"These are not exercises in style": *Le Chant du Styrène**

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For Richard Sieburth and Vanessa Schwartz

No celluloid, no cinema. From Stan Brakhage scratching emulsion with his fingernail to produce his last film, to the 70mm wide-screen spectacles of Hollywood, all transactions of the cinematic institution must negotiate the humble filmstrip.[1] Speculation about its replacement by digital technology may well be premature. After more than a century of investment in exhibition infrastructure, the movie projector, a fixture of the cinematic institution from Bombay to Brooklyn, seems unlikely to disappear anytime soon.[2] Film history provides multiple examples of an attentiveness to plastic as technological material and cultural metaphor.[3] Yet the richest exploration of this scarcely fortuitous linkage between cinema and its ineluctable material base, a work that transcends modernist self-reflexivity, though it surely implies that modernist gesture, remains *Le Chant du Styrène* (*The Song of Styrene*), a 1958 industrial documentary commissioned by the

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1. Although some experimental filmmakers have worked solely with the film projector and screen, my own view is that the medium specificity of cinema resides in the filmstrip and that attempts to dispense with it inevitably produce results that mimic creations in other media such as theater and performance. On the history of celluloid, initially developed as a possible substitute for the ivory in billiard balls, see Robert Friedel, *Pioneer Plastic: The Making and Selling of Celluloid* (Madison: University of Wisconsin Press, 1983) and Deac Rossell, *Living Pictures: The Origins of the Movies* (Albany: State University of New York Press, 1998), esp. pp. 57–78.

2. On this point see John Belton, "Digital Cinema: A False Revolution," *October* 100 (Spring 2002), pp. 98–114.

3. A short filmography of plastics and its presence in cinema would include the Disney cartoon *The Plastics Inventor* (1944), the opposition between Humphrey Bogart (plastic) and Audrey Hepburn (glass) in *Sabrina* (Billy Wilder, 1954), and the famous scene in *The Graduate* (Mike Nichols, 1967) in which Dustin Hoffman is advised to seek his future career in plastics. On the former and the latter, see Jeffrey I. Meikle, *American Plastic: A Cultural History* (New Brunswick, N.J.: Rutgers University Press, 1995), esp. pp. 3, 154.

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French plastics company Pechiney and directed by Alain Resnais with an accompanying narration in alexandrine verse written by literary and intellectual polymath Raymond Queneau (1903–1976).

The Song of Styrene assumes a place of prominence in the legacy of the short film, a medium that has traditionally been a vehicle for philosophical, scientific, or aesthetic inquiry, a tendency already evident in the 1920s films by Jean Painlevé and Jean Epstein, up through the work of 1950s avant-garde practitioners such as Oskar Fischinger and Peter Kubelka. Indeed, the latter two also made advertising films commissioned by sponsors.[4] France had long excelled in the making of short films, and Jean-Luc Godard praised this tradition by comparing the usefulness of the short film to cinema to that of the antibody in medicine.[5] The impurity of the *court metrage* and the challenges with which it confronted filmmakers enabled many directors to hone their skills, he asserted. Although Resnais once dismissed *The Song of Styrene* by confiding to an interviewer, "Polystyrene just happened to be the most amusing subject proposed to me when I needed money," this somewhat cavalier remark nonetheless positions it within a history of short films whose makers sought to explore the cinematic medium while simultaneously paying their bills.[6]

Unlike the contemporaneous early films by Godard and Francois Truffaut, Resnais's cinema of the 1950s and 1960s generally avoided the gritty realist cinematography on actual urban locations that defined much early work of the French New Wave. Instead, his predilection for collaborating with writers and realizing carefully planned explorations of ideas marked his earliest documentaries. In films such as *Van Gogh* (1948), *Gauguin* (1950), and *Guernica* (1950), he presented these artists' paintings as the basis for understanding their cultural and social milieux. Resnais's collaboration with Chris Marker and Ghislain Cloquet resulted in *Les Statues meurent aussi* (*Statues Also Die*) (1950–53), a bold study of African art that elicited the wrath of the censor. *Toute la memoire du monde* (*All the Memory of the World*) (1956) is set in the Bibliothèque Nationale and its elaborate camera tracking and thematics of memory prefigures *Hiroshima mon amour* (1959).

Explicating neither celebrated works of art, nor appropriating the storytelling conventions of narrative cinema (most notably, characters and a discernible unity of place), *The Song of Styrene* differs from these other works of Resnais by virtue of both its technical subject matter—the process of manufacturing polystyrene—and its impersonal attitude toward it. Produced at the height of the director-centered "politique des auteurs," *The Song of Styrene* is, by contrast, a film in

4. Here one might mention Fischinger's various advertising films produced from 1950 to 1957 and Kubelka's *Schwechater* (1958), which began its life as a beer commercial financed by a brewery.

5. Jean-Luc Godard, "Take Your Own Tours," *Godard on Godard*, trans. and commentary by Tom Milne (New York: Viking Press, 1972), p. 110. The title of this article is a reference to the annual festival of short films in Tours, France, an important venue for their popularization.

6. Noël Burch, "A Conversation with Alain Resnais," *Film Quarterly* 13, no. 3 (Spring 1960), p. 27. Resnais also relates that although *The Song of Styrene* took five days longer to shoot than *Hiroshima mon amour*, he was paid far less to direct it.

which subjectivity—that of the filmmaker, the writer, or the few people it depicts—is not readily apparent. Straddling the genres of the artistic short and the commissioned industrial film, and thus the categories of culture and commerce, it treats plastic as both object and subject, a fact of everyday life but also a strategy for organizing cinematic vision.

Already in its title *Le Chant du Styrène* introduces intertextual allusion, manifesting what Michel Riffaterre calls the dual sign, the first of many in both poem and film.[7] For as any speaker of French notices, *styrène* rhymes with *sirène* and proposes the collaboration of Resnais and Queneau as a contemporary song of the sirens. Its mermaids—the consumer products and industrial objects in the newly emerging culture of plastics in 1950s France—beckoned to both men with irresistible charm. Apprehending and granting them voice with ironic bemusement, Resnais and Queneau's film simultaneously grasps the deeper stakes implied by the turn to synthetic materials. At once advertisement and public relations effort, a primer on the manufacture of plastic compounds that had begun to transform postwar French life, *The Song of Styrene* is also, as I hope to demonstrate, an allegory of material and semiotic production. It provides a revealing window onto the French political and global economy of the late 1950s, rewarding close reading with a veritable return of repressed geopolitical relations.

Evoking the *chansons de geste*, epic poems of the eleventh and twelfth centuries that celebrated Charlemagne and recounted illustrious heroic deeds, Queneau's narration for the film, his *chant*, basks in the incongruity between its style and subject matter. That styrene is to be heroicized, albeit ironically, treated as a veritable king of the modern scene, is confirmed by its alexandrine versification. Named after the "Roman d'Alexandre" by Lambert le Tort, a poem written around 1170 to celebrate the conquests of Alexander the Great, the alexandrine predominated as the standard meter of French poetry from the sixteenth century until the emergence of the *vers libre* of the late nineteenth century and found its most frequent employment in narrative poems and tragedies.[8] Queneau had his own reasons for employing it in his epic *Petite Portative Cosmogenie* (Small Portable Cosmogony) (1950), which traces the creation of the world from its geology to

7. Michel Riffaterre, *Semiotics of Poetry* (Bloomington: Indiana University Press, 1978), esp. pp. 86–105.

8. For a short definition of the alexandrine see the entry on it in *The New Princeton Encyclopedia of Poetry and Poetics*, ed. Alex Preminger and T. V. F. Brogan (Princeton: Princeton University Press, 1993), p. 30. For a more detailed study of its history and reappearance in recent poetry, see the book by Queneau's colleague Jacques Roubaud, *La vieillesse d'Alexandre. Essai sur quelques états récents du vers français* (Paris: Maspero, 1978). On the alexandrine in Queneau, see Jean Borie, "Raymond Queneau: Poésie et Français Parlé," *Romantic Review* 55 (1966), pp. 41–55, esp. pp. 44–48. Borie notes how in Queneau's alexandrines the caesura is rarely respected and the silent *e* is not always counted. His employment of the alexandrine is thought by Borie to result in a "sabotage" and "burlesque" of the traditional poetic form. By introducing banal and prosaic subject matter, Queneau undercuts its ceremonial grandeur and crafts an ironic verse style that flouts the distance between the poem's metrical form and content. In a suggestive statement about the suitability of this form to cinema, Borie likens it to the accelerated and staccato movements of Charlie Chaplin.

the development of modern technology.[9] Breaking from André Breton and the Surrealists in 1929, Queneau contributed to the scathing *Un Cadavre* (A Corpse) pamphlet signed the following year by Georges Bataille, Michel Leiris, Robert Desnos, and Jacques Prévert.[10] He questioned the primacy of automatic writing, an article of faith for Breton, and wrote in 1938:

> Another highly false idea which nevertheless is very popular these days is the equivalence that has been established between inspiration, exploration of the subconscious and liberation; between chance, automatism, and freedom. Now *this* inspiration, which consists in blindly obeying every impulse, is in reality a form of slavery. The classical writer composing a tragedy by observing a certain number of rules with which he is familiar is freer than the poet who writes down whatever goes through his head and is enslaved to other rules of which he is unaware.[11]

Espousing a rule-governed literature of formal constraints and classical rigor as an antidote to what he perceived as the Surrealist cult of subjectivism and its excessive allegiance to the ideals of inspiration and a charismatic hierophant (Breton), Queneau refused to limit his creations to the material of his subconscious. Instead, he borrowed forms and material from the most varied literary and scientific sources.[12] Nearly all of the technical vocabulary utilized in the film comes from the Pechiney company brochures Queneau consulted, just as its discussion of polymerization is based on his study of the organic chemistry of the day.[13]

Opening the film with a quotation from Victor Hugo's poem "This Century Is Large and Strong" (1837), the only moment when the voice-over narration spoken by Pierre Dux is accompanied by a written intertitle, Resnais appropriates the idiom of technological enthusiasm and celebration of industry espoused by Hugo

9. Raymond Queneau, "Petite portative Cosmogenie," in *Oeuvres complètes*, ed. Claude Debon (Paris: Gallimard, 1989), vol. 1, pp. 201–38. For Queneau's thoughts on this text, see "Conversation avec Georges Ribemont-Dessaignes," in *Bâtons, Chiffres et lettres* (Paris: Gallimard, 1965), p. 47.

10. See "Un Cadavre" in *Tracts Surréalistes et Déclarations Collectives 1922–1939*, ed. José Pierre (Paris: Le Terrain Vague, 1980), pp. 133–47. See also Georges Bataille, "Notes on the Publication of 'Un Cadavre,'" in *The Absence of Myth: Writings on Surrealism*, ed. and trans. Michael Richardson (London and New York: Verso, 1994), pp. 30–33. The parallels between the thought of Bataille and Queneau, especially their relation to Hegel and captivation by the violence of the dialectic, are richly suggestive.

11. Raymond Queneau, "Qu'est-ce que l'art?" (February 28, 1938), in *Le Voyage en Grèce* (Paris: Gallimard, 1973), p. 94. Translation mine.

12. In his novel *Odile* (1937), trans. Carol Sanders (Normal, Ill.: Dalkey Archive Press, 1999), Queneau offers a fictionalized treatment of the circle around the Surrealists. See also Chris Andrews, "Surrealism and Pseudo-Initiation: Raymond Queneau's Odile," *The Modern Language Review* 94, no. 2 (April 1999), pp. 377–94.

13. For a discussion of Queneau's use of Pechiney's brochures that also proposes the numerological significance of the poem, see Anne Clancier (with the collaboration of Jean-Claude Bollinger), "*Le Chant du styrène*: Étude chimico-psychanalytique," in Clancier, *Raymond Queneau et la psychanalyse* (Paris: Éditions du limon, 1994), pp. 139–57. Claude Debon, editor of Queneau's collected writings, notes that the writer consulted Henri Gibello, *Le Styrène et ses polymères* (Paris: Dunod, 1956), as the basis for the poem's technical vocabulary. See Queneau, *Oeuvres complètes*, vol. 1, p. 1262.

during the July Monarchy and his conversion to the philosophy of Saint-Simon. "Man is served by blind matter. He thinks, he searches, he creates / In his living breath the germs scattered in all of nature Tremble like the rustling of the wind in the forest."[14]

Written as France was undergoing industrialization and shortly before Hugo witnessed with his own eyes that technological miracle of the nineteenth century—the railroad—the poem praises the obliteration of the landscape by the train as confirmation of increasing material progress. Similarly, these lines of Hugo that Resnais introduced into *The Song of Styrene*—produced at a moment when the productive forces of France once again were undergoing hyperbolic growth, this time during the 1950s economic boom of the Fourth Republic—evoke the power of human agency to transform the world through the operations of consciousness directed upon matter, an idea also pursued by Hugo's contemporary, Karl Marx.[15] Unlike the Saint-Simonians or Marx, Hugo was more skeptical about the ultimately beneficent character of political and technological progress. He concluded his poem on a less optimistic note, discerning in the splendor of his century a simultaneous diminution of spiritual values, despite the growing mastery of nature. Although seemingly a paean to the future, the poem and its citation by Resnais betray ambivalence about what may be lost in the forward movement of history. While seemingly less critical of the gleaming surfaces of postwar modernity than other French films such as Jacques Tati's *Playtime* (1967), *The Song of Styrene* nevertheless does not become the encomium for the automobile and *promesse de bonheur* of consumer society evident in Jacques Deny's *Lola* (1960), and suggestively analyzed by Kristin Ross.[16]

The prologue to the film transpires in an indeterminate space and time that is, in fact, the present. At once evoking science fiction through its austerity and bright colors, it also suggests a primordial stage of evolution. Against a darkened background, brightly colored ferns shown in close-up begin to unfurl as if

14. Victor Hugo, "Ce siècle est grand et fort," *Les Voix Intérieures*, in *Oeuvres poétiques*, ed. Pierre Albouy (Paris: Gallimard, 1964), vol. 1, p. 924. For a discussion of Hugo's links to Saint-Simon, see the annotation on p. 1478. On the Saint-Simonian concept of the harmonious action of man on nature as manifested through the progress of industry, see the work of his disciples, *The Doctrine of Saint-Simon: An Exposition, First Year, 1828–1829*, trans. with notes and an introduction by George G. Iggers (Boston: Beacon Press, 1958), esp. pp. 29, 111, 217. As Iggers notes (p. xii), although it was only through this later work that Saint-Simon's ideas became known, his followers already began to distance themselves from his faith in science and technology and instead sought solutions in the realm of political and social organization.

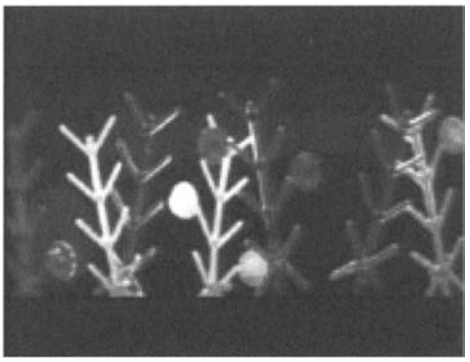
15. Paradigmatic here is Karl Marx, "The Economic and Philosophic Manuscripts of 1844," in *The Marx/Engels Reader*, ed. Robert C. Tucker (New York: Norton, 1972), pp. 67–125. On the significance of plastics in the industrial boom of postwar France, see Denis Woronoff, *Histoire de L'industrie en France* (Paris: Éditions du Seuil, 1994), pp. 541–42, where it is noted that between 1960 and 1972 the French chemical industry experienced annual increases of production of 8.1 percent. Writing of government initiatives to assist industry in modernizing and remaining competitive, Woronoff describes the conjuncture of the 1950s and 1960s as that of the "Saint-Simonian state" (p. 555).

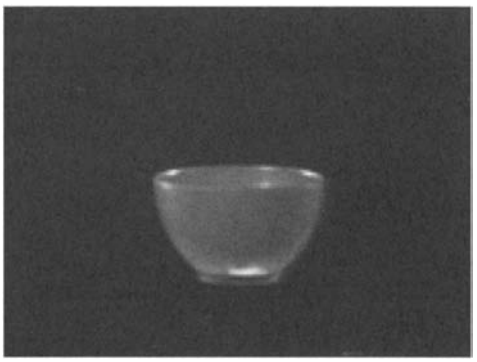
16. Kristin Ross, *Fast Cars, Clean Bodies: Decolonization and the Reordering of French Culture* (Cambridge, Mass.: MIT Press, 1995).

attracted by the light and heat of the sun. Only after these vegetable forms have completely unfolded do we realize they are actually plastic ladles. Thus Resnais introduces the play between inorganic and organic, between the ambiguous status of plastic with respect to the natural materials from which it is produced and the cultural product it becomes, which composes a leitmotif of his film. In successive shots an assortment of gender-neutral plastic products—flat extruded sheets, panels, doors, cups, and a tennis racket—are displayed against a darkened background punctuated by brightly colored geometric shapes, as if to garner respectability for plastic by linking it with the abstraction of modern art. Red and blue rectangles floating against blackness present few depth cues and suggest a trajectory of modern painting from Kasimir Malevich through the work of Mark Rothko and Barnett Newman.[17] Such an image recalls the experimentation László Moholy-Nagy describes in the 1947 edition of *The New Vision*, involving colored, opaque, and transparent plastic panels, a "painting with light" that the artist claimed changed his technique.[18]

In a voice dripping with mock-epic gravitas, the narrator exhorts, "O time, suspend your bowl. O plastic, where do you come from? Who are you? And what explains your rare qualities? So what are you made of? And where did you come from?" Accompanying this narration, the film presents a red plastic bowl, subsequently depicted in two shots that increase its size. Although motivated by the image of the bowl, the implausible conjunction of the concepts of time and bowl introduces what Riffaterre calls the "ungrammaticality" characteristic of poetic texts.[19] That it makes little apparent sense for time to raise a bowl indicates that

17. Resnais has spoken of his deliberate use of color dominants in *The Song of Styrene*, unlike the neutral color employed in *Nuit and brouillard* (*Night and Fog*) (1955). See Jean Carta and Michel Mesnil, "Un Cinéaste stoïcien: Interview d'Alain Resnais," *Esprit* 6 (June 1960), p. 938. This text is perhaps the most sustained discussion by Resnais of the film. One might note that there is scarcely any literature on it in French or English, and most of what has been published is undistinguished. See Roy Armes, *The Cinema of Alain Resnais* (London: A. Zwemmer, 1968), pp. 60–61, and Richard Roud, ed., *Cinema: A Critical Dictionary* (New York: Viking, 1980), vol. 2, p. 856.
18. László Moholy-Nagy, *The New Vision*, 4 rev. ed. (New York: George Wittenborn, 1947), p. 83.
19. Riffaterre, *Semiotics of Poetry*, p. 2.





All images: Alain Resnais. Le Chant du styrène. *1958.*

criteria other than literal meaning explain the significance of this utterance. Here the relevant information needed to decode the poem is intertextual, for Queneau is in fact making a pun that takes as its object the celebrated poem "Le Lac" (The Lake) composed in 1817 by Romantic writer Alphonse de Lamartine (1790–1869).[20] Separated from his recently deceased beloved, the poet sits alone by a lake and laments the temporality of human life, wishing that he and the object of his love might have escaped time's passage.

Lamartine's verse, "Ô temps, suspends ton vol" (O time, suspend your flight) is hilariously parodied and transformed by Queneau into "Ô temps, suspends ton bol" (O time, suspend your bowl). At once deflating the Romantic project of transcendence from the ravages of temporality, the pun in Queneau's text reinforced by the image track of the film also introduces a prosaic materialism. The flight of time, subject of mythological fabulation and philosophical speculation since the dawn of human culture, is eclipsed by an ordinary plastic bowl as the object of the poet's attention. He addresses himself not to time as an element of the universe, but rather to plastic as a new fact of his culture, inquiring twice as to its origins and directing all further questions to it. If Lamartine framed his melancholic meditations on love and time in the context of nature, Queneau approaches plastic as an element of a very different cosmogony, one shaped by technology whose artificiality is reflected in the temporally and spatially ambiguous setting of the film's prologue no less than in the displacement of romantic reverie by what Roland Barthes in *Mythologies* (1957) called "the aggressive quality" of red plastic.[21]

Continuing this search for origins ("Let's go back from the object to its distant ancestors"), the film presents the mold used for the casting of objects. Introduced in a close-up shot, it pivots before the camera, its polished metal gleaming. The narrator informs us that the mold includes "the matrix, mysterious being" ("la matrice, être mystérieux"), inserting yet another pun into the Quenellian text, for *la matrix*, the matrix, also signifies "womb" in French. To speak, as in the next sentence, of the mold that "creates the bowl, or whatever one wants" ("Il engendre le bol ou bien tout ce qu'on veut") therefore is simultaneously to organicize and feminize the source of plastic products. This association of the matrix with female sexuality is further confirmed by the ambiguity attached to another dual sign, the word for mold, *le moule*, whose feminine homonym *la moule*, the mussel, also refers in vulgar slang to the female genitalia.

Filming in close-up, Resnais shows the hands of operators who pull finished plastic objects, refrigerator drawers and toy cars, from the molds, not unlike those of an obstetrician pulling a newborn infant from the womb. The camera elegantly

20. Lamartine, "Le Lac," in *Oeuvres Poétiques*, ed. Marius-François Guyard (Paris: Pléiade, 1963), pp. 38–40. An English translation can be found in *Six French Poets of the Nineteenth Century: Lamartine, Hugo, Baudelaire, Verlaine, Rimbaud, Mallarmé*, ed. and trans. E. H. and A. M. Blackmore (Oxford: Oxford University Press, 2000), pp. 11–14.

21. Roland Barthes, "Plastic," in *Mythologies*, trans. Annette Lavers (New York: Hill and Wang, 1977), p. 98.

moves up and down the press, mimicking the rhythms of its industrial repetitions. For most of this sequence the faces of the workers are invisible, as if to convey a universe in which human subjectivity is secondary to a more primary mechanical dynamic.[22] Liquid plastic is injected into the press (its source unknown), workers remove finished products (their destination unknown). Only at the conclusion of the sequence do we actually see a full-length shot of a man working at the press, dwarfed by its enormity. Similarly absent are those who design the plastic objects shown throughout the film, as well as the consumers who are the end users of the products depicted.

If the depiction of the labor at the press does not ultimately differ from the representation of production shown in many industrial films, the color of the brass molds, their immaculate polished and gleaming surfaces, aestheticize the machinery. Evoking the sculptures of Constantin Brancusi, these machines fascinate the camera by virtue of their metallic splendor and their hard-edged boxy shapes. Their mass and solidity, all sharp corners and heavy geometry, are matched by the plastic products we see being molded with stylized edges, whose design reflects what Jean Baudrillard calls the shift from "bulbous streamlining to a flared look paralleling Detroit's jet-age tail fins" that evolved in the 1950s.[23] These items are ready to assume their positions in what the sociologist called "the system of objects" of industrial society, whose ordered and ordering presence in the home comprises a key term in the visual lexicon of the twentieth century.[24]

Commencing in the late 1940s, industrial designers turned to materials such as molded plywood, Formica, and Plexiglas in the modernist spirit of adapting form to function and facilitating mass production. In 1950, Charles and Ray Eames introduced a chair made of fiberglass and polyester resin, and five years later the Parisian department store Printemps organized an exhibition entitled "Your Home in the Age of Plastic."[25] Formica tables, molded polyester chairs, and plastic light fixtures began to fill the pages of interior design magazines and were on prominent display at the 1958 Brussels World's Fair. For Baudrillard, this proliferation of

22. In Roger Vailland's novel *325,000 Francs* (Paris: Corrêa, 1955), the central protagonist works in a plastic factory at a press whose enormity and sexual connotations are repeatedy stressed.
23. Meikle, *American Plastic*, p. 188.
24. Jean Baudrillard, *The System of Objects*, trans. James Benedict (London: Verso, 1996). The connection between the smooth, depthless surfaces of automobiles and other manufactured objects and Alain Robbe-Grillet's aesthetic of the nouveau roman has been well articulated by Ross in *Fast Cars, Clean Bodies*, p. 75.
25. For a presentation of the ubiquity of plastics in 1950s French design and consumer goods, see Anne Bony, *Les Années 50s* (Paris: Éditions du Regard, 1982), esp. pp. 175–79.

objects defied even the French penchant for encyclopedic compilation yet freed users from the tyranny of traditional bourgeois society in which furniture had long personified human relationships.[26] Introducing mobility and modularity into the once rigid schemas of dining and living rooms, plastics and other new materials exploded the unity of a domestic space formerly "moral in character."[27] Yet the reverse side of this liberation entailed the replacement of an "integrated psychological space" by a "fragmented functional space" whose loss of "internal organization" struck Baudrillard as an impoverishment.[28] Even worse, the bright colors of serial objects—the saturated-red armchairs, sky blue settees, and multicolored kitchens that defined French modernist interior design of the 1950s—promised festivity and emancipation but in reality became signs in a new signifying order, "traps, raising the banner of freedom but delivering none to direct experience."[29] As if describing the profusion of plastic products visible at the start of *The Song of Styrene*, Baudrillard laments that among the new "clothing, cars, showers, household appliances, plastic surfaces—nowhere here, it seems, is the 'honest' color that painting once liberated as a living force now to be found."[30]

Within this new system of cultural consumption, objects are increasingly called upon to resolve social and psychological conflicts and function as signs to be manipulated, rather than the means to fulfill needs. *The Song of Styrene* is among the most prescient cinematic announcements of this culture of the simulacrum whose culmination for Baudrillard and Barthes would be the replacement of the natural world by an artificial "plasticized" one in which human beings have become mere "spectators" of objects.[31] From the plastics factory in Tati's *Mon Oncle* (1958), whose assembly lines comically go awry, to the destruction of a plastic bar in Louis Malle's *Zazie in the Metro* (1960), to the prevalence of consumer goods in Resnais's own *Muriel* (1963), to the critique of commodity culture in Godard's *Two or Three Things I Know About Her* (1967), the French cinema of the late 1950s and 1960s frequently placed this emerging reality before the cinema spectator.

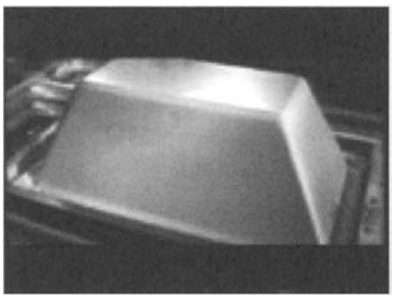
Yet unlike the films of Tati and Godard, *The Song of Styrene* does not explore the metropolis, the architecture of its steel and glass towers and its sites of consumption, but remains confined to the sphere of production. Accompanied by the sharp edges of Queneau's alexandrines and composer Pierre Barbaud's musical score—an energetic marshaling of lyrical wind instruments punctuated by dramatic bursts of percussion—*The Song of Styrene* represents the novel colors, shapes, and ambiance of this semiotically charged object-world of late modern

26. On this point see Leora Auslander, *Taste and Power: Furnishing Modern France* (Berkeley: University of California Press, 1996).
27. Baudrillard, *The System of Objects*, p. 15.
28. Ibid., pp. 17, 19.
29. Ibid., p. 32.
30. Ibid., pp. 32–33.
31. Barthes, "Plastic," p. 99; Baudrillard, *The System of Objects*, pp. 56, 57.

industrial civilization.[32] Confronting the viewer with objects that have no users, the film implies the autonomy of the former, as if to problematize the status of people within this domain. It takes evident pleasure in the visual forms of polystyrene, a modernist fantasy of pure colors and sinuous shapes, even as it elides the question of the social relations that plastic objects might imply. Contemporaneous with the early years of structuralism, *The Song of Styrene* outlines a set of structural relations (of manufacturing techniques and tangible forms) that compose a *langue* of plastic objects, uninflected by the distinctive *parole* of its users.

Introducing the technique of vacuum molding, the camera tracks above the press in which warmed plastic is extruded as a sheet and sucked into shape from below. Perfectly white sheets, gleaming as if empty canvases awaiting consecration by an artist, capture the attention of camera and viewer alike as they are transformed into pans and other household products. To enter into the press, we are told that a piston is required. This, in turn, necessitates a heating mantle ("le manchon chauffant"). Shown by the film as a phallic organ whose back-and-forth movements convey nothing so much as copulation, this machine exudes an eroticism underscored by the linguistic inversion of Queneau's text ("le chauffant manchon") that duplicates the thrusts and withdrawals shown by the cinematic image. Always ready to inject a risqué association where it may least be expected, Queneau, the author of the novel *Zazie in the Metro* (1959), describes a heating machine that is also hot, if not hot to trot.[33] As the sleeve emits a stream of yellow plastic beads, its fecundity emphasized by succeeding close-ups of blue, red, and green pearls, the film announces the fundamentally different agenda that distinguishes the eros of its mechanical devices from the bachelor machine of Duchamp and its thematics of unconsummated desire.[34]

For Queneau the cosmogonist, the poet who, like Hesiod, sought in metered verse to chronicle the origin of things, the manufacture of polystyrene must surely have been of interest for its unexpected evocation of the atomism of the Roman Epicurean philosopher Lucretius. Writing in his *De rerum natura* (*On the Nature of the Universe*), completed before his death around 55 B.C., Lucretius advanced the materialist doctrines of Epicurus and Empedocles in new and original directions and argued for the primacy of atoms as the seeds of all things, the indestructible foundation from which everything arises. "Nothing can ever be



32. For a discussion of the musical score of the film see the statement by Pierre Barbaud in *L'Arc* 31 (1967), pp. 84–86.

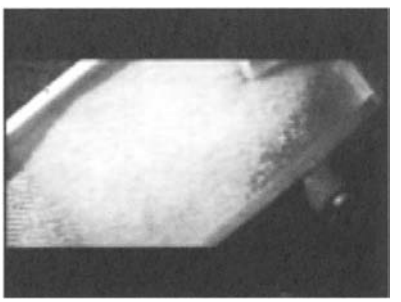
33. Raymond Queneau, *Zazie in the Metro*, trans. Barbara Wright (New York: Penguin, 2001).

34. On the bachelor machine in Duchamp, see David Joselit, *Infinite Regress: Duchamp 1910–1941* (Cambridge, Mass.: MIT Press, 1998), and *The Bachelor Machines*, ed. Harald Szeemann (New York: Rizzoli, 1975).

created out of nothing," because "nature resolves everything into its component atoms and never reduces anything to nothing," he claimed.[35] Believing the universe to be composed of these atoms and condemned to eternal movement in a world without any end or bottom where they might rest, Lucretius also posited the existence of a void through which atoms circulate and understood this vacuity as immanent to things themselves. "Nothing is really solid," he concluded, since even the most apparently inviolable agglomeration of atoms, a sealed building or a gold bar, could be breached by external forces such as heat.[36]

Watching the polystyrene shown in the film—"lively and turbulent, that tumbles and scatters and the granular swarm on the vibrating sifter happily pulsating with its beautiful dye"—one might easily discern the tenets of the Lucretian cosmogony that captivated Queneau. The tendency postulated by Lucretius for all matter to fall downward through empty space is neatly paralleled by the motion of the grains of plastic as they tumble through the metallic sifter, a movement documented by the film with evident care. Similarly, the vibrating motion of the sifter itself evokes the vibratory movements produced by atoms as they combine and form the elements of the world.[37] Denying that atoms possess any intrinsic color, Lucretius proposes that the colors we perceive in things are produced by a kind of stain or dye laid upon them by atoms in the act of their combination. As we watch colorless plastic beads combine with pigment in a mixer that renders them a homogeneous color, the supposition is further strengthened that Queneau viewed the manufacture of polystyrene shown in the film as an allegory for the Lucretian cosmogony, a cinematic recapitulation of the creation of the universe.

The protean dimension of styrene, its ability to assume infinite hues and shapes and metamorphose into the most varied products unlike earlier permanent thermoset materials such as Bakelite, is suggested by the sequence in which long stalks of dyed styrene "of all colors, tints, nuances, tones" are cooled in water. Prior to their appearance in these elongated thread-like forms, "these stalks had been drawn through a screwing die, a sausage without end that compresses a screw." As the worm screw spews out an engorged mass of yellow plastic, its appearance suggestive of nothing so much as a piece of excrement being forcibly expelled by yet another machine whose operations mimic those of organic life, the violent dynamics at the heart of the Lucretian conception of matter



35. Lucretius, *On the Nature of the Universe*, trans. Ronald Latham (Baltimore: Penguin Books, 1951), pp. 32, 33. The most detailed study of the Lucretian dimensions of Queneau's work is Chris Andrews, *Poetry and Cosmogony: Science in the Writing of Queneau and Ponge* (Amsterdam: Rodopi, 1999).
36. Lucretius, *On the Nature of the Universe*, p. 42.
37. For a detailed discussion of this point see Diskin Clay, *Lucretius and Epicurus* (Ithaca, N.Y.: Cornell University Press, 1983), p. 149.

attain exemplary clarity.[38] For the atoms circulating in incessant motion, whether combining into new compounds or destroying those that already exist, partake equally in the play of movement that reveals the ostensibly permanent character of the sensuous world as fluid and transitory, shot through with decay and ruin.[39]

Identified in 1950s France with all that was most modern and advanced, what Barthes calls "the stuff of alchemy ... the very idea of ... infinite transformation ... ubiquity made visible [in] the first magical substance which consents to be prosaic," plastic might also have captivated Queneau for its mimicry of the violence immanent to the material world, the finitude and dissolution of all forms, including the harmonies of language and literature.[40] Although widely thought to be captivated by the redemptive prospect of literature creating "small areas of order and symmetry," Queneau was no less fascinated by the forces of chaos and entropy that it seeks to contain.[41] Here a significant tension between the creative efforts of Resnais and Queneau emerges. For unlike the words of the writer, Resnais's images betray little concern with transfiguring 1950s French consumer objects so as to make them appear manifestations of a more primordial flux. Yet this aspiration is fundamental to *The Song of Styrene* and comprises a key difference between it and other postwar French films treating consumer society. Inflected by Queneau's text and his Lucretian philosophical leanings, the bouncy rhythms of matter captured by Resnais seem to imply the seeds of their own destruction.

Exemplifying the reverse movement from effects to causes announced at its start, "Let's go back from the object to its distant ancestors / This model story must unfurl backwards," the film presents us first with granulated styrene, then with stalks, and finally with the compressed plastic sausage from which they originate.[42] Here it recalls Dziga Vertov's employment of reverse motion (analyzed by Annette Michelson in *Man with a Movie Camera* [1929] and in his other films) to

38. One might note that Marx himself was deeply immersed in the ancient atomism of Democritus, Epicurus, and Lucretius, and in 1841 completed his own doctoral dissertation on their philosophy. See Marx, *Difference Between the Democritean and Epicurean Philosophy of Nature*, in Marx and Frederic Engels, *Collected Works* (New York: International Publishers, 1975), vol. 1, pp. 25–105.

39. Clay, *Lucretius and Epicurus*, p. 165.

40. Barthes, "Plastic," pp. 97–98.

41. Martin Esslin, "Raymond Queneau," in *The Novelist as Philosopher: Studies in French Fiction 1935–60*, ed. John Cruikshank (London: Oxford University Press, 1962), p. 85. See also Italo Calvino, "The Philosophy of Raymond Queneau," in *Why Read the Classics?* (New York: Pantheon, 1999), pp. 245–60.

42. See Richard Lanham, *A Handlist of Rhetorical Terms* (Berkeley and Los Angeles: University of California Press, 1991), p. 89. For an analysis of hysteron proton in the cinema of Dziga Vertov, see Annette Michelson, "'The Man with the Movie Camera': From Magician to Epistemologist," *Artforum* 10, no. 7 (March 1972), pp. 60–72.

depict the processes of production, as when we see a dismembered bull reassembled, or a speeding locomotive followed by the camera crew that records it. Writing of his collaboration with Resnais, Queneau offered this account of the film's narrative form:

> Alain Resnais completed a documentary on styrene of a fascinating science fiction–like beauty. When he proposed that I write the commentary, the editing already was finished.
>
> What did not make my work to come any easier was that the montage was backward. It began with the object to show the different stages of fabrication, all the way to the raw materials, coal and petroleum. The commentary was supposed to have been a cantata. I succeeded in convincing Resnais to be content with the alexandrine but he always missed his cantata. The alexandrines were not so easy. I had to obey the editing, its content as well as the duration of the shots and sequences. When the rhyme of one alexandrine fell in the next shot, it became necessary to start over. Resnais was ruthless. I got on perfectly with him. If he displayed a search for total perfection in his domain, he was no less respectful of the text that I submitted.
>
> During the winter of 1957–58 I was rather seriously ill. During the first days of my convalescence, I saw Resnais reappear, kind, discreet, inexorable. He had to delete two lines that would modify the alternation of masculine and feminine rhymes. Would this bother me? Must I not revise the passage in question? Even the reading of the text was submitted to me for approval. I never had the feeling of having so intimately collaborated on a film.
>
> I recently watched *The Song of Styrene* again and still find it very beautiful. I speak in all objectivity, for there is one thing about which I am certain: it is a film by Alain Resnais.[43]

Conforming his poem to the edit realized by Resnais, Queneau confessed to being seduced by the challenge of negotiating the "curious or rigorous constraints" presented by its subject matter no less than the alexandrine form and the film's montage.[44] Although captivated by the possibility of imposing a musical structure of the cantata on the film, Resnais nonetheless accepted Queneau's alexandrine. When asked about it in an interview, he responded:

> I was thinking of the didactic poetry of Boileau and Malherbe, and it seemed to me that a text in verse would be more pedagogically effective, and then I vaguely sensed that there could exist a relationship between the alexandrine and CinemaScope. Finally, I had a certain taste for

43. "Le Chant de la sirène/Resnais et le styrène," brochure *Alain Resnais* (Paris: Cinemathèque française, September 1963), quoted in Queneau, *Oeuvres complètes*, vol. 1, p. 1261.
44. Ibid., p. 1260.

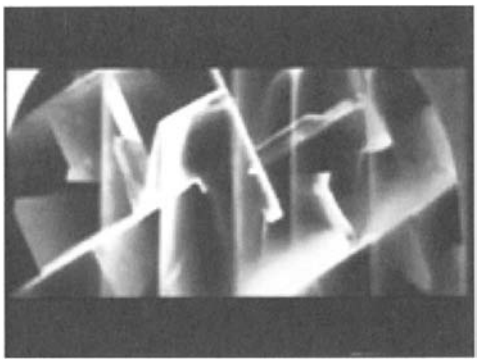
> mixing sweet and sour, for strange combinations. Paradoxically, Pechiney initially did not want the commentary by Queneau and commissioned a traditional, matter-of-fact narration. They discovered, however, that Queneau's version was easier to understand, while in the matter-of-fact narration the sequence of chemical transformations was harder for people to follow. Pechiney now distributes the Queneau version. They did not ask me to explain the fabrication of styrene, just to show that it was a noble material, since its fabrication was very complex and required considerable knowledge, because it was created entirely by man.[45]

If Queneau's characteristic modesty led him to attribute authorship of the film entirely to Resnais, it should by now be evident that the narration introduces a range of associations that contribute no less than the work of the director to its rich play of meanings. Pechiney's discovery that the writer's alexandrine verses conveyed complicated information more clearly than a standard voice-over commentary suggests a fundamental congruence between them and Resnais's direction. Although the relation Resnais surmised between the alexandrine and CinemaScope does not seem to have borne fruit, both the filmmaker and the writer remained captivated by the reverse narration of hysteron proton, the movement from effect to cause, product to process, object to origin that leads toward the turbulent dynamics of matter and the natural world.

For his own part, Queneau already had expressed skepticism about the very project of documentary cinema. In an essay published in 1946 entitled "The Myth of Documentary," he observed:

> Is it necessary to repeat that "truth" cannot exist for anyone but the contemplative sage? Pure documentary does not exist, even if one were to run the camera by chance (for man cannot *imitate* chance). The documentary does not speak the language of science (ideally, that is, mathematics), but that of cinema, that is to say, of moving images. . . . It is illusory for the cinema to search for proof of its dignity in science, just the way at its beginnings it searched in art. Expression without tradition manipulated for a long time by illiterates and immediately popular (and internationally, humanly popular), the cinema perpetually fears its own autonomy. . . . It is like the mentally ill patient in *Let There Be Light* who cannot walk well, even though he does not have any physiological lesion. A little psychoanalysis, and he is cured. At the end of the film when one sees him running around in a baseball game, this does not appear more convincing (contrary to the intentions of the film). A documentary cannot prove whatever it might wish to demonstrate, for it does not possess a truth value but a cinematographic value. . . . The documentary, after all, has no meaning other than an involuntary one.[46]

45. Carta and Mesnil, "Un Cinéaste stoïcien: Interview d'Alain Resnais," pp. 937–38.
46. Raymond Queneau, "Le Mythe du documentaire," *Labyrinthe* 22 (December 1946), p. 28.



Proscribed from willfully cultivating the spontaneous and accidental, the territory in which Queneau believed the Surrealists to be stranded, documentary cinema must recognize and accept its own properly cinematic identity, one that Queneau discerns as distinct from the imperatives of science or art. In his suggestion that the documentary possesses an involuntary meaning, he ascribes to it a symptomatic value, and thus distances himself from the realist film aesthetics of André Bazin with its belief in photographic verisimilitude. Similar to Freud's notion of parapraxis, genuinely illuminating moments of cinema dwell in incongruous details rather than in reassuring instances of mimesis. True documentary film presupposes an act of reading that treats the manifest content of the image as but one layer of a complex palimpsest. A close-up of a rotating drying rack shows beads of polystyrene falling downward, their sloping cascade once more evoking the Lucretian idea that "Whenever the atoms are traveling straight down through empty space by their own weight, at quite indeterminate times and places they swerve ever so little from their course, just so much that you can call it a change of direction."[47] Lucretius refers to this swerve of trajectory as *clinamen*, his appropriation of the Greek term for bending, *klesis*, employed by Empedocles. Just as Lucretius understood the swerve of atoms away from their parallel paths as the means by which matter was created, the swerve of meaning in *clinamen* becomes the central creative trope in *The Song of Styrene*. Queneau's puns and double entendres derail literal meaning, while the constant interaction of verbal language and image undercuts the self-sufficiency of each.

The ensuing discussion of polymerization—"Our polystyrene was born with difficulty. A polymer produced of simple styrene" ("A peine était-il né, notre polystyrène. Polymère produit du plus simple styrène")—allows Queneau another dual sign, the homonym of polymer, (poly/mère, i.e., many mothers) that evokes the fertility of plastic and its connection to the organic world. Forming a complex of heavy molecular weight and linking molecules in an autoclave, "an elementary machine with a concave belly" ("une autoclave, machine elementaire à la panse concave"), according to the spoken narration, polymerization is explicitly linked

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Queneu's own activity in the cinema was extensive and included writing and speaking the commentary in a short film, *Arithmetique* (Pierre Kast, 1951), that was to have been included in a cinematic encyclopedia. In 1956, he wrote the script for Luis Buñuel's *La Mort en ce jardin* (*Death in the Garden*), while three years later he supervised the French version of *Some Like It Hot* (Billy Wilder, 1959). For a useful overview of his cinematic career, see Claude Rameil, "Images of Queneau: An Essay in Filmography," trans. Douglas Kerr, in *Raymond Queneau (Prospice 8)*, ed. Michael Edwards (Isle of Skye, Scotland: Aquila, 1978), pp. 89–98.

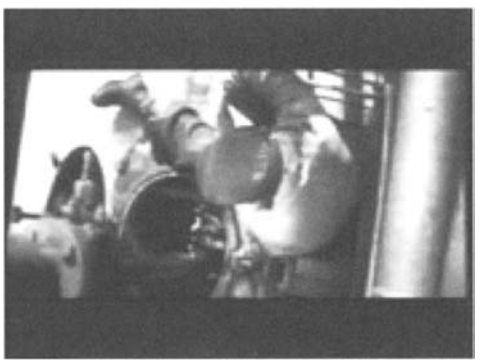
47. Lucretius, "On the Nature of the Universe," p. 66.

to the labor of giving birth, an association further strengthened by the dark womblike cavern of the control room.

Cutting from the concave form of the autoclave to the tank in which liquid styrene is stored, the camera travels in a luxuriating crane shot along the side of this container. This is the first moment of natural illumination in the film, and indeed the first scene to take place outdoors, removed from the molding and fabrication plant. Appealing to our curiosity about the origin of styrene, the film continues along its trajectory of depicting increasingly elemental stages of its manufacture. The camera now has moved to the center of the tank and in a striking overhead shot we see a worker next to its open door. In the tank, an innocuous-looking water-like fluid is now visible. "Take a good look; this is the only occasion for you to view that which is in question," we are informed. If what we see is underwhelming, far less than what such a hyperbolic buildup might have led us to expect, the very absence of spectacle, the near invisibility of styrene presented as merely "a clear liquid" ("un liquid incolore"), is itself significant. At once suggesting the limits of our vision, the viewer's and the camera's shared inability to see the molecular transformations in question, this moment is supremely Lucretian in its linkage of invisibility to immortality and its reminder of a more primary level of atomic matter, forever in motion.

Yet this transparency of liquid polystyrene, its seeming invisibility to the gaze, underscores the significance of plastics within a more general postwar modernist transformation of materiality. Already anticipated by the dematerialization of glass architecture and tubular metal furniture associated with figures such as Le Corbusier and Marcel Breuer in the 1920s, the plastics revolution of the 1950s similarly conjoined lightness and optical permeability with the promise of democraticization of access through prefabrication. In projects such as Lionel Schein's plastic house commissioned by *Elle* magazine and the French Coal Industry for the 1956 Salon des Arts Ménagers in Paris, the seashell-like plan of the house yields a living space that is both open and surveyable, a veritable panopticon.[48] From Monsanto's 1957 plastic

48. See Bruce Martin, "How Should We Use Plastics?" *The Architectural Review* 120, no. 53 (August 1956), pp. 134, 136.



"House of the Future" exhibited at Disneyland, to Buckminster Fuller's "Radome" dome sculpture on display in the garden at the Museum of Modern Art in 1959, the late 1950s comprise a golden age of plastic architecture.[49]

While thermoplastics such as cellulose acetate had been employed in electrical parts and architectural hardware from the early twentieth century, it was only in the early 1960s that polyester compounds began to be employed in structural building applications, such as roof structures, and in interior fixtures such as kitchen countertops and bathtubs.[50] Writing in his 1968 book *Everyday Life in the Modern World*, Henri Lefebvre observes that "The glance that is cast upon a technical object—passive, concerned only with the way it works, with its structure, how it can be taken apart and put together, fascinated by this backgroundless display all in transparent surface—this glance is the prototype of a social act."[51] To a degree far greater than other French films of the late 1950s, *The Song of Styrene* foregrounds this social optic. It calls attention to the countless gazes upon plastic surfaces that soon would become the norm as postwar French consumer society embraced modernity by liquidating residues of older (precapitalist and peasant) modes of production.

Returning to the exterior of the chemical refinery, a jungle gym of pipes dwarfs the single man shown against its immense backdrop. As unmistakably technological a setting as one could imagine (whose acrid aroma almost seems to leap off the screen), this landscape is nonetheless organicized by Queneau. "From pipe to pipe, thus we travel through the desert of piping. Toward raw materials, toward abstract matter which circulated endlessly, effectively and secretly" ("Du tuyau en tuyau ainsi nous remontons, A travers le désert des canalisations, Vers les produits premiers, vers la matière abstraite Qui circulait sans fin, effective et secréte"). Here it may also be possible to discern Queneau the Hegelian, the transcriber and editor of Alexandre Kojève's famed lectures on *The Phenomenology of Spirit* delivered at the École des Hautes Études from 1933 to 1939, in affirmation of the German philosopher's teaching that the abstract is most concrete.[52] Yet one might also note the writer's activity as editor of the *Encylopédie de la Pléiade*, a similarly ambitious attempt to synthesize the state of knowledge of the twentieth century.[53]

49. On the Monsanto "House of the Future," see Meikle, *American Plastic*, pp. 205–14.

50. See Forrest Wilson, "Plastics, Past and Future," *Architecture* 77, no. 4 (April 1988), pp. 103–08.

51. Henri Lefebvre, *Everyday Life in the Modern World*, trans. Sacha Rabinovitch (New York: Harper and Row, 1971), p. 49.

52. See Alexandre Kojève, *Introduction to the Reading of Hegel: Lectures on the Phenomenology of Spirit*, assembled by Raymond Queneau, ed. Allan Bloom, trans. James H. Nichols Jr. (New York: Basic Books, 1969). On the significance of Hegel in Queneau, see Pierre Macherey, "The Hegelian Musings of Raymond Queneau," in *The Object of Literature* (Cambridge: Cambridge University Press, 1995), pp. 57–83.

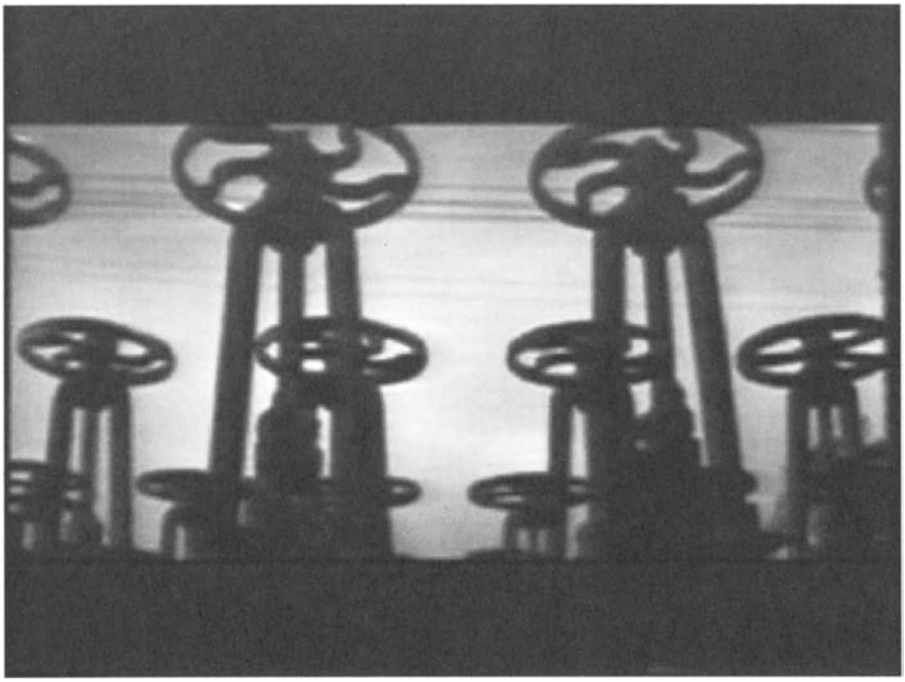
53. On the encyclopedic in Queneau, see the essays collected in *Queneau encyclopédiste? Actes du 2e Colloque Raymond Queneau, Université de Limoges* (December 1987; Montpellier: Éditions du Limon, 1990). One might also note that *All the Memory of the World* was produced by Pléiade and is listed in the opening credits as the fifth film in a cinematic encyclopedia of Paris.

Resnais presents this trek, a journey across time no less than space, through a series of elaborate camera movements and traveling shots whose motions appear to mimic the circuitous trajectory and curvilinear shapes of the pipes. Aestheticized to the point of excess, as when two bunches of pipe curving in alternate directions are shown against a blue sky filled with clouds, these shots anticipate the elaborate tracking in *All the Memory of the World* and *L'Année dernière à Marienbad* (*Last Year in Marienbad*) (1961). Yet if the dominant tropes of the latter film are circularity and confinement, the impossibility of an escape from a labyrinthine architecture, if not the ultimate identity of memory and imagination as the true agents of suffocating enclosure, the circular camera movements in *The Song of Styrene* never yield a sense of increasing familiarity with the setting, though their virtuosity of technique supports Godard's assertion that "Resnais has invented the modern tracking shot, its breakneck speed, its abrupt start and slow arrival, or vice versa. . . . Simply because he asked himself questions about the problem, and solved them."[54]

Unlike the meticulous filming of concentration camps in *Night and Fog* (1955) that strives to render them spatially coherent and accessible through tracking shots and minimally disruptive montage, the space of the refinery is not clearly delineated, and the commentary fails in any but the broadest sense to identify the technology we see with its function. Nor does the film ever provide a location for the factory and the production process that we witness. The canted angles assumed by the camera bestow the tops of the refinery plant with an impressive grandeur. Panning up and across the piping, alternating long shots with close-up views, tracking beneath the elevated catwalk, the camera—and through identification with it, the spectator—seems to overcome normal spatial limitations. A series of crane shots travel through the pipes and create an effect of movement through an impossibly narrow and constricted space. For a few brief moments the film viewer becomes as mobile and malleable as the liquid surging through these tubes, temporarily separated from his or her body thanks to the film camera. Godard praised this editing by calling Resnais "the second greatest editor in the world after Eisenstein. . . . Never, I believe, since Eisenstein has a film been so scientifically conceived as *Le Chant du Styrène*."[55]

The duration of the sequence and the intensity of the camera's fixation upon this site betrays a nostalgia for an older mode of production, one whose gleaming metal parts, linear elements, and geometric volumes refer to the first machine age—the very cultural ambiance seemingly rendered obsolete by the flowing immateriality of plastic—as its referent. If this cult of the machine is rendered familiar through the science-fiction film, from the inaugural *Voyage à travers l'impossible* (*Impossible Voyage*) (1904) of Georges Méliès through more recent efforts, it is no less present in the work of early modernist artists such as Max

54. Godard, "Take Your Own Tours," p. 116.
55. Ibid., p. 115.



Ernst, Francis Picabia, Vladimir Tatlin, Wyndham Lewis, Raoul Hausmann, and of course Duchamp.[56] Exploring this dimension of plastic and its underside, the industrial fabrication rarely acknowledged by promoters of its aesthetic, the film extols production while nonetheless calling attention to the discrepancy between polystyrene as process and product.[57]

That the viewer is meant to experience this aestheticization as a suspension of history, a momentary cessation of the backward movement toward raw materials and abstract matter, is shortly made evident. For just before the lines of the narration in which these words are spoken, a worker is shown sliding down a pole from the catwalk. Five shots and almost one minute later, the action concludes and he lands on the ground, but not before we have been shown the deserted refinery and an army of workers who cross its expanse. Marked as a moment of reverie, a refuge from the suctionlike force of the film's narrative that pulls the viewer back to ever more distant origins, this scene is abruptly truncated by Queneau's telling lines, "Purified, distilled, and redistilled, and these are not exercises in style. Ethylbenzene can and indeed must explode if the temperature reaches a certain point."

Making explicit reference to Queneau's own *Exercises in Style* (1947), his celebrated narration of a simple incident on a Parisian bus in ninety-nine different literary styles that run the full gamut of rhetorical modes and spoken idioms, such an intertext also announces the writer's own modernist sensibility.[58] The purification, distillation, and redistillation of language is essential to the work of Queneau, for whom literature entailed the submission to forms as instrumental in shaping reality as molds are in fabricating objects from molten plastic. Language and literature do not reveal a pregiven world but rather impose order upon a formless and inchoate flux by means of conventions of various techniques and genres.[59] If this image of the writer as mechanical fabricator, wresting finished poems from the heavy machinery of literary history, anticipates the critique of the author launched by structuralists such as Barthes (who shortly would champion *Zazie in the Metro*), Queneau's embrace of the aesthetic of constraint would find its ultimate manifestation in his co-founding (with François Le Lionnais) of the Oulipo (Ouvroir de Littérature Potentielle/Workshop for Potential Literature) in

56. Two helpful and still not surpassed overviews of this cultural matrix are K. G. Puntus Hultén, *The Machine as Seen at the End of the Mechanical Age* (New York: Museum of Modern Art, 1968), and Reyner Banham, *Theory and Design in the First Machine Age* (Cambridge, Mass.: MIT Press, 1980). The relation of Duchamp to the machine is incisively explored in Linda Dalrymple Henderson, *Duchamp in Context: Science and Technology in the Large Glass and Related Works* (Princeton, N.J.: Princeton University Press, 1998), a work whose full scope is not conveyed by its title.

57. One might note that the real health hazards of labor in a plastics factory are never acknowledged by the film, unlike Tati's *Mon Oncle,* in which a harried Monsieur Hulot is shown growing drowsy as he inhales noxious fumes. Numerous moments in Tati's film suggest that it is in dialogue with *The Song of Styrene.*

58. Raymond Queneau, *Exercises in Style,* trans. Barbara Wright (New York: New Directions, 1981).

59. Esslin, "Raymond Queneau," p. 95.

1960.[60] Its members, including Georges Perec, Jacques Roubaud, Harry Mathews, Italo Calvino, and Duchamp, pursued with dizzying enthusiasm the imbrication of literature with mathematics and other formal systems.[61]

Yet what then should one make of the text's assertion that the labors of purification and distillation entailed in the manufacture of styrene are not mere "exercises in style"? For surely the film is a triumph of style that leaves the mastery of Queneau and Resnais beyond any possible doubt. Just as we hear the narrator announce that "ethylbenzene can and indeed must explode when the temperature reaches a certain point," the phalanx of workers files past the camera, the first and only moment in the film when a group of any sort is shown. These proletarians, with their grim docility, have little in common with the technocrats in the cinema of Tati and Godard—the office workers in *Playtime*, or the residents of Godard's *Alphaville* (1965). Nor does their somber march corroborate the triumph of Saint-Simonian organization, let alone the revolt of the industrial working class predicted by the contemporaneous Situationists.[62] Thus, the significance of the potential explosion that the film hints at (and that transcends mere stylistic exercise) will need to be sought elsewhere. Emphasized by a series of close-ups of

60. Roland Barthes, "Zazie and Literature" (1959), in *Critical Essays*, trans. Richard Howard (Evanston, Ill.: Northwestern University Press, 1972), pp. 117–23. On the significance of constraint in Queneau, see Warren F. Motte Jr., "Raymond Queneau and the Aesthetic of Formal Constraint," *Romanic Review* 82 (January 1991), pp. 193–209.

61. On the history of the group, see the indispensable *Oulipo Compendium*, ed. Harry Mathews and Alastair Brotchie (London: Atlas Press, 1998), as well as *Oulipo: A Primer of Potential Literature*, ed. and trans. Warren F. Motte Jr. (Lincoln: University of Nebraska Press, 1986).

62. See "The Bad Days Will End" (1962), in *Situationist International Anthology*, ed. and trans. Ken Knabb (Berkeley: Bureau of Public Secrets, 1981), pp. 82–87.

pressure gauges, the impassive face of a worker who monitors them (played by the film's cinematographer Sacha Vierny), and Barbaud's increasingly frenetic score, the sense of an impending blast is palpable.

One need not look far, however, for at the moment of the seemingly matter-of-fact description of the proclivity of ethylbenzene to explode when heated to a certain temperature, Queneau's text undergoes an explosion of its own. A comparison of the version reprinted in his collected writings with the spoken narration in the film reveals a number of divergences. In fact, there are eleven moments in the film's voice-over commentary that differ from this printed version of the text and introduce alternate lines and phrases. The editors of Queneau's writings note the existence of two other printed versions of the text, thus complicating the project of identifying any one of these four variants as definitive.[63] Most of the differences between the printed and spoken versions of Queneau's text are minor and do not introduce significant changes in meaning. Yet two passages do vary considerably, the first of which immediately follows the mention of explosive chemical properties.

We read in the collected writings: "As to ethylbenzene, it is clear, it results from the combination of liquid benzene and ethylene, a simple vapor. Ethylene and benzene have as their ancestors coal or petroleum, petroleum or coal." Yet in the spoken commentary of the film we hear the following: "Now it is necessary to ask where these essential products ethylene and benzene come from. They are extracted from oil, magical liquid/treasure, that is found from Bordeaux to the heart of Africa. They are extracted from oil and also from coal."

Earlier in the poem Queneau notes "in the past styrene was extracted from benzine, the source of styrax, an Indonesian shrub," thus introducing a moment of geographical specificity into an otherwise spatially indistinct narrative.[64] This quickly changes with the first mention of oil in the poem. Suddenly, the initial presentation of polystyrene as product of technological processes and chemical reactions shifts to a consideration of the source of its raw materials in the world system. Oil is described as a "reliquide," a portmanteau word constructed from "relique," the word for a relic or treasure with a religious significance, and "liquide," the word for liquid. This magical treasure, found, we are told, from Bordeaux to the heart of Africa, is now furnished with a specific origin, one that deeply resonates with French business practices and geopolitics of the 1950s.

63. The poem first appears in *Les Lettres Nouvelles* 9 (April 29, 1959), pp. 5–7, in a version nearly identical with that included in Queneau's collected writings, as well as the one in his *Chêne et chien* (Paris: Gallimard, 1969), pp. 173–75. It next was reprinted in nearly indistinguishable form, save for two misprints, in *L'Avant Scene du Cinema* (February 15, 1961), p. 50. A third variant, apparently with significant differences, was published in the brochure accompanying the 1963 retrospective of the films of Resnais at the Cinématheque Française. A fourth variation, an unedited version included in an unpublished synopsis, is reprinted in Queneau, *Oeuvres complètes*, vol. 1, pp. 1264–265.

64. On the history of the balsamic resin styrax, see E. G. Couzens and V. E. Yarsley, *Plastics in the Modern World* (Harmondsworth, U.K.: Penguin, 1968), p. 68.

Pechiney, the firm that sponsored Resnais's film and with whose cooperation it was made, dates back to the nineteenth century. From 1871 it began to fabricate aluminum (to this day its core business and one in which it is the fourth largest global producer), and later expanded into chemicals, hydroelectric power, and other subsidiary areas. In 1948, it adopted a new organizational structure based upon American models, and together with these imported management precepts it embraced the idea of corporate public relations. Toward this end, an industrial film about its polystyrene products, marketed under the trade name Afcolene, no doubt was deemed useful.[65] Flexible plastic packaging for the food and cosmetic industries, an application whose expansion during the 1960s is prefigured by the consumer objects shown in the film, would become an important source of revenue for the company during that decade. Polystyrene was first manufactured by the German chemical firm BASF during the 1930s. Today it is most commonly found in expanded polystyrene, a compound made of 5 percent plastic and 95 percent air, from which coffee cups and take-out food containers are produced. By 1981, the Pechiney Group, the instantiation of more than a century of acquisitions, mergers, and consolidations, was the eighth-largest corporation in France. By 2003 the company had net annual sales of 11 billion Euros and its workforce comprised 34,500 employees located in fifty-one countries.[66]

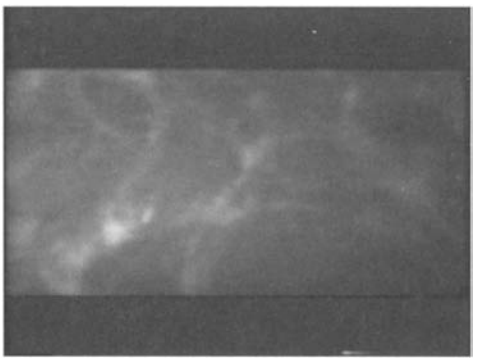
The Bordeaux region mentioned in Queneau's verse was the site of one of its many chemicals plants, as well as oil refineries. Yet Africa also played a significant role in the company's business profile during the 1950s, for in 1957 it inaugurated production of aluminum at a plant in Edea, Cameroon.[67] The following year, a similar facility commenced operation in French Guinea. In this expansion into Africa Pechiney simply was following the lead of the French petroleum industry, for by 1950 Petrofina was already tapping oil reserves in the Congo, Angola, and Tunisia. In 1958, the same year as *The Song of Styrene*, Total began oil extraction at a facility in Hassi-Messaoud in Saharan Algeria, where, as the conglomerate's Web site today notes, it remained active until the nationalization of this facility by the Algerian government in 1971.[68] In November 1958, the Saharan

65. Claude Joseph Gignoux, *Histoire d'une entreprise française* (Paris: Hachette, 1955), p. 209.

66. In 2003 Pechiney itself was acquired by the Canadian firm Alcan, now the second-largest manufacturer of aluminum.

67. On this history see Michel Beaud, Pierre Danjou, and Jean David, *Une multinationale Française Pechiney Ugine Kuhlman* (Paris: Éditions du Seuil, 1975), pp. 48–49. For an official presentation of the company and its history, see Gignoux, *Histoire d'une entreprise Française.*

68. www.totalfinaelf.com/history/total. See also André Nouschi, *La France et le pétrole de 1924 à nos jours* (Paris: Picard, 2001). Some indication of the importance of these oil deposits can be ascertained, as Nouschi notes (p. 238), by the fact that for 1,000 meters of drilling by French petroleum companies during the period 1950–67, 387 were in Saharan Algeria. Against the background of the National Liberation Front, increasingly active since 1954, the Evian Accords (1962) granting Algerian independence, and the nationalization of Elf's holdings in 1971, the French state continued to regard its presence in Algeria as a showcase for the Third World to highlight the advantages of maintaining "special relations" with France. On this latter point, see Harvey B. Feigenbaum, *The Politics of Public Enterprise: Oil and the French State* (Princeton, N.J.: Princeton University Press, 1985), p. 78. On relations between



Petroleum Code was introduced to normalize exploitation of the region's reserves within the framework of the OCRS (Organisation commune des régions Sahariennes) created the previous year.[69] Inseparable from the new geopolitical status of Africa, already acknowledged by Resnais in *Statues Also Die*, the French plastics industry is presented by Queneau and Resnais with a knowing appreciation of its place within the larger dynamics of global trade and decolonization.

To claim, then, as does the text, that purification, distillation, and refinement are not simply exercises in style is to assert the primacy of geopolitics, especially the flows of petroleum, as the ultimate domain where matters can get too hot and explode. Manifesting contradictions, the ungrammaticality that Riffaterre understands as the challenge of the poetic text to the strictures of representation—the two alternate verses in the poem (each structurally acceptable) adumbrate two distinct approaches to the question of origins.[70] One might also view them as constituting the potential literature that so interested Queneau, for which reason he may well have deliberately preferred his poem to circulate in multiple versions. The decision of Resnais and Queneau to include the more geographically specific lines in the film's narration, the domain of spoken language so important to the writer, introduces politics and history into what had been an account of plastic largely circumscribed by the discourses of technology, chemistry, and cosmogony.[71] Located in the audio rather than in the image track, this swerve away from the dominant trajectory of the film up to this point suggests an eruption

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Algeria and France, see Phillip Chiviges Naylor, *France and Algeria: A History of Decolonization and Transformation* (Gainesville: University Press of Florida, 2000).

69. Nouschi, *La France et le pétrole*, p. 240.

70. Riffaterre, *Semiotics of Poetry*, p. 2.

71. It also problematizes the logocentric assertion of Claude Debon, editor of Queneau's collected writings, that the version of "Le chant du styrène" published there, reproducing its first 1959 publication, be considered definitive. I would argue instead that the poem's status as a commissioned work intended to be a spoken accompaniment to the film introduces dimensions of orality and referentiality that explode what Riffaterre understands as the closed semiotic structure of poetry. The tension between alternate versions of the poem, rather than establishing any single one as definitive, suggest its permeation by underlying ideological tensions.

of involuntary meaning, the sudden stutter of the previously unspoken, that Queneau discerned as the truth of documentary cinema. For the *clinamen* of Lucretius, as understood by Queneau and his fellow Oulipians, also signifies the possibility of temporarily evading stylistic constraints so as to emphasize free will and autonomy, an exception that confirms the dominance of the rule.[72]

Organicizing the petroleum refinery in the film's concluding sequence, Resnais and Queneau play upon the ambiguous status of oil as simultaneously natural and technological, the ultimate dual sign of advanced industrial capitalism. As we see masses of coal undergo firing, the text muses "Does petroleum not come from masses of fish? Nor is too much known about where coal comes from. Does petroleum come from plankton in labor? Controversial questions . . . obscure origins." Reflecting the state of geological science of his day, Queneau attempts to explain the origins of the raw materials from which styrene is fabricated.[73] Concluding with a shot of a rippling ocean surface covered by sea mist, the film proposes an origin for plastic that literally disappears into the mists of time, and if one were to project it backward, commencing with this shot, *The Song of Styrene* would chronicle a straightforward movement from the organic element of water to the manufactured plastic bowl.

Yet the second major divergence between the spoken and written forms of Queneau's poem, significantly its final lines, undercuts this narrative of organic origins. Noting the chemist's labors that render natural elements into useful objects, the poem's written form concludes, "Into new materials these mysterious residues are thus transformed. There are people out there who await the chemical change that finally will bring about merchandise at a good price." Emphasizing the utilitarian features of plastic and its inevitable transformation into commodities, Queneau seems to propose economic demand as the force driving its emergence. However, the film's spoken narration ends as follows: "There are unknown materials that still await a similar work of transformation to become the subject matter of other documentaries."

Pressures of supply and demand, the world of commodities, are denied the last word in this version. Rather than the reactions of organic chemistry, documentary cinema is foregrounded as the real transformative agent whose interpretive decoding can reveal new conceptual and historical relations. Distancing their narrative of styrene from excessive reliance upon technological innovations, economic determinism, or a teleology of organic origins, Resnais and Queneau affirm that human beings have created plastic, not vice versa. Cinema realizes an alchemy of intellectual transubstantiation as a means of forestalling the arrival of the totally plasticized world that alarmed Barthes and Baudrillard. Yet *The Song of Styrene* simultaneously teaches its viewers how to see the very plastics whose aggressive and unnatural colors struck these critics as a scandal.

72. On this usage of the term, see *Oulipo Compendium*, p. 126.

73. Clancier and Bollinger cite J. J. Chartrou, *Pétroles Naturels et Artificiels* (Paris: A. Colin, 1941), as a work that reflects the state of geological knowledge of Queneau's era ("Le Chant du Styrène," p. 142).

Like Vertov, the filmmakers realize a film that is an epistemological tract, a document of the production process and of the capacity of cinema to traverse space and time and synthesize a critical perspective on its own historical moment. Reading Resnais's images against Queneau's narration, *The Song of Styrene* comes into focus not as a triumphant celebration of growing mastery over nature but as a front-guard action that celebrates plastic while slyly and underhandedly undercutting its enshrinement within a cult of progress. Explicating styrene with far more ambivalence than Pechiney might have realized, *The Song of Styrene* refuses to present its subject matter as reified second nature or as mere "exercises in style." It thus comprises an exemplary account of production that supplements the copious depictions of consumption in the French cinema of the 1950s while presciently anticipating later geopolitically savvy artworks such as Christo and Jean-Claude's *Wall of Oil Barrels—Iron Curtain, rue Visconti, Paris* (1961–62), in which a narrow street is blockaded by 240 tangible reminders of the petroleum economy.

Resnais and Queneau locate the raw material of polystyrene—petroleum—within geopolitical relations rather than in the heaps of fish of ancient seabeds. Arising from organic nature, human society can never return to unsullied origins, forever stained by the history it produces and lives. To conclude, however, that this mediation establishes the ultimate nonidentity of plastics with the organic is to overlook the violence immanent to the formation of matter itself that persists and obtains new and ever more frightening expression in the workings of technology, social organization, and the nation state.[74] The filmmakers' acknowledgment of this and the high cultural and political stakes it entails is neatly conveyed in a short definition offered by Queneau: "Oulipians: rats who build the labyrinth from which they propose to escape."[75]

74. That polystyrene is the principle ingredient in napalm, invented by Harvard chemist Louis Fieser in 1943 and later utilized during World War II, the Vietnam War, and the 2003 invasion of Iraq, is a striking example of the parallel between molecular and military violence.
75. Quoted in *Oulipo Compendium*, p. 201.