

4 *Re-Newing Old Technologies: Astonishment, Second Nature, and the Uncanny in Technology from the Previous Turn-of-the-Century*

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Old and New: The General Line from Amazement to Habit

What can we learn from a cultural history of technology? Beyond chronicling the development, introduction and proliferation of specific technologies, what can we learn from investigating, to use Carolyn Marvin's revealing phrase, the time "when old technologies were new"?¹ Technology in the modern age has a direct relation to the phenomenon of innovation and novelty, and therefore to what makes the modern age modern. To imagine an old technology as something that was once new means, therefore, to try to recapture a quality it has lost. It means examining a technology or device at the point of introduction, before it has become part of a nearly invisible everyday life of habit and routine. But it also must mean examining this move from dazzling appearance to nearly transparent utility, from the spectacular and astonishing to the convenient and unremarkable. This transformation needs to be interrogated for the cultural myths of modernity it assumes and creates. The move from astonishment to a habitual second nature may be less stable than we think, and this instability may explain our fascination with rediscovering technology at its point of novelty. This essay, then, is perhaps more intimately involved with novelty than with technology, or rather with the intersection between them.

History deals not only with events but, primarily, and some would claim exclusively, with the discourses they generate and which record them. The introduction of new technology in the modern era employs a number of rhetorical tropes and discursive practices that constitute our richest source for excavating what the newness of technology entailed. The Universal Expositions that mark the latter part of the nineteenth and the early part of the twentieth centuries celebrated, represented and explained the agents and effects of the modern world. Their visual displays and verbal proclamations, protocols and practices, announced key aspects of modernity: an overcoming of space and time that allowed a new sense of the global in a world shrunken by new technologies of transportation and

communication; a demonstration and, nearly, the deification of new sources of energy and power, especially electricity; a narrative of progress exemplified by a series of new technical devices and goods placed on display in order to launch them into the world of newly created consumers; and last, but not least, a mode of highly stimulated spectatorship in which huge crowds were encouraged to envision a future that would be simultaneously spectacular and convenient.² We are all aware of the ambivalence of these official celebrations, the racism inherent in their myths of globalized progress and the exploitation of world-wide laboring populations, camouflaged by a narrative of an irresistible march of mankind towards an exalted future.³ But there is more to be uncovered in these Expositions than an ideological swindle, if only in their contradictions.

Primary among these is the paradoxical celebration in these festivals of the novel in the guise of the eternal, and of the technological in the form of magic. Expositions primarily presented a conservative face, such as the Columbian Exposition of 1893 in Chicago whose White City imaged an Imperial Utopia considered appropriate to a nation garnering its first colonial possessions overseas, while turning its face away from the smoke wreathed gray city of slums a few miles from the fairgrounds.⁴ But every visitor knew that this pastiche of Rome and Venice was made of plaster rather than marble, designed to dissolve and disappear within a year of festivities.⁵ Indeed, the ruins and conflagrations left in its wake drew almost as large crowds as its glorious opening. Monuments to progress possess an inherent instability, as the attractions of a consumer society depend on novelty as much as utility, seeking cheaper and more attractive as well as more effective methods and devices. Newness and amazement became a mode of reception for technology at these Expositions.

Novelty in modernity enacts a consistent scenario. Initial reactions express astonishment, which gradually gives way to an acceptance of the new technology as second nature, in both the colloquial meaning of that term—an accustomed familiarity—(“it’s second nature to me now”), and in the more complex meaning the term acquired in the work of Lukacs and the Frankfurt school, of a reified human-made environment which confronts mankind as an alien reality. Astonishment and familiarity contrast strongly, but they form successive stages within modern experience and are therefore interrelated. The appearance of a new technology is celebrated for its novelty and astonishment is the proclaimed response. This is precisely the experience that the Universal Expositions were designed to provoke, the thrill they offered their mass audience. It can be summed up by the response of one visitor to the Philadelphia Centennial Exposition in a postcard home: “Dear Mother: Oh. Oh. oooooooo!”⁶ and by

Owen Wister's description of his entrance to the Columbian Exposition : ". . . my mind was dazzled to a standstill."⁷

But astonishment is inherently an unstable and temporary experience. One finds it difficult to be continually astonished by the same thing. Astonishment gives way to familiarity. Astonishment acts as a sort of threshold experience and for this reason, the actual approach to a World Exposition, as Wister noted, was often the most dazzling experience, one renewed by the visitor's first entrance into the various pavilions. A journalist described entering the Palace of Electricity at the 1904 Louisiana Purchase Exposition by noting, "As you enter the Palace of Electricity you hear uncanny whirrings and snappings; you see electrical lights of hues and intensities that you never saw before; strange machines begin to glide or whirr or glow or click."⁸ Such visual and auditory novelty beckons one to enter into a new world. But once within, once past the threshold, astonishment gives way to curiosity and investigation and eventually to familiarity. (This account of the Palace of Electricity continues with the statement, "the meaning of all these things is that electricity is put to more varied uses . . . than ever before."⁹) The narrative of the World Exposition opens with heightened astonishment, gradually fading into understanding as the dazzle of the first encounter yields to knowledge.

Although this arc of reaction exemplifies the response to new technology in modernity, it draws on fairly universal cognitive patterns. John Onians's incisive essay, "I Wonder . . . A Short History of Amazement" offers a cognitive understanding of this cycle, stating, "If we are to write a history of wonder we must write a natural history."¹⁰ In his outline of this process he sees four stages by which amazement leads to learning: (1) a striking experience, usually visual, but sometimes aural; (2) a consequent physical paralysis; and (3) a mental reaction which results in something being learned which may be followed by (4) a new action.¹¹

Onians relates his natural history of amazement to Darwin's analysis of the expression of emotions in man and animals. For Darwin, the characteristic expression of amazement involved raising the eyebrows and opening the mouth. The practical aspects of this expression lay in the improvement of vision and the easing of breathing (the "oooooooo" of the Centennial Exposition visitor or "wow!" of a sports fan simply vocalizes this sharp intake of breathe).¹² Modern modifications of this explanation, based on the chemical processes of the brain, still fundamentally describe amazement as an adaptive behavior to new stimulus.¹³ The physiognomy of astonishment was well known and employed by painters from Leonardo through Le Brun.¹⁴ Le Brun's mentor, Descartes, describes amazement clearly in *The Passions of the Soul*:

When our first encounter with some object surprises us and we find it novel, or very different from what we formerly knew of from what we supposed it ought to be, this causes us to wonder and to be astonished at it. Since all this may happen before we know whether or not the object is beneficial to us, I regard wonder as the first of all the passions.¹⁵

Astonishment may shed light on the cycles of cultural as well as natural history. Onians declares the sixteenth and seventeenth century as a “great period of wonder” due to the mass of new discoveries, technological and territorial, during this period.¹⁶ This period of astonishment “was brought to an end . . . by a wave of explanation and classification.”¹⁷ If there are periods of cultural wonder, then the period roughly from the 1870s through to World War I would seem a likely candidate, an era of technological acceleration and transformation of the environment. Onians sees all periods of wonder as marked by the display of novelties (from the collections of Assurnasirpal II of Assyria to the cabinets of curiosity of Rudolph II),¹⁸ and the World Expositions played this role in the modern period, with a global consciousness, industrial context and mass appeal that defined their modern characteristic. However, Onians declares the sixteenth and seventeenth century as the *last* great period of wonder, undoubtedly because of the greater availability of scientific explanations after this period. But even a cursory glance at the World Expositions reveals that the display of curiosities and the fascination caused by them continues and gains power in the modern era. The cycle between amazement and explanation may have become shorter, but one could also claim that the increased pace of modernity supplies a constant stream of environmental changes, sufficient to renew wonder even if in shorter cycles.

What happens in modernity to the initial wonder at a new technology or device when the novelty has faded into the banality of the everyday? One might claim that having gone through Onians’s four phases, wonder becomes subsumed in action, then in habitual action and ultimately in the diametric opposite of wonder, automatism. This creates a world of disenchantment. Effects that seemed miraculous or wondrous, through their rational interpretation become banal, and even the astonishing becomes familiar. Although I feel this is an accurate description of one aspect of the cycles of modernity, I am not fully satisfied that it completely explains the modern alternation between astonishment and familiarity that the World Exposition first rehearsed. The contrast between Onians’s cognitive description of *individual* astonishment in which astonishment would of necessity be short-lived, and a social and historical concept like a century of wonder should give us pause. As illuminating as the cognitive description of the cycle of astonishment

may be, I do not think it offers us an unmediated understanding of the role of astonishment in modernity or of the fascination with “new” technology.

Wonder and curiosity seem to be universal human traits and I believe their investigation provides insight into their historical manifestations. But we are dealing not simply with individual experiences but with social practices and I, for one, am unwilling to enter into a debate about which causes which. Mediation enters into the natural in unexpected ways, as a brief excursus on the illustration Onians borrows from Darwin to portray the typical expression of astonishment reveals. It derives, of course, from G. B. Duchenne de Boulogne’s famous photographs of typical expressions of the human face.¹⁹ As a physiologist, Duchenne was primarily interested in the mechanics of facial expressions, which muscles were involved in their creation. He understood facial movement as part of a God-given language of expression. The expression reproduced by Darwin and Onians was not a spontaneous reaction by a human subject, but an already determined expression that Duchenne sculpted on the face of his experimental subject by means of electrodes, to be photographed by Nadar Junior in 1853. I do not dispute the validity of the interpretation of this expression, but merely indicate that even in the center of a naturalist demonstration, ideas of a pre-existent facial language and the play of the then novel technologies of electricity and photography intervene and mediate.

As historical phenomena, human experiences have always already been caught in the net of social discourse. And I believe that the “newness” of new technology, its capacity to dazzle us, is always in some sense the product of discourses surrounding it. Discourse includes more than verbal statements, although these are obviously privileged by historians for the relative clarity of their interpretation. In the World Expositions, the carefully arranged lay-out of space and the logic of form and color in the architecture, evoke cultural associations and determine the temporal and spatial unfolding of vistas and patterns. The stimulus of sound and light, the prose of guidebooks and explanatory signs, make up the discursive positioning of the new technology in the Expositions and cued visitors to experience astonishment. The discourse of modernity, then, is not only one of innovation, but precisely one of novelty, maximizing the dazzling experience of the new.

Making It New and Making It Strange: The Uncanny Route of Return

But what makes the new *new*? Russian formalist Victor Shklovsky discovered the function of this rhetoric of newness when he set out to write a history of the introduction of electric light to Moscow and Petersburg and its transformation of the city nightscape.²⁰

He abandoned the project after combing the newspapers of the period and finding no mention of the phenomenon, no recorded astonishment at this major technological transformation. Journalists instead recorded traditional genres of news: gossip, royal visits, politics, but not the new genre of technological innovation. Shklovsky concluded from this discovery that "the new arrives unnoticed."²¹ In effect, we must learn to be surprised, at least as recorded in print, astonishment is not simply a natural phenomenon. Now I (and I presume Shklovsky) would not claim no one was astonished by the electrification of Moscow (he indicates, "at that time electricity already functioned in Moscow and some people were even delighted about the fact"²²). The journalistic silence does not simply reflect a blasé attitude on the part of Moscow's citizens. Rather, journalists lacked a discursive context, or tradition, for the expressing of such astonishment. As Shklovsky puts it, "newspapers are extremely slow in perceiving the new because they lack a method for giving it form."²³ There apparently was not a spectacular and highly ritualized practice such as the nightly lighting of the electric lights at the Chicago Columbian Exposition, or the highly publicized inaugural turning on of electricity in downtown shopping areas so well recorded in U.S. urban history.²⁴ Undoubtedly, as a social phenomenon and particularly as one that gets officially noted, surprise is learned, fostered and expressed by discursive practices whose implementation brings profit to someone: merchants, policy makers, civic fathers justifying municipal power plants, or any one of a number of interested parties. Modernity must partly be understood as learning to be surprised by certain innovations, a discourse that valorizes and directs our attention to such changes and the excitement they can provoke.

And what of the final phase of Onians's natural history of wonder, its dissolution in knowledge and new practices? While knowledge certainly plays a role here, it may belong more directly to the opening of the cycle, closer to amazement than to habit. It was the educational potential of the World Expositions that organizers lauded, a firm belief that wonder prompted learning about technical innovation. The submerging of innovation into a realm of second nature would seem to have more to do with what Shklovsky elsewhere describes as habituation and automatism.²⁵ This phase, the opposite of amazement, indicates less a gain in knowledge than a loss of vivid experience. As Shklovsky says, "habitualization devours works, clothes, furniture, one's wife, and the fear of war."²⁶ Rather than knowledge, the outcome of this habitualization is to render us unconscious of our experience.

As historians searching for the novelty of old technology, we confront a dilemma. Is decline into invisibility irreversible and irresistible? Does the wonder at technology head

in the express lane towards either the outmoded and discarded or the practical and unnoticed? Once understood, does technology ever recover something of its original strangeness? I maintain there are several ways that this can happen. Shklovsky describes an aesthetic path back towards heightened perception through the technique he called defamiliarization or “making it strange.”²⁷ For Shklovsky, art takes up the struggle against this loss of sensual awareness. Through techniques of formal play—such as roughened language or unusual perspectives—“art removes objects from the automatism of perception.”²⁸ But for Shklovsky defamiliarization deals with perception not knowledge.²⁹ I think it is an error to believe that we possess a full understanding of technology through a scientific explanation of how it works. There are layers of knowledge that emerge in our dealings with technology that also cause us to wonder anew. Heidegger’s early discussion of work in terms of the dynamic of the tool shows that we can suddenly gain a new perspective on technology through an interruption of habitual actions. His conception of the tool as “the ready to hand” gives us another way to conceive the “unconsciousness” of habit in terms of technology.³⁰ According to *Being and Time*, it is in the nature of a tool not to assert itself, but rather to withdraw in favor of the project it is supposed to accomplish. When a tool works, we pay it no attention; it seems to disappear. However, if the tool breaks down, if in some way it doesn’t function, it suddenly becomes conspicuous.

I would claim, then, a more complex cycle for the cultural introduction of technology than Onians’s. A discourse of wonder draws our attention to new technology, not simply as a tool, but precisely as a spectacle, less as something that performs a useful task than as something that astounds us by performing in a way that seemed unlikely or magical before. The discourse highlights and defines this magical nature. This wonder intrigues and attracts us, allowing curiosity to give way to investigation and education, usually carefully channeled by social discourses. However, habituation dulls our attention to technology. But, in different ways, both Heidegger and Shklovsky claim that wonder can be renewed. Shklovsky’s de-familiarization employs aesthetic and rhetorical means, refashioning discourse away from the automatic so that the familiar becomes strange and can be rediscovered in its sensual specificity and vividness. Heidegger’s renewal has less of a celebratory thrust. It is the breakdown of equipment that allows us to experience it afresh. The interruption makes the project itself explicit. When a tool is missing “our circumspection comes up against emptiness, and now sees for the first time what the missing article was ready-to-hand with and what it was ready-to-hand for. The environment announces itself afresh.”³¹

There are several points that I want to stress in this more complex model. First, the

various stages relate to one another dialectically, so that one announces the reversal that the next one achieves. Secondly, neither astonishment nor habit derive simply from individual cognition of single objects, but are triggered by changing relations to the world, guided or distracted by language, practice, representation and aesthetics. Inattention can be transformed into wonder; wonder can be worn down into habit; habit can suddenly, even catastrophically, transform back into a shock of recognition.

Wolfgang Schivelbusch's influential discussion of the railway supplies a specific example of this dialectical interaction.³² Initial reception of railway travel was shaped by concerns about safety and anxiety about the possibility of railway accidents. Early railway journeys entailed a gnawing fear of death through accident, a fear founded in a very real possibility, and in the novelty of traversing space at unheard-of speeds. But this fear seemed to vanish by the turn of the century, as new practices (such as the introduction of reading during the train journey) created, as Schivelbusch put it, "a new psychic layer that obscures the old fears and allows them to lapse into oblivion."³³ But this psychic buffer zone involves more than the disappearance of wonder through new knowledge, for the possibility of disaster has been camouflaged, not eliminated. A series of cultural practices serve to allay anxieties rather than dispel them, like the nearly sedated voices making announcements in international airports, which, combined with design and color schemes with all-too-evident calming intentions, always make me feel like I have wandered inadvertently into the psycho ward. As Schivelbusch says, "any sudden interruption of that functioning, (which has now become second nature) immediately reawakens the memory of the forgotten danger and potential violence: the repressed material returns with a vengeance."³⁴ Just as a breakdown in equipment makes the context of the tool suddenly visible for Heidegger, for Schivelbusch a more advanced technological breakdown seems to tear apart acquired familiarity and assurance, creating a disaster within our second nature.

I would like to introduce another term to mediate between the extremes of astonishment and automatism: the uncanny. In contrast to Shklovsky's de-familiarization and Heidegger's glimpses of the total environment of the tool, this phenomenon involves less a new perception/understanding than an overriding uncertainty. Rather than clearly coming at the end of a cycle of habitualization, the uncanny seems to permeate the whole cycle, hinted at in the experience of wonder re-emerging just when rational explanation seemed to have triumphed. I rely here on Freud's analysis of the particularly pregnant German term *Das Unheimlich*.³⁵ Freud, following Schelling, pointed out the essential ambivalence of this word, which literally means "un-home-like." The specific effect of the un-

canny comes from the flowering of a sense of unfamiliarity in the midst of the apparently familiar. For Freud, the uncanny signals the emergence of unconscious material from repression, and it can take many forms. We must recognize that repression in Freud's sense should not be equated with the dulling of our awareness sought by nineteenth-century railways or contemporary airlines. "An uncanny experience," Freud states "occurs either when infantile complexes which have been repressed are once more revived by some impression, or when more primitive beliefs which have been surmounted seem once more to be confirmed."³⁶ "Primitive beliefs" refers to magical and superstitious ideas that Freud as a rationalist felt mankind had properly discarded, but which, as a psychologist, he acknowledged "remained preserved under a thin disguise."³⁷

"Primitive beliefs" recall the discourse of wonder that mark the introduction of new technology, picturing them as magical creations and elemental beings. While this rhetoric is nearly always couched in a ironic or at least condescending form—the childish prologue to the true knowledge to be gained—the spectacular stage managing of technological fairylands, such as the World Exposition, do in fact, produce that authentic dazzlement of wonder with which we began our discussion. If the uncanny as understood by Freud also harks back to childhood beliefs of animism and the omnipotence of thoughts, the fact that many of us as children first encounter technology through the lens of such manufactured folktales, may in fact produce lasting impressions, preserved beneath a later learned rationality. In other words, new technologies evoke not only a short-lived wonder based on unfamiliarity which greater and constant exposure will overcome, but also a possibly less dramatic but more enduring sense of the uncanny, a feeling that they involve magical operations which greater familiarity or habituation might cover over, but not totally destroy. It crouches there beneath a rational cover, ready to spring out again.

Thus the cycle from wonder to habit need not run only one way. The reception of technology allows re-enchantment through aesthetic de-familiarization, the traumatic surfacing of allayed fears and anxieties, as well as the uncanny re-emergence of earlier stages of magical thinking. While this may not exhaust the variety of responses that we find to technology (parody and nostalgia are two other notable responses I won't treat here), it does, I think, provide a relevant model for a cultural history of the reception of technology in the modern era. But we should realize that not all technologies are received in the same ways and that the experiences of wonder and especially of the uncanny are more likely in some technologies than others. While a series of uncanny experiences seem to cluster around technologies of communication like the telephone, or of representation

like the photograph, technologies that are arguably equally important in the environment of modernity, such as refrigeration or canned food, don't seem nearly as subject to these responses. I want next to explore those aspects of technologies of reproduction that especially invite uncanny effects.

Technological Doppelgangers: Modern Memento Mori

Certain associations evoke the technological uncanny. Challenges to basic categories of experience—such as the locomotive's "annihilation of space and time," or the telephone's blurring of the categories of presence and absence—elicit uncanny reactions. The same is true of recording technologies that seem to alter ontological status, techniques of representation which create simulacra so intense they appear as to double the originals. A cluster of nineteenth-century inventions—the photograph, the phonograph and the motion picture—were all greeted as technological responses to the ultimate limit to human life, mortality. The photograph became the means of preserving the memory of family members after their death and it was this practice that Thomas Edison had in mind when he likewise proposed the newly invented phonograph as: "The Family Record—a registry of sayings, reminiscences, etc., by members of a family in their own voices, and of the last words of dying persons."³⁸ Georges Demeny, an important pioneer in the production of motion pictures, described his Phonoscope as a technological improvement on the family album's hedge against death through the addition of motion, declaring, "How valuable it would be to illuminate the actual and varied expressions of these portraits which are too often mummy-like, and to leave behind us documents of our existence which can be made to live again like actual apparitions."³⁹ All of these technologies claimed to preserve human traits (expression, movement, voice) after the subject had died. As an objective form of memory, these recording techniques represented man's triumph over death, the ultimate astonishment and wonder of which man was capable.

But the uncanny aspect of these technologies does not reside simply in their apparently miraculous overcoming of fatal oblivion; a deep ambivalence marks these means of reproduction. Each delivers an uncanny foretaste of death, as a peculiarly modern *Memento Mori*. The proclaimed technological defense against death became death's image. The preservation of distinctive human traits divorced from a living individual, produced less an experience of immortality than a phantom, a bodiless transparent, or even invisible, double, who haunts our imagination rather than re-assuring us. As Charles Grivel has put it, "my self would live *without me*—horror of horrors!"⁴⁰

Still photography originally generated grave suspicion due to its seeming uncanny resemblance to its subject and the apparently automatic nature of its production. The new technology allowed a re-animation of the ontological instability of all mimetic representation. The most extreme expression of this uncertainty appears in spirit photography, the belief that this new sensitive medium could pick up the images of invisible spirits of the dead hovering around a posing subject. Photography possessed supernatural associations for writers like Balzac who thought photographs captured a series of emanations from the surfaces of things,⁴¹ or Hawthorne whose daguerrotypist Holgrave in *The House of the Seven Gables* claimed photography brought out the secret character of subjects in a way no painter could match.⁴² The ties of these frozen images to death have been widely remarked upon from the beginning, when photographs took on an important role in memorial imagery, to the recent eloquent characterization by Roland Barthes of photographers as the contemporary agents of the image of death.⁴³

Do such associations apply to moving pictures? Barthes derives part of photography's connection to death from its suspended temporality: it is death in the future that still photographs convey.⁴⁴ Moving images would seem to evoke the very stuff of animation, of life, as one early commentator put it, they "catch life on the fly."⁴⁵ Yet this asymptotic approach to the reproduction of life produces the effect of the uncanny and phantasmatic. For Maxim Gorky, viewing Lumière's Cinematographe in 1896, the movement itself seemed only to stress every other aspect of reality these moving pictures lacked: sound, color, three dimensionality.⁴⁶ For Gorky, the animated world of Lumière's new invention presented a gray and silent world, a realm of shadows only. Its apparent familiarity intertwined with this fundamental ontological alienation to produce a sense of malaise: "Before you a life is surging, a life deprived of words and shorn of the living spectrum of colors—the gray, soundless, the bleak and dismal life. . . . It is terrifying to see, but it is the movement of shadows, only of shadows."⁴⁷

But if the projection of shadows, of images somehow lifted from the bodies of the living and preserved with all its mimetic resemblance in the immaterial play of darkness and light, seems too easily to partake of the uncanny, what of the other aspect of the modern motion picture, whose lack Gorky felt so strongly, the world of sound and voice? The recording of sound and the recording of images share a similar ambivalence in the face of death. A consideration of the single most famous image of astonished reaction to technology, Francis Barraud's painting "His Master's Voice" helps us unravel the ambivalence surrounding recorded sound. The image provides another illustration for Onians's natural history of amazement, substituting a rather domesticated dog for Darwin's Halloween

cat. The dog, Nipper, sits posed before human technology, his clearly readable physiognomy expressing his recognition of "his master's voice" coming over this machine, his curiosity at this phenomenon, and some degree of doggie-style wonder. Animals can be as amazed by technology as humans are; wonder is a natural reaction to an unnatural object. As Michael Taussig had pointed out in his canny discussion of this image, the dog becomes humanized by his legible expression.⁴⁸ And yet his animal nature plays a key role in the power of this image. Dogs' ears possess great acuity, reaching beyond the limits of human hearing. And dogs' intense sense of hearing and smell indicate a direct connection to nature, unlikely to be confused by the obfuscation of discourse (they can neither talk, nor see pictures). Therefore Fido becomes the perfect emblem of audio fidelity. Nonetheless, as Taussig points out, the dog *is* being fooled, and our recognition of this deception guarantees our own human position of knowledge in relation to technology.⁴⁹ Like the rubes who flourish in comic strips, jokes and motion pictures of the turn of the century, the dog's astonishment and ignorance about technology serves as a foil to our growing familiarity with this second nature.

The global circulation of this image is striking. Not only was this trademark recognized world wide (note the wonderful scene with images of Nipper in Yasujiro Ozu's Japanese gangster film from 1933 *Dragnet Girl*), as Taussig shows, the image became a favored motif of the embroidered Mola blouses of the Cuna Indians of Panama.⁵⁰ Beneath the apparent disparity of the adoption of this Western commercial emblem for a Third World handicraft, (and the delight this conjunction provides Western consumers), Taussig discovers the spell of the modern commodity, its aspiration towards a condition of magic.⁵¹ But if the Cuna blouse shows again the possibility of the re-enchantment of technology (which I feel is the source of its delight for us, the recovery of that slumbering amazement), it is the two homunculi that stand as ministering attendants to the apparatus that highlight its magical nature. Like the little men within machines that populate both a child's vision of technology and advertising's attempt to endow commodities with magical attractions, these minions convert the machine into a ritual act, completing its circuit between animate and inanimate.

But two things should be pointed out in addition. First, the original image was made famous as an advertisement and trade mark, a discourse orienting consumers towards the phonograph, evoking and at the same time disavowing a primal astonishment.⁵² Secondly, this image of master/slave discourse possesses an uncanny dimension. According to Taussig, Barraud intended his painting as a memorial image.⁵³ The master whose voice the dog recognizes was reportedly Barraud's dead brother, whose voice had out-

lasted his earthly existence. This presumably supplies another level to the dog's confusion, a canine uncanny.

The ultimate uncanny of modern technologies of reproduction lies in the blurring of the frontier between life and death, both as an occult utopia liberation expressed in the spiritualist's embrace of photography and in a much more sober and chilling sense that such apparatuses have flattened out the line between the living and non-living with an endless loop of replayed discourse and information for which a human speaker would be only a contingent factor, like Dixie the Flatliner in William Gibson's novel *Neuromancer*, a computer-generated construct which continues functioning after the death of its human model and whose one repeated request is to be erased.⁵⁴ This triumph of an unending stream of discourse may sound like a basic definition of post-modernity and should prompt one to ask whether an essay like mine traces post-modernity to the effects of recent technologies, or whether I simply offer a contemporary reception of technology colored by the fashionable discourse of post-modernity. I would opt, and hope, for another alternative. I believe that technologies and cultural discourses interpenetrate, discourses shaping how we perceive and use technology, while technologies function not simply as convenient devices, but refashion our experience of space, time and human being filtering through our arts works, dreams and fantasies.

Therefore it matters less which end of the process we seize than that we grab hold of the whole dog. But my investigation of the reception of technology at the turn of the last century makes me hesitate about terms like post-modernity. I find the two ends of the Twentieth Century hail each other like long lost twins. Both periods generate inventions revolving around reproduction and communication and, perhaps even more clearly, both mine these new technologies for theoretical and aesthetic implications. Although differences should never be underestimated, I believe that this period of early or pre-modernism has so much continuity with the present day that I can never entirely endorse the post of post modernity. We have been repeating this story for sometime, although periodically everyone seems to forget it. It is the historian's task to recall it.

The Systematic Derangement of the Senses

If questioning of the unified subject stands as one of the hallmarks of post modernity, doesn't anyone notice that this theme was first sounded in the period from 1871 to the first years of the twentieth century, from the work of Rimbaud through to the work of Freud? If Freud's discovery of the fissure between conscious and unconscious still

provides the terrain for most radical speculation about the nature of the subject, Rimbaud's earlier dictum, "I am an other" still supplies, to my mind, the motive for aesthetic practices which challenge both containment and contentment. It is the tradition of the avant-garde that most coherently addresses the question of technology from the viewpoint of the uncanny and de-familiarization. But this is not simply a matter of an inert relation between aesthetic technique and technology as a theme. Avant-Garde discourse on technology responds to transformations of experience technology offers. To specify the concrete nature of this historical mutual interpenetrating, I would like to briefly show how, without direct involvement on his part, the reproduction of sound and motion pictures circulate around the figure of Rimbaud.

The first and most powerful connection comes through the fascinating and ambiguous figure of Charles Cros, an amateur scientist and inventor, symbolist poet and major figure in the turn-of-the-century Parisian bohemian cultural scene. It was Cros who went with Paul Verlaine to pick up Rimbaud at the station on his arrival in Paris. And a few months later Rimbaud, in one of his notorious displays of contempt for Verlaine's friends, apparently put sulfuric acid in Cros's drink. Possibly in retaliation, it was Cros who showed Madame Verlaine Rimbaud's love letters to her husband.⁵⁵ And it is Cros that Ronald Gelatt, author of the standard history of the phonograph, declares the first to conceive of a practical phonograph in April 1877, several months previous to Edison's invention, although due to lack of funds Cros did not produce a prototype.⁵⁶

In May of 1871 Rimbaud made his declaration "Je est un autre," "I am an other," or "I am someone else," a declaration against the classical conception of a unified self, in a now famous letter in which he set out the aspirations of an aesthetic Avant-Garde, involved in a dangerous and fundamental exploration of the limits of consciousness and experience.⁵⁷ Now referred to as the "Lettre du voyant," the letter of the visionary, this missive was sent by Rimbaud to his friend Paul Demeny, a minor symbolist poet. It is not known if Paul showed this letter to his brother Georges, but as Laurent Mannoni has remarked, it was Georges Demeny who in some sense fulfilled Rimbaud's statement literally through his work in motion pictures, first with Etienne Jules Marey and then independently on a number of extremely important pioneer motion picture machines.⁵⁸ These include the Phonoscope, one of the first attempts to interrelate sound and motion pictures and first intended as a tool for the instruction of the deaf in the techniques of speech.⁵⁹

While this fraternal connection between motion pictures and Rimbaud's avant-garde project may indicate nothing more than the contingent crisscrosses of history, the connection between Cros's poetry and his science seems to me quite significant for

understanding the cultural roots of the fascination of modern technology. Although most frequently descriptions of Cros as a “poetic” scientist simply refer to his lack of practicality in commercially exploiting his brilliant insights,⁶⁰ I believe his nearly systematic engagement with the technology of reproduction derives from the symbolist’s belief that they were creating a new art of the senses, what Rimbaud in his *lettre du voyant* describes as “the systematic derangement of the senses.”⁶¹ Cros not only discovered the principles of the phonograph ahead of Edison, he also described the basic technology of motion pictures as early as 1867 and labored for years perfecting processes of color photography.⁶² The systematic derangement of the senses and their systematic reproduction, I maintain, went hand in hand.

Cros’s poetry, however, did not yet envision the actual transcription of sound as an inspiration for poetic effects, as Italian Futurist poet F. T. Marinetti or Russian Futurist poet, soon to be filmmaker, Dziga Vertov did in the first decades of the twentieth century.⁶³ But the ability of the phonograph to transcribe sound (an issue that fascinated Cros, partly because of his involvement with the education of the deaf)⁶⁴ introduced a new model for avant-garde practice. As James Lastra has shown, earlier attempts to reproduce speech drew on a long tradition of automatons, machines that gave the semblance of life and whose form was based on the human body.⁶⁵ While investigations of the physiology of speech led to apparatuses whose form no longer mimed the human figure, even the version of Farber’s Talking Machine displayed at the Barnum Museum, which used bellows and complex machinery to reproduce speech, still included a human head as a residual emblem of the earlier ambition to recreate the voice as part of the artificial creation of a mechanical human being.⁶⁶

Reportedly, Barnum challenged customers with a rewards of 10,000 dollars if they could match the effects of Farber’s device, a proclamation quickly removed when he heard rumors of Edison’s phonograph.⁶⁷ But neither Edison’s phonograph nor Cros’s invention resembled a human being. Cros’s friend Villiers de l’Isle Adam in his 1886 satirical symbolist novel *The Eve of the Future* portrayed Edison inserting a phonograph into the breast of Hadaly an automaton figure of a woman he had fashioned, in order to comfort his friend Lord Ewald in his disappointment over a faithless lover. This perfect robot woman would be supplied with recordings in order to offer Lord Ewald the delights of witty conversation.⁶⁸ But the phonograph, as Theodor Adorno understood, derived from a tradition of inscription rather than simulacrum.⁶⁹ Both Edison and Cros were inspired by Chladni’s experiments tracing in sand images left by sound vibrations, as well as devices such as the phonautograph which provided a linear inscription of sound patterns.⁷⁰

As Villiers has his fictional Edison proclaim, "the vibrations of sounds around us can be inscribed in tracks that can be fixed like handwriting."⁷¹

As Thomas Levin has shown in his magisterial essay on Adorno's appreciation of the phonograph, an inscription of sound carried aesthetic possibilities rather different from the immediate resemblance offered by photography and motion pictures.⁷² The curving path of the needle offered the possibility of a new language and form of writing. The inscription of sound on the phonograph record simultaneously possessed a direct, causal relation to the sound that made it, and yet translated sound, not simply into its reproduction, but into a form of script, the pitted groove scored by the recording stylus. Without offering film's illusion of an immediate reality, the phonograph record offered, Adorno claimed, borrowing a phrase from Walter Benjamin, "the last remaining universal language since the construction of the tower."⁷³

It is this *transcription* of sound, rather than the trick of the reproduction of the voice, that fascinated Adorno. Influenced, as Levin demonstrates, by a long German tradition of the hieroglyphics and signatures of nature concealing encrypted messages of a higher realm within a fallen world, Adorno proposed the record as a harbinger of the apocalypse threatened by technology, with the potential to destroy the world of second nature through its own means.⁷⁴ Adorno concluded his essay on the phonograph record with these prophetic and cryptic words:

What may be announcing itself here, however, is the shock at the transfiguration of all truth of artworks that iridescently discloses itself in the catastrophic technological progress. Ultimately the phonograph records are not artworks but black seals on the missives that are rushing towards us from all sides in the traffic with technology; missives whose formulations capture the sounds of creation, the first and last sounds, judgment upon life and message about that which may come thereafter.⁷⁵

We find in Adorno perhaps the most sophisticated (and enigmatic) formulation of the uncanny of technology, the shock of astonishment transformed into the still sealed message of the future. Recorded sound carries overtones of first and last things, echoes from beyond.

Such a conception shatters the kitsch image of Nipper harking to the voice of his master from beyond the grave, with a deeper sense of catastrophe in which we are all implicated. Technology's ambition to crack open the seals on the mysteries of nature produces not simply knowledge, but a fundamental transformation of the human subject and of representation and calls up obscure glimpses of a brave new world well beyond Barraud's

painting. I have a counter image to propose. As a young student, Rainer Maria Rilke constructed a phonograph with his science class. His description of his initial reaction perfectly conveys the astonishment that we have been probing:

The phenomenon, on every repetition of it, remained astonishing, indeed positively staggering. We were confronting, as it were, a new and infinitely delicate point in the texture of reality, from which something far greater than ourselves, yet indescribably immature, seemed to be appealing to us as if seeking help.⁷⁶

But Rilke finds, like Adorno, that it was not the simple reproduction of sound that most fascinated him, subject as it seemed to be to a growing familiarity and loss of power. Instead, the inscription of sound itself, this runic language promised something beyond the already known:

At the time and all through the intervening years I believed that that independent sound taken from us and preserved outside of us, would be unforgettable. That it turned out otherwise is the cause of my writing the present account. As will be seen, what impressed itself on my memory most deeply was not the sound from the funnel but the markings traced on the cylinder; these made a most definite impression.⁷⁷

It was the visual qualities of the marking that most impressed Rilke, the translation from sound to a sort of writing. Rilke rediscovered this signature of nature during anatomy lessons years later at the *École des Beaux-Arts*. Examining a skull he recognized something in the coronal suture:

. . . a certain similarity to the closely wavy line which the needle of a phonograph engraves on the receiving, rotating cylinder of the apparatus. What if one changed the needle and directed it on its return itself naturally—well: to put it plainly, along the coronal suture, for example. What would happen? A sound would necessarily result, a series of sounds, music . . .

Feelings—which? Incredulity, timidity, fear, awe—which of all the feelings here possible prevents me from suggesting a name for the primal sound which would then make its appearance in the world . . .⁷⁸

Let us re-imagine Barraud's painting. Nipper sits attentive and amazed as an elaborate apparatus spins a memorial skull, its stylus tracing a path down the coronal suture, operated by the Cuna Indians' little helpers. How does Nipper respond? "Alas poor Rainer, I knew

him, Teddy?" What sound issues from this cranium? Is this a collage by Max Ernst or a cartoon by Tex Avery?

These specifically avant-garde receptions of technologies of reproduction reveal another dimension to the astonishment generated by new technology. Part of this astonishment comes not simply from unfamiliarity, an experience easily overcome, but from the prophetic nature of new technologies, their address to a previously unimagined future. Every new technology has a utopian dimension that imagines a future radically transformed by the implications of the device or practice. The sinking of technology into a reified second nature indicates the relative failure of this transformation, its fitting back into the established grooves of power and exploitation. Herein lies the importance of the cultural archeology of technology, the grasping again of the newness of old technologies. As Friedrich Kittler says, "What reached the page of the surprised author between 1880 and 1920 by means of the gramophone, film and typewriter—the very first mechanical media—amounts to a spectral photograph of our present as future."⁷⁹ But it is precisely this imagined future, whether catastrophic or utopian or both, that can never completely disappear; it can only be to some degree forgotten. But what can be utterly forgotten in a world where the recording of the ephemeral has become obsessive? Even in the midst of familiarity, within the practices of everyday life, fissures open and the forgotten future reemerges, with uncanny effect. The question is, simply, is any one watching or listening?

Notes

1. Carolyn Marvin, *When Old Technologies Were New: Thinking about Electric Communication in the Late Nineteenth Century* (Oxford: Oxford University Press, 1988).
2. My sense of the World Expositions has been shaped by James Gilbert, *Perfect Cities: Chicago's Utopias of 1893* (Chicago: University of Chicago Press, 1991); Philippe Hamon, *Expositions: Literature and Architecture in Nineteenth Century France* (Berkeley: University of California Press, 1992); Neil Harris, *Cultural Excursions: Marketing Appetites and Cultural Tastes in Modern America* (Chicago: University of Chicago Press, 1990); Neil Harris, Wim de Wit, James Gilbert, and Robert Rydell, *Grand Illusions: Chicago's World's Fair of 1893* (Chicago: Chicago Historical Society, 1993); John F. Kasson, *Amusing the Million: Coney Island at the Turn of the Century* (New York: Hill & Wang, 1978); Thomas Richards, *The Commodity Culture of Victorian England: Advertising and Spectacle 1851–1914* (Stanford: Stanford University Press, 1990); Robert W. Rydell, *All the World's a Fair: Visions of Empire at American International Expositions, 1876–1916* (Chicago: Chicago University Press, 1984); Alan Trachtenberg, *The Incorporation of America: Culture and Society in the Gilded Age* (New York: Hill and Wang, 1982); Rosalind H. Williams,

Dream Worlds: Mass Consumption in Late Nineteenth-Century France (Cambridge, MA: MIT Press, 1982). I have dealt with the World's Fair phenomenon in my article "The World as Object Lesson: Cinema Audiences, Visual Culture and the St. Louis World's Fair," *Film History* 6, no. 4 (Winter 1994): 422–444.

3. See Rydell in particular.
4. See Gilbert, 75–130.
5. See Neil Harris, "Memory and the White City" in *Grand Illusions*, 3–32.
6. Quoted in Rydell, 13.
7. Quoted in Trachtenberg, 213.
8. *The World's Work* viii, no. 4 (August 1904): Special Double Exposition Issue, 5088.
9. *Ibid.*
10. John Onians, "I wonder . . . 'A short history of amazement" in *Sight and Insight: Essays on Art and Culture in Honor of E. H. Gombrich at 85*, ed. John Onians (London: Phaidon Press, 1994), 11.
11. *Ibid.*, 12.
12. Charles Darwin, *The Expression of the Emotions in Man and Animals* (Chicago: University of Chicago Press, 1965), 280–285.
13. Onians, 14.
14. *Ibid.*, 16.
15. Quoted in *Ibid.*, 18.
16. *Ibid.*, 24.
17. *Ibid.*, 26.
18. *Ibid.*, 18–26.
19. G. B. Duchenne de Boulogne, *The Mechanism of Human Facial Expression* (Cambridge: Cambridge University Press, 1990).
20. Victor Shklovsky, "Electricity and the Theme of Old Newspapers," *Podenshchina* (Leningrad: Pisatelej, 1930), 14–15. Another debt owed to Yuri Tsivian who directed me to this discussion and supplied a translation and summary.
21. *Ibid.*, 14.
22. *Ibid.*, 15.
23. *Ibid.*

24. See David E. Nye, *Electrifying America: Social Meanings of a New Technology* (Cambridge, MA: MIT Press, 1990), 47–73.
25. Victor Shklovsky, “Art as Technique” in *Russian Formalist Criticism: Four Essays*, ed. Lee T. Lemon and Marion J. Reis (Lincoln: University of Nebraska Press, 1965), 3–24.
26. *Ibid.*, 12.
27. *Ibid.*, 12–22.
28. *Ibid.*, 13.
29. *Ibid.*, 18.
30. Martin Heidegger, *Being and Time* (New York: Harpers and Row, 1962), 95–107.
31. *Ibid.*, 105.
32. Wolfgang Schivelbusch, *The Railway Journey: Trains and Travel in the Nineteenth Century* (New York: Urizen Books, 1979).
33. *Ibid.*, 132.
34. *Ibid.*
35. Sigmund Freud, “The Uncanny,” in vol. 17, *The Standard Edition of the Complete Psychological Works of Sigmund Freud* (London: Hogarth Press and the Institute of Psycho-analysis, 1953–1974), 217–256.
36. *Ibid.*, 249.
37. *Ibid.*, 242.
38. Edison quoted in Roland Gelatt, *The Fabulous Phonograph: from Tin Foil to High Fidelity* (Philadelphia: Lippincott, 1955), 29.
39. Demeny quoted in Jacques Deslandes, *Histoire comparee du cinema*, tome 1: 168.
40. Charles Grivel, “The Phonograph’s Horned Mouth” in *Wireless Imagination: Sound, Radio, and the Avant-Garde*, ed. Douglas Kahn and Gregory Whitehead (Cambridge, MA: MIT Press, 1992), 35.
41. Honoré de Balzac, *Cousin Pons* (London: Penguin Books, 1978), 131.
42. Nathaniel Hawthorne, *The House of Seven Gables* (New York; New American Library, 1961), 85.
43. Roland Barthes, *Camera Lucida* (New York: Hill and Wang, 1981), 13–15 and *passim*.
44. *Ibid.*, 89–90.
45. From *La Post* December 30, 1895, quoted in Bernard Chardere, *Le Romans des Lumières* (Paris: Gallimard, 1995), 314.

46. Maxim Gorky, appendix in Jay Leyda, *Kino: A History of the Russian and Soviet Film* (London: Allen & Unwin, 1960), 407–409.
47. *Ibid.*, 407.
48. Michael Taussig, *Mimesis and Alterity: A Particular History of the Senses* (New York: Routledge, 1993), 212–235.
49. *Ibid.*, 224.
50. *Ibid.*, 225.
51. *Ibid.*, 233.
52. Gelatt, 108–109.
53. Taussig, 224.
54. William Gibson, *Neuromancer* (New York: Ace Books, 1984).
55. My main source for biographical information on Cros comes from the Introduction and Chronology, Charles Cros, Tristan Corbiere, *Oeuvres Completes*, ed. Louis Forestier and Pierre-Olivier Walzer (Paris: Gallimard Bibliotheque de la Pleiade, 1970), 3–45.
56. Gelatt, 24.
57. Arthur Rimbaud, À Paul Demeny, May 15, 1871, in *Rimbaud Complete Works, Selected Letters*, ed. Wallace Fowlie (Chicago: University of Chicago Press, 1966), 304–311.
58. Laurent Mannoni, *Georges Demeny: Pioneer du Cinema* (Paris: Cinemathèque Française/Pagane, 1997), 12.
59. *Ibid.*, 40–51.
60. Gelatt, 23.
61. Rimbaud, 307.
62. Cros, “Procède d’ enregistrement et de reproduction des couleurs, des formes et des mouvements” in *Oeuvres Completes*, 493–498, his writing on color photography can be found on 498–510; 575–591.
63. See F. T. Marinetti, “Destruction of Syntax, Imagination without Strings, Words-in-Freedom,” in *Futurist Manifestos*, ed. Umberto Apollonio (New York: Viking Press, 1973), 104; Dziga Vertov early sound experiments are briefly described in Dziga Vertov, “From the Notebooks of Dziga Vertov,” in *Film Culture Reader*, ed. P. Adams Sitney (New York: Praeger, 1970), 362. Goerges Sadoul discusses Vertov’s “Laboratory of the Ear” in relation to the sound experiments of the Italian Futurists, Marinetti and Russolo in *Dziga Vertov* (Paris: Editions Champ Libre, 1971), 15–46.