, as must also be the case with the second entry of the hands when they appear to reassemble the broken *fantauche* after his fall from the house. The first of these moments is the equivalent of the moment of shock when the still projection of the Lumière cinematograph suddenly began to move; but it is a new effect in the sense that the transition to a purely machinic vision (negative) and to an animation without the support of a visible maker introduce the sense of the cinema apparatus as autonomous participant in creation.

The drawing hand in the opening frames and the mending hands later on can also give us a sense of the structure guiding the relations between human and mechanical collaborators. In the latter case in particular, we are confronted with the three-dimensionality of the *fantauche* who, though flat, can be picked up. There is of course a self-reflexive joke here, but at the same time we are offered a second way of viewing the film. The movement between animated and photographed actions works on the paradigmatic axis, integrating two diegeses, one the fictional world of the drawings, the other the “real” world of filmmaking. Whereas the first entry of the drawing hand is explicable as a throwback to the lightning-sketch genre, the second adds a whole new axis to the film, attributing autonomy to both the *fantauche* and the maker in addition to the autonomy of the apparatus. This is effected through a paradigmatic substitution of real for drawn hands in an action parallel to the cubist application of found papers (newspaper, wallpaper, labels, tickets) in Picasso’s and Braque’s breakthrough *papiers collés* of autumn 1912 to spring 1913. One of the effects of the substitution in cubist collage was to assert the independence of the world from the artist, who no longer translated it into paint, but could apply items from it directly to the surface of the work. In the cubist case, this also entailed alertness to the fact that these cut-out pieces of printed material were already signs, already artifacts of a thriving visual culture. In Cohl’s case, the gluing hands admit that they too are already a part of the apparatus of cinema. They disrupt the grammar of the cut, but only to extend the capabilities of film.

There is no documentary evidence that these are Cohl’s hands, certainly, but they are presented generically as the hands of the maker. The presence of the photographed hand for that instant at the beginning of the film is thus a kind of signature, but one that presents itself in the act of
Perception and representation of the world play a crucial role in shaping our experiences. The interaction of these two processes is crucial for understanding the nature of our perceptions.

The representation of the world is a complex process involving various cognitive functions. It is not just a passive process, but an active one, involving the brain's ability to process and interpret sensory input.

The perception of the world is influenced by our past experiences, our cultural background, and our current cognitive state. This interaction between perception and representation is not a one-way street, but a dynamic process that is constantly changing.

In conclusion, the interaction between perception and representation of the world is a fundamental aspect of our cognitive processes. Understanding this interaction is crucial for developing effective strategies to improve our cognitive abilities.
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One reason for beginning in the pioneer period is to isolate the elementary aspects of cinema at the moment of becoming. The task of the following chapters is to historicize them: to show how these raw principles develop and interact in the ongoing dialogue between cinema and society, to see how the virtual cinema became actual. The vector completes the elements of the moving image, but it does so by becoming human. In the normative cinemas that followed, the apparatus would take its revenge.