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Source: *Science Fiction Studies*, Vol. 38, No. 2 (July 2011), pp. 304-320

Published by: [SF-TH Inc](#)

Stable URL: <http://www.jstor.org/stable/10.5621/sciefictstud.38.2.0304>

Accessed: 19/06/2014 23:25

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Nicholas C. Laudadio

## “Sounds like a Human Performance”: The Electronic Music Synthesizer in Mid-Twentieth-Century Science Fiction

“Music is born free; and to win freedom is its destiny. In the new great music, machines will also be necessary.”—Ferruccio Busoni, *Sketch of a New Esthetic of Music* (5)

“The growth of musical art in any age is determined by the technological progress which parallels it.”—Joseph Schillinger, “Electricity: A Musical Liberator” (26)

**Introduction.** When the ships descend on Devil’s Tower in the climactic moments of Stephen Spielberg’s *Close Encounters of the Third Kind* (1977), the humans greet the aliens not with tanks and howitzers as in *The Day the Earth Stood Still* (1951), but with a simple five-note motif plucked out on an Arp 2500 electronic music synthesizer.<sup>1</sup> Atop its formidable white-and-black dais, the large modular synthesizer not only dominates the scene visually but soon proves itself to be the most powerful tool the humans have for communicating with the alien visitors. The synth literally establishes first contact and maintains it. As the musical conversation between the humans and the aliens progresses, the synthesist loses pace with the ship and the instrument ends up playing itself, its keys being triggered unaided like some manic pianola. The synthesizer emerges in the film’s most dramatic moments as a final technological step in humanity’s move towards a strange new post-alien reality as well as a powerful actor in its own right, capable of sustaining the connections between human and alien technologies (and doing so largely independent of human agency).<sup>2</sup> This Arp synthesizer—a particularly famous example of an instrument whose development constituted “one of the most significant musical moments of the twentieth century” (Pinch and Trocco 10)—proves itself to be the ideal cosmic communication device as it sings its exchange with the alien ship, its very name suggesting an ability to synthesize, to bridge vast cultural (and cosmic) distances.

In this article, I want to examine the signifying power of the synthesizer in the postwar Western imagination by looking at moments where it emerges diegetically in sf narratives such as *Close Encounters*. For even though widespread changes in the production and consumption of music throughout the twentieth century sparked constant debate in popular and musicological publications, one finds a sophisticated and expansive meditation on the musical consequences of uninhibited technological progress in the science fiction of the period. That sf should play a part in this conversation about electronic music and its ability to transform Western culture should come as no surprise. Music is a common art form in science fiction if for no other reason than, as the *Encyclopedia of Science Fiction* suggests, it is “dependent on the instruments with which it is played” and is “more than most art forms associated with contemporary technology” (Davies et al. 844). And in this sf finds a willing accomplice in the synthesizer, an instrument possessing what one critic calls a

“double character”—both a commercial instrument and a new form of “authentic” expression—as well as being an embodiment of the “reciprocal, co-evolutionary role of a technological artifact, embedded in a milieu which it helped to create” (Braun 14).

By analyzing some of the electronic musical instruments extrapolated in sf and considering them within the historical synthesizer’s own technological context, I hope to show how this “double character” permeates every aspect of both the fictional and actual instrument. Rather than focusing on the era of *Close Encounters*, a significant high-water mark in the history of electronic instruments (it was during the late 1970s that synthesizer production “reached industrial proportions” [Théberge 54])—I want to consider examples from two decades earlier, when the commercial analog synthesizer was still an ambitious experiment, electronic music was seen as a challenging and often inaccessible form, and the electronic instrument’s acceptance into a musical/cultural mainstream was far from assured. I will examine two works of print fiction published during these early years of electronic music that examine some of the broader implications of electronic instruments and their double character: Charles L. Harness’s novella “The Rose” (1953) and Lloyd Biggle, Jr.’s short story “The Tunsmith” (1957). Both stories feature an electronic musical instrument that, like the Arp in *Close Encounters*, is central to the narrative and proves itself capable of drastically changing not just human culture and music, but humanity itself (for better and for worse).

In many ways, these early representations of electronic instruments in sf anticipate Spielberg’s image of the synthesizer as spokesmachine for the species—yet these early stories seem to offer a far more convincing investigation of the dangers and promises of unrestrained technological innovation for cultural, social, and biological development. In their navigating of complex political and social issues via the deployment of electronic instruments, Harness and Biggle provide a thoughtful (and at times prescient) analysis of the consequences of an increasingly technologized culture on the verge of one of the more significant developments of the twentieth century. The electronic instrument in these texts proves itself capable of both destroying and rebuilding humanity, of undoing and advancing human biological development, and of dismantling and renewing traditional understandings of culture, art, industry, and music; it becomes a literal synthesizer.

**Context.** In order to understand the narrative power these authors locate in the electronic musical instrument, it is necessary to make clear the historical and technological context that surrounds the very real instruments being developed concomitant with Harness’s and Biggle’s imaginary ones. I will thus provide in this section a brief introduction to the development of the actual synthesizer, suggesting connections between the real instruments and their science-fictional counterparts.<sup>3</sup>

As with many technological innovations, the synthesizer was not invented on a single day by a single person; there does not seem to have been a true “eureka” moment. The synthesizer that Bob Moog first sold in 1964 after years

of building theremin kits represented one particular culmination of a century's worth of electronic music research. Probably best defined as a "self-contained electronic music system for the generation, modification, and playing of electronically produced sounds" (Holmes 162), the synthesizer's genealogy stretches at least as far back as Elisha Grey's "Musical Telegraph," a diminutive two-octave keyboard instrument built in 1876 that used electromagnetic oscillators to generate tones that were transmitted over telephone lines. By the early days of the twentieth century, Grey's tiny device and other such experiments gave way to Thaddeus Cahill's 200-ton additive-synthesis machine, the Telharmonium (1906), Lev Termin's famously eerie Theremin, European concert instruments such as the Ondes Martenot (1928) and the Trautonium (1930), and one of the synthesizer's most successful technological predecessors, Lauren Hammond's electronic organ (1934), as well as his less well-known proto-synth, the Novachord (1938). With the end of the Second World War, the pace of electronic instrument development increased dramatically: Canadian Hugh LeCaine designed the Electronic Sackbut (1945), an instrument that pioneered the voltage control technology used by the first commercial synths (still in widespread use), and composer, musician, and engineer Raymond Scott founded his company Manhattan Research (1946) as "designers and manufacturers of electronic music and musique concrète devices and systems" (Chusid 11).

Of Scott's many musical machines, the most remarkable was perhaps the Electronium, an "instantaneous composition-performance machine" that he began developing around 1950. The Electronium had no keyboard or traditional musical interface and was designed to compose and perform music based on user-defined parameters using solely electronic sound sources, and to do so on its "own terms" without human interference. Scott once remarked that the "Electronium is not played, it is guided" (qtd. in Holmes 150). A notorious perfectionist, Scott saw his electronic instruments as ways around "the human element of the individual musician [that] began to intrude" on music (Scott 28). A drummer of his once remarked that "[a]ll he ever had was machines—only we had names" and Anita O'Day argued that Scott "reduced [musicians] to something like wind-up toys" (qtd. in Chusid 10-11). The infectious jingles he built for companies like IBM, Ohio Bell, and Baltimore Gas & Electric clearly reflected this rigid machine aesthetic, each one dutifully rendered by a well-designed machine, a strangely ideal music for a shiny, new corporate culture. (A representative example is his appropriately bubbly 1963 jingle for Sprite, "Melon-ball Bounce.") Though never fully completed, the Electronium shared much with the first instrument actually to be called a synthesizer, the RCA Mark II Sound Synthesizer. Beginning in 1951, Harry Olson and Herbert Belar started work on the first fully programmable synthesizer, which was inspired by Joseph Schillinger's *The Mathematical Basis of the Arts* (1949). Olson and Belar's Mark II could analyze music and, based on that analysis, write, perform, and record original music all within the confines of a single device. Incredibly ambitious projects for the time that were never fully realized given obvious hardware limitations, the RCA synthesizer and the Electronium represent the

electronic instrument as a complete “pop music machine,” suggesting that, contrary to imitative instruments such as the electronic organ, “the synthesizer became an instrument in its own right” (Braun 13).

The synthesizer became an instrument “in its own right” in concert with the triumph of technological discourse in the 1950s—a decade marked by a popular belief “in the ineffable qualities of science and technology,” which Timothy Taylor calls “commodity scientism” (76). In both their ambition and their technological prescience, the Mark II and the Electronium make clear the contention that “technology has always been inseparable from the development of music” (Braun 9)—or, as one musicologist put it in 1955, that “music and technology are so dependent on one another that it is only through a joint effort that the artistic idea can be separated from its technical determination” (qtd. in Braun 9). Yet not surprisingly, the RCA project and the Electronium’s attempt to remove “the human element” from musical creation represented for many the most dangerous consequence of the technologization of musical production, threatening to replace live musicians and turn music into a purely industrial commodity. These infernal devices, with their Fordist air of automated manufacture, stoked fears that machines in music could (and would) lead to what some saw as “the ultimate technological nightmare” (Schwartz 8).<sup>4</sup> As one historian of early electronic music put it, “the most frequent objection [to electronic music/musical instruments could] be summarized by the catchphrase ‘the dehumanization of music’” (Borio 79).

In his 1964 introduction to the RCA synthesizer, electronic music pioneer Milton Babbitt confronts such objections from those who consider the synthesizer to be a “soulless machine” and whose arguments depend upon “invocations of musical humanism against the barbarous assault of musical science” and assertions that electronic music “could never be good” (264). One might imagine that the colleagues to whom Babbitt was responding shared sympathies with German musicologist Walter Riezler, who in 1954 gave a talk at a Munich lecture series, “The Arts in the Age of Technology,” and used the occasion to pillory electronic music and musical instruments—specifically the Melochord, another influential proto-synthesizer designed by engineer Harald Bode. Riezler declaimed that the Melochord might

remind one of barking hell-hounds—these sounds come from a world in which there are no humans, but only devilish beings, whom man as a spiritual being would be unable to dominate; they would either destroy him or drive him into madness. If it really is so that with the means of modern physics a breakthrough in the sphere of the final source of the physical world has succeeded, then that would signify a threat to humanity that is no less great than that posed by an atom bomb. It would be as if Pythagoras’s harmony of the spheres had fallen into the hands of devils, who had distorted it into gruesome dissonances! (qtd. in Borio 79)

New musical technologies have long been perceived as threats to concepts of musical authenticity, but the intensity one finds in criticisms such as Riezler’s (a “threat no less great than the atom bomb”) is proportional to the intensity of technological advancement during the period in which he was writing. Music

journals and magazines of the era were riddled with Luddite attitudes and dire prognostications of musical and cultural disaster of the kind one would expect in the most florid of the pulps. Surprisingly, it is in the sf stories of the same era that one finds a clear-eyed (and -eared) approach to these new musical technologies and the challenges they present.

**“The Rose” (1953).** First appearing in one such pulp magazine, Charles L. Harness’s 1953 novella “The Rose” features a machine called the “Fourier Audiosynthesizer,” one of the earliest examples of a synth in science fiction. Taking its name from the eighteenth-century French mathematician Jean-Baptiste-Joseph Fourier, whose work with waveforms and harmonics was crucial to the development and design of the synthesizer, this novella provides a far less dire take on electronic instruments than Riezler’s. The novella recounts a dreamlike tale of posthuman evolution set in the midst of a literal war between art and science for cultural and political control, in which the synthesizer is the only real point of connection between these poles.<sup>5</sup> The Fourier synthesizer in “The Rose” is a machine capable of turning algorithms into song, of capturing the “truth” of a mathematical equation and translating it into organized sound. The music Harness’s synthesizer creates is not “based on” or “inspired by” science; rather, it creates an exact musical expression of the data itself. Because of this power, the instrument emerges in the narrative as the only device capable of overcoming the fraught art/science divide, ending the formal impasse at the heart of the narrative and making possible a new type of human music, as well as a new type of human being.

Published as the cover story in the short-lived but influential British pulp *Authentic Science Fiction*, “The Rose” is set in 1991, in a vaguely European city caught in the early stages of what one character calls “Renaissance II” (9). Here, artists are hailed as the “golden people” and “the coming force in society” (9); Harness’s story follows one of these ascendant “golden people,” Anna van Tuyl—psychiatrist, prima ballerina, and acclaimed composer. As the story begins, we learn that Anna is also in the midst of a mysterious physiological transformation that has left her a “misshapen creature” with “incipient horns” and a “humped grotesquerie” for a back (6). Yet despite these apparent deformities, Anna spends much of the story focused not on her body’s strange metamorphoses, but on her efforts to finish a ballet based on Oscar Wilde’s fairy tale “The Nightingale and the Rose” (1888), itself a story of transfiguration and a battle between love and logic. In the first of the story’s many pairings, her score has been discovered by Ruy Jacques, a choreographer and *flâneur* undergoing a similar transformation, who soon falls in love with Anna and her project. In part because of the relationship that develops between these two “misshapen creatures,” Martha Jacques, Ruy’s wife, fixates on Anna and the “precious feather bed world of music and painting” she represents (29). Like an Ayn Rand character crossed with a mad-scientist culture warrior, Martha Jacques is at once “the most valuable mind in history” and the “most dangerous human being alive” (9). Her sole aim is to undermine Anna and Ruy’s artist-centered world-view, stopping this new artistic renaissance and

replacing it with a scientific renaissance grounded in her own quasi-philosophico-mathematical doctrine, “sciomnia.” Presented as a series of nineteen mathematical equations (directly paralleling the nineteen movements in Anna’s ballet), sciomnia—literally, “to know all”—provides a theoretical framework through which Martha can “control the minds and bodies of men” (72). In the midst of the battle over these minds and bodies, Harness turns to the synthesizer as the weapon that will end the war, a technology that will reconcile these ostensibly incompatible “two cultures.”

When we are first introduced to Harness’s synthesizer, it is at a party where the “Fourier-piano ... synthesized the seven equations, six short, one long, into their tonal equivalents” (49), singing out “Twinkle, Twinkle Little Star” as a silly punch line to a joke about music predicting astronomy’s discoveries. By the time we get to the final scenes, far more potent equations find their way into the instrument’s workings, but even in this small way, it is already moving freely between discourses and cultures, offering musical commentary on the questions of science. As the narrative nears its end, Martha arrives at Anna and Ruy’s ballet with a “black metal box with a few dials and buttons” under her arm (84), eager to prove science’s dominance by destroying the entire art district where the ballet is being performed (and where her husband spends most of his time), and thus to prove that “in the final analysis ... [sciomnia] means *force*” (84; emphasis in original), a force against which an artistic world-view has no defense. Entering the theater ready to destroy, Martha first encounters her husband and tests her sciomnia equations by turning her black box device on him, paralyzing him and forcing him to watch as Martha “route[s] the equations to the loudspeaker ... Fourier-style” (84).

What results from this is Martha’s “fourier composition *fortissimo*” (84), a composition built of electronic timbres at their most piercingly alien: “the sound of sciomnia ... chill, metallic, like the cruel crackle of ice heard suddenly in the intimate warmth of an enchanted garden, and it seemed to chatter derisively, well aware of the magic that it shattered” (85). Martha’s violent song rises like a “towering tide of tone ... apparently from no human source, and from no human instrument” (85). Yet as the inhuman wails are about to drown out the ballet and overpower the audience, leaving everyone subject to Martha’s dictatorial aspirations, “the heart strings of Anna van Tuyl [become] one with this mighty sea of song” (85) and the “melody spiral[s] to heaven on wings” (86). Rather than the “cold sound” of sciomnia rendering everyone powerless to Martha’s technocratic ambitions, the performative synthesis of these seemingly incompatible timbres—the “cruel crackle” and the “heart strings”—results in a different thing altogether. As the song unfolds, Anna and Ruy’s deformities reveal themselves to be the early stage in a complete transformation from human to winged posthuman, what Harness calls *homo superior*.

Ultimately, the synthesizing technology itself proves the catalyst in these transformations. Just as when the fourier keyboard turns astronomical equations into children’s starry lullabies, the fourier synthesis techniques translate Martha’s equations into weapons and give physical form to Anna’s (and



Wilde's) narrative about transformation and love. Evocative of postwar musical experiments in form and composition, the fourier synth creates a "new language of music" (79) that the *homo superiors* will use for what Harness calls "telemusical communication ... of pure thought by pure music" (32). If Spielberg's Arp joins humans with their technologically advanced visitors, Harness's synth offers a connection point between humanity as it is and as it aspires to be, suggesting a bright future for a technologically mediated life by providing a space where the languages of science and art commingle productively. At the same time, there is also the familiar threat of dehumanization, the fear that this very same technology could lead to Martha's own terrifying brand of technocratic fascism. The device can still generate a force that creeps like ice into the "intimate warmth of an enchanted garden" (85) and it can still sing a song of "no human source and from no human instrument"—threats sounding much like those contained in anti-electronic-music polemics of the period.<sup>6</sup>

With its ability to turn misshapen *homo sapien sapiens* into angelic *homo superior*, Harness seems overwhelmingly optimistic about electronic music and its potential for resolving some of the conflicts that emerged in discussions about the technologization of music and culture. But as with electronic music itself during the early 1950s, the synthesizer as Harness imagined it—even with its tremendous potential for the advancement of the species—remains a hazy and protean thing. In the end, the novella suggests that the discourses of science and art have become so distant in their aims and goals that they can find common cause only if humans alter themselves—in fundamental, even physiological ways—to accommodate the complex demands placed upon them. Most importantly, the double character of the electronic musical instrument in "The Rose" underscores the threats and promises to human culture posed by a new age of industrial technological production.

**"The Tunesmith" (1957).** Just four years after the publication of "The Rose," Lloyd Biggle, Jr. explored the cultural implications of the electronic instrument in his story "The Tunesmith." But while Harness treated his audiosynthesizer as the final link in a grand narrative about biological/physical change, Biggle, an academic musicologist and practicing musician, focused more explicitly on the economic and cultural effects that might accompany such a device. Biggle's "multichord," an advanced multi-timbral and programmable electronic instrument, proves itself capable of changing the bleak corporate world it helped to foster. Dual in nature, the instrument restores the traditional European canon it in large part destroyed, finally shaping a post-industrial culture out of the very industrial processes that preceded it.

First published in *IF* in August of 1957, "The Tunesmith" imagines a future very different from Harness's with its balletic posthumans and Strangelovian antagonists. Biggle's is a world without ballet, where "there is no entertainment except the TV commercial—which thus must constitute the only surviving form of artistic expression in music, art, literature and the drama" (2). It tells the story of Erlin Baque, a commercial composer (a "tunesmith") who, out of



financial desperation, finds himself on a mission to wrest music from the hands of a powerful media oligarchy using only a multichord. Emerging just a year after the RCA's first public performance, Biggle's multichord is what the RCA synthesizer and the Electronium aspired to be: a complete music production device with programmers and synthesizers all built into a single instrument. But unlike the expensive and unwieldy midcentury machines that never saw much use,<sup>7</sup> Biggle imagines an instrument so powerful and easy to play that it nearly replaces the musicians themselves. In a future where traditional musicians are disappearing, "even multichord players were becoming scarce, and if one wasn't particular about how well it was done, a multichord could practically play itself" (12).

Not only does the multichord resemble a synthesizer in its technical capabilities—it can be fully automated and features song/patch storage and sound-shaping filters—its role in the narrative as commercial pop-music machine reinforces the fear and loathing expressed by electronic music's detractors of the period. Biggle's focus on labor and the changes in the music industry accurately presages fears expressed by the American Federation of Musicians over a decade later when, in 1969, they voted to place severe restrictions on the synthesizer in its capacity as a union-approved instrument for fear that it would "replace" the musicians themselves (Pinch and Trocco 148). Commenting on what amounted to a ban, Bob Moog noted that

basically the union didn't understand what the synthesizer was. They thought it was something like a super Mellotron [an early tape-based sampling instrument, known for its use in the Beatles' "Strawberry Fields Forever"]. All the sounds that musicians could make somehow existed in the Moog—all you had to do was push a button that said "Jascha Heifetz" and out would come the most fantastic violin player! (qtd. in Pinch and Trocco 148).

The multichord is just such an instrument, without the physical limitations of Moog's real instruments. It becomes the "pop music machine" that the RCA and the Electronium could not be and, as a result, it helps create a musical dystopia where the culture industry is a nearly omnipotent economic and political force.

"The Tunesmith" is a convincing portrait of the bleak musical future that seemed all too possible to some midcentury composers, musicians, and critics. Baque, like his homophonic other (who is referred to in the story as the "B-A-C-H Baque"), is a skilled and versatile craftsman as well as a consummate artist, who, according to his disgruntled agent, "know[s] more about music than anyone alive" (11). It is this knowledge and his commitment to restoring the Western concert repertoire so defined by his namesake that drives Baque, although it barely supports him. In this future without orchestras or concert halls, Baque's undervalued artistry finds an outlet only in writing (like Raymond Scott) advertising jingles. While other tunesmiths, however, crank out shoddy, slapdash material that guarantees a short shelf life and thus necessitates its own replacement (keeping everybody in business), Baque spends excessive amounts of time composing each piece of music, according to his agent. As a result, though his work is clearly superior to that of his peers in that it resonates with consumers, Baque is broke. Since the economic landscape of "The Tunesmith"

consists of discrete guilds that divide up the spheres of the “visiscope” industry (the tunesmiths’ guild, the performers’ guild, the lyric writers’ guild), Baque cannot change without giving up composing for performance.

But Baque’s task is difficult, for within the guilds themselves the lines that divide the entertainment industry are absolute. Asking why a French horn player he wants for his new “Com” (i.e., composition) is not available, Baque finds out that the musician was “nixed [because] he went out to the West Coast and played for nothing.... [T]he guild can’t tolerate that sort of thing” (10). Of this crisis in traditional musicianship, Biggle then notes: “Earlier that year the Performers’ Guild had blacklisted its last oboe player. Now its last horn player, and there just weren’t any young people learning to play instruments. Why should they, when there were so many marvelous contraptions that ground out the Coms without any effort on the part of the performer?” (12). This is a culture where art, music, and those who make it are completely under the control of a vast media empire; all musical instruments become “contraptions.” There still exist in dusty corners the “real instruments ... amazing sounding things that no one played anymore” (12), but most people hear only synthetic efforts built with multichords practically playing themselves and with devices like the “harmonizer,” a “contraption” that “doesn’t produce effects.... [I]t just—harmonizes” (10). Biggle’s imagined devices add an ominous note to the claims made for those Raymond Scott developed around the same time: an ad for his Clavivox (a diminutive late-1950s proto-synth) stresses that “the newest electronic music instrument—*sounds* like a human performance” (Scott 91; emphasis in original).

The multichord’s ability to connect directly to a listener’s emotional responses becomes evident when Baque is forced, for financial reasons, to quit the tunesmith’s guild and take an entry-level union job playing the multichord at a dive restaurant called the “Lanky Pank Out.” Like the old spinets in saloons in Hollywood westerns, his multichord is a “battered old instrument” that bears “the marks of more than one brawl” (17). And this multichord has suffered from more than just aesthetic damage: “only the flute and violin filters clicked into place properly. So he would have to spend twelve hours a day with the twanging tones of an unfiltered multichord” (17). Rather than rely on the multichord in its capacity as what Ricardo Arias calls a “machinery of sound mimesis” (49)—i.e., rather than simply play the presets—Baque decides to explore the instrument in its “unfiltered” form: in a sense, the “real” multichord. In this choice, one perceives the tension not just between new instruments and timbres, but between new forms of music (e.g., the serialism and antonality so popular in midcentury concert programs, which is also suggested by Harness’s “sciomnia”) and the Western musical canon that Baque seeks to resurrect.

On the first night of his engagement at the Lanky Pank, Baque asks if he can keep playing while the singers take a break. When one asks if he will be singing, Baque replies that he will just play. “Without any singing?” she marvels, “Without words?” He informs her that not only will he not be singing, he might not even be playing Coms: “I might improvise something” (20). In

addition to playing without the instrument's sound-shaping filters, Baque is now trying to further isolate the raw source of the multichord's sound by drawing it to the foreground, by playing improvised instrumental music. He has now stripped away all of the corporate media strictures (including the regimented mode of composition enforced by the guild) that form the music of his world, from the shaping of the sounds, to the order of the arrangement, to the words that tell the tales. As he begins to play, Baque wonders "what these people were thinking as they heard for the first time music that was not a Com, music without words.... [C]ould he bring them out of their seats with nothing more than the sterile tones of a multichord?" (20). Naturally, the answer to these leading questions is yes, but Baque does more than just "bring them out of their seats." The music that "erupts" from his multichord causes a swell of intense desire within each patron: "lasciviousness twisted every face. Men were on their feet, reaching for the women, clutching, pawing ... while Baque helplessly allowed his fingers to race onward, out of control" (21). As he watches the audience become more debauched, it becomes more difficult for him to curb the eroticism he injects into his playing—he is almost helpless in his attachment to the instrument. And yet despite (or because of) this helplessness, Baque rarely neglects to include the "sex music" in future shows.

At first this scene seems a particularly American rendering of Felix Mendelssohn's argument for the power of instrumental music: "[p]eople usually complain that music is so ambiguous, that it leaves them in such doubt as to what they are supposed to think, whereas words can be understood by everyone. But to me it seems exactly the opposite" (qtd. in Storr 64). Baque's music leads his listeners to act without thinking: as his fingers fly across the keyboard, a "dress flutter[s] crazily downward" (21). When trying to explain how this happened, Baque remarks that he "saw that young couple sitting there, and they were happy, and I felt their happiness. And as I played everyone in the room was happy" (22). It is an ideal feedback loop between musician and audience, bridged and supported by the instrument itself—in this case, an electronic instrument playing electronic music, unadorned with the trappings of familiar timbres. Whether feelings of contentment or something slightly more prurient, through the multichord Baque can project their own emotions back onto his listeners, multiplied and concentrated, just as Martha Jacques tries to project force onto her unwitting hearers. Yet unlike Martha, Baque does not begin with a grand gesture before a huge audience; he starts small, testing out responses and tone colors, experimenting with ways to inspire, entertain, and titillate long before he begins to unleash the instrument's more widely transformative power.

While Baque's tremendous success in writing advertising jingles indicates that he is no stranger to playing on peoples' emotions through music, the intensity of the audience's response to his unfiltered performances leaves him wondering about his new use of the instrument. What Baque is tapping into is a muscular version of music's ability to operate "as an extraverbal mode of mental functioning, permit[ting] a specific, subtle regression to [the] preverbal, i.e., to truly primitive forms of mental experience, while at the same time remaining socially ... acceptable" (Storr 93). At first, Baque imagines a

connection with Orpheus who, in his words, could “move trees and soften rocks with his music” (22). But he soon dissociates himself from the Orphic link, seeing the music’s power not so much as his own, but as deriving from the instrument itself. He remarks to his agent: “I’ve noticed my playing is most effective when I don’t use the filters.... I’m wondering if maybe the effects the Greeks talk about were produced by their instruments, rather than their scales ... if the tone of an unfiltered multichord might have something in common with the tones of the ancient Greek kithara [lyre] or aulos” (22-23). Baque’s reference to the aulos, while also establishing the multichord as heir to an ancient organological genealogy, suggests that there is some sort of mystical quality to these ancient musical practices that he has harnessed through his use of the unfiltered instrument.

Seeing the power that his client now has over people, Baque’s agent is terrified: “I don’t think it’s the instrument, or the scales either. I think it’s Baque, and I don’t like it. You should’ve stayed a tunesmith” (23). Yet despite what his agent believes, Baque is correct in his suggestion that it is the instrument itself that gives him such power over his audiences. In effect, this power comes from the fact that the multichord balances the needs of corporate advertising with Baque’s desire to reestablish the power of music to affect listeners in the absence of consumer desire. As with the Arp and the fourier synth, the multichord synthesizes these competing interests—it gives music the space to liberate itself from its commodified existence, yet it ends up reestablishing a much older cultural power dynamic.

It does not take long for Baque to realize the potential of this instrument to undo the power of the Coms and the guilds. The last thing he says to his agent is that he “wants to find a place where we can put a lot of people—a thousand, at least—not to eat, or watch Coms, but just to listen to one man play on a multichord” (23). The power of his music is also creating a growing demand that eventually draws unwanted attention; on his way home from work he is invited (by force) to meet with “James Denton, Czar of Visiscope International. Ruthless arbiter of public taste” (27). Like Baque, Denton is acutely aware of the music’s ability to establish an effective and powerful empathetic connection, understanding that were he to gain control of its power, he could solidify his grip on the media and the culture at large. But he also sees potential in Baque’s music to tear down his empire and render it obsolete. Inviting Baque to his offices, Denton sets up an unfiltered multichord in a room filled with the “overlords of industry, science and business” and encourages Baque to work through his set list, including “the pounding force that Lanky called ‘Sex Music’” (28-29). But while the music seems to have a tremendous effect on those in the room, those listening over an intercom feel nothing but “a mild boredom” (29).

As a result of this experiment, Denton’s “expert” reaches the conclusion that “Erlin Baque has the ability to telepathically project his emotional experience. When the projection is subtly reinforced by his multichord playing, those in his immediate presence share that experience intensely. The projection has no effect on those listening to his music at a distance” (30). Baque is then released

because “whatever [he] has is of no use” to Denton for “he could not project his emotions by way of visiscope” (30). Denton assumes that the intense way that Baque’s music affects those who hear it comes from Baque himself—a cult of personality. They believe that he has an almost mesmerist-like ability to “project his emotional experience,” that his “sphere of influence” is powerful (30) but personal and limited.

Since they ascribe the power of influence to Baque himself, the “overlords” do not take into consideration the possibility that the medium over which they are broadcasting this music is not technically sufficient for the message. For Biggle claims that it is the instrument’s overtones, or harmonics, that serve as carriers for the empathetic message. Overtones are the physical consequences of the means by which an instrument produces sound; they are localized vibrations in the string or column of air that “enrich the sound of the principal note” by expanding the note’s harmonic “coloration” (Westrup 255). And since the voice intercom Denton set up “didn’t carry the overtones” to people listening in, the “multichord sounded dead” (Biggle 36). In a biting commentary on the state of musical fidelity in the late 1950s, the transmitted sound of the instrument carries with it only the bare minimum of reproduction—the multichord needs more bandwidth to deliver its more powerful message than a simple office intercom can provide. The “full-frequency range of live sound” (36) can be transmitted only live or through the more technologically complex visiscope.

Because of this misrecognition of the multichord’s capabilities, Baque convinces Denton to allow him to perform on one of his network’s more popular programs. Even though Denton soon shuts the show down, playing for “a quarter of Earth’s population three minutes of Sex Music” (37) guarantees that Baque’s future performances will now be sold out for months in advance. As the show’s host herself uncomfortably admits, this music “does things” to people (37). While the emphasis is on the erotic and the bacchanalian, the cultural ramifications for Baque’s performance are much wider, since the “sex music” that unpins inhibitions (and clothing) acts as a kind of shorthand for much broader forms of musical connection and cultural intimacy that have been missing in this sterile mediascape. From one perspective, Baque is plainly showcasing his music’s ability to effect the sort of direct change that Denton and his Coms have always been after—to be able to directly govern and manipulate desire through machine-produced commercial music.

Biggle’s rendering of such a profoundly bleak musical environment suggests an equally grim view of popular music in the Fifties. Though now more commonly known for the birth of rock-and-roll or the rise of hard bop, for many the Fifties were, as Joseph Lanza has put it, “the moodiest years on record” (67). Moodsong or “mood music”—basically, muzak-style “light” recordings often tailored to specific moods and social situations—became tremendously popular in the postwar decades. Lanza argues that mood music “is perhaps the twentieth century’s most authentic music, tailored exclusively for the electronic revolution” (70). In a sense, Baque and his *real* mood music are a barbed commentary on this genre. Biggle seems to poke fun at the base

ridiculousness of the emotions evoked in this kind of music—of course, in the age of records like *Music to Relax by in your Barcalounger* (Columbia, late 1950s) and *Music to Strip By* (Alshire International, 1969), Biggle does not have to work too hard to make his point. Nevertheless, Baque's career as a multichordist attests to a real emotional and physical power in this new instrument, which generates music capable of genuinely affecting an audience, ultimately placing a good deal of control back in the hands of the composer and performer after years of corporate domination.

As the story ends, cracks begin to show in the system of media control. Baque's final concert is an "Earth-wide program direct from Lankey's" that omits the sex music entirely and abandons all attempts to play to the familiar commercial targets. No longer limited by time constraints or genre expectations, Baque works to establish a more complex emotional connection with his audience, playing the multichord along the full spectrum of human emotion—the tonic as well as the overtones. He uses the massive audience for his concert as a primer in "serious" music for an ignorant public and a proof of music's ability to make profound emotional gestures, free of commercial demands and constraints. For this triumph, Baque pays dearly. Abruptly following his most successful performance, Denton frames Baque for murder and has him sent off to a distant prison colony. In the wake of this performance's notoriety and through the long years of his incarceration, a profound cultural transformation takes shape, and gradually Baque's dream of a culture that values music and art on its own terms, and not for its commercial value, finally takes hold. In the end, the "classics" return and "serious" music triumphs—the standardized and homogenized world of the multichord and the commercial ultimately fades away and Baque becomes an unsung hero, a martyr for the cause.

From one perspective, the change in "The Tunesmith" is the triumph of the Western canon, the restoration of Bach and his brethren to their prominent place as busts on countless pianos. If this is a story about the great renewal of traditional Western culture after a long period of stagnation, however, it is also a tale about the technological means by which this transformation is made possible. Biggle finally places the power to undo the hypercommercialization and standardization of music in the multichord's electronic, orphic timbres. Again, the multichord exhibits a "double character": it is not only a major instrument in cultural decline, it is also the key to undoing commercial hegemony and reinstituting an "authentic" music in popular contexts. In Biggle's story, the electronic instrument fulfills its double character and proves itself to be both problem and solution, limitation and liberator—or, finally, "one of the most revolutionary creations in instrumentation throughout the history of western music" (Prendergast 302).

**Conclusion.** In 1958, the year after "The Tunesmith" was published, electronic music gained even greater cultural traction. Edgard Varèse debuted his experimental electronic composition *Poème Électronique* in (and with) Le Corbusier's Philips Pavilion at the Brussels World Fair. Varèse, aided extensively by architect and composer Iannis Xenakis, produced a dramatic mix



of colored lighting, images, recorded sound, and live electronic music that was both “a dramatic and fitting closure to an episode in the history of electronic music composition,” and “a crossover work that revealed some of the pleasures of electronic music to the general public” (Holmes 134).

The same year (and recorded in the same studio) as *Poème Électronique*, Dutch composer Dick Raaijmakers’s “Song of the Second Moon” was released, its press materials suggesting that “never before has electronic music been so melodic, so fully arranged, and such pleasant listening” (qtd. in Holmes 152). The challenging pleasures of early electronic music were giving way to a more pleasant, non-threatening experience. The years to come would find the electronic instrument becoming more a part of the popular soundscape; in contradistinction to the “cold cruelty” of sciomnina, a new electronic pop chirped along with happy tunes and bright synthetic timbres, echoing Biggle’s Coms and Scott’s machine compositions. This popular acceptance of electronic music was significantly advanced in 1964 when Bob Moog released his Modular 55, the first commercially available synthesizer, and Don Buchla developed his own signature approach (notably different from Moog’s) to what he marketed as a “modular electronic music system” (“Buchla”).

But the real watershed moment for the synthesizer and its popular assimilation would come in 1968, when Wendy (*née* Walter) Carlos released an album that relied solely on a Moog modular synthesizer to build intricate electronic versions of the Bach canon. Released on Columbia Records, *Switched on Bach* would go on to become one of the most successful classical recordings of the twentieth century, going platinum and spawning a legion of knock-off synthsploitation albums like *The Moog Strikes Bach* (1969), *Switched on Gershwin* (1970), and even *Country Moog: Switched on Nashville* (1970). As with Harness’s fourier synth and Biggle’s multichord, the commercial synthesizer functions as an instrument for musical translation; the Moog digests and processes styles and genres into its own language: popular songs get *mooged*—rendered electronic and thus novel. And it finally takes Bach (Baque) to reimagine the electronic instrument for a new technological era, in this case to domesticate it and soothe some of the fears that accompanied its development: Carlos’s album cover even shows the large Moog perched on a wooden table in a warm, well-appointed parlor. *Switched on Bach* is, in effect, the commercial enjoyment of the multichord performance made possible by the reintroduction of Western art music to Biggle’s dystopia; it is the blending of warm, human timbres with the “cold” voice of the fourier equations that liberated humanity in Harness’s future. The familiar Western canon is juxtaposed with the tonal and timbral unfamiliarity of electronic music, helping to define the electronic instrument in the next stage of its evolution.

After *Switched on Bach*, the “in sound” of the synthesizer became even more familiar as smaller, cheaper, and more streamlined instruments such as the Minimoog Model D became available. Formally released in 1971, the Minimoog was a smaller version of Carlos’s modular instrument and was one of the first synths to be sold in music retail outlets as a basic “musician’s” instrument. Once synths were more affordable, the industry really “took off”



(Pinch and Trocco 257). Electronic music could be found all over television and film soundtracks, on the radio (on classical, rock, *and* pop stations) and, more and more (thanks to the greater portability and reliability of the new instruments), in live performance. By the end of the decade, Spielberg's grand vision for the instrument seems a reflection of the dramatically changing market reality, as well an indication that the electronic synthesizer was becoming domesticated, rendered familiar, even harmless. The rise of popular electronic genres like disco, punk, techno, synth pop, and new wave in turn would make the electronic musical instrument just one of many larger shifts going on in popular music and culture. But in the short period of its final realization, the synthesizer matured quickly. As one critic put it, "it's as if someone invented the first orchestral instrument in 1950 and by 1975, we had arrived at the full-blown modern symphony orchestra" (Prendergast 302). It is the rapidity of this development that fomented such an intense conversation in music discourse—and in sf—about the role these new devices would play in the milieu they helped create.

In his book *Sound Ideas*, Aden Evens remarks that the musical "instrument does not just yield passively to the desire of the musician. It is not a blank slate waiting for an inscription. Likewise the musician does not just turn the instrument to his own ends, bending it to his will against whatever resistance it offers. Rather, musician and instrument meet, each drawing the other out of its native territory" (160). In their renderings of early electronic instruments, Biggle's and Harness's sf narratives explore this space where musician and instrument meet, illustrating the conflicts that defined many of the claims surrounding these new devices. In doing so, their stories speak to the changing relationship between musician and instrument, dynamically modeling cultural concerns about the state of musical art in late industrial culture. The synthesizer also emerges from these texts as a site of profound resistance—positioned between and pushing against not just the musician and the instrument, but art and science, music and commerce, and even humankind and alien life. In this midcentury sf moment, the synthesizer serves as a potent (and lasting) cultural signifier that underscores the shifting notions of what it means to be and remain human in an increasingly technologized society.

#### NOTES

1. Arp stands for Alan R. Pearlman, the company's founder.

2. By that time, the analog synthesizer had helped define the sound of emerging genres such as disco, techno, and hip-hop. The same year *Close Encounters* was released also witnessed Donna Summer's breakthrough disco hit "I Feel Love," the work of Italian producer and electronic music guru Giorgio Moroder, who scrapped the traditional orchestra in favor of entirely electronic instrumentation; the release of Kraftwerk's influential album *Trans Europe Express*, a sprawling collection of minimal electronic soundscapes by a band that saw themselves, according to the documentary *Synth Britannia* (2009), as the "children of Wernher von Braun"; synth star Gary Numan gigging in London's punk clubs; and Grandmaster Flash beginning his own live career at Disco Fever in the Bronx, the first regular gig for a hip-hop artist.

3. The use of electronic music for effects in sf films was already well established by the mid-1950s, with devices such as Samuel Johnson's theremin, which holds the alien ship aloft in *The Day the Earth Stood Still*, and Bebe and Louis Barrons's cybernetic assemblages, which keep *Forbidden Planet* (1956) feeling eerie half a century later. Indeed, sf film's electronic timbres came to represent, for film audiences, a quite literal "sound of the future"—or even, as Bebe Barron put it, "what dreams sound like" (qtd. in Taylor 94). For a discussion of this topic, see the two essays by Rebecca Leydon.

4. These fears were reminiscent of those John Philip Sousa had expressed a half-century earlier when, in 1906, he argued that the player piano (and the phonograph) would "reduce the expression of music to a mathematical system of megaphones, wheels, cogs, disks, cylinders, and all manner of revolving things, which are as like real art as the marble statue of Eve is like her beautiful, living, breathing daughters."

5. Harness's vision of a society factionalized between science and art prefigures C.P. Snow's famous 1959 Rede lecture "The Two Cultures."

6. The language of "warm" and "cold" that Harness uses is still very much a part of discussions about the perceived sonic differences between analog and digital music technologies.

7. Despite its high-profile move to the Columbia-Princeton Electronic Music Center in 1958, the RCA synthesizer never got much of a work-out; one of its few moments in the musical spotlight came years later when Charles Wuorinen won the 1970 Pulitzer Prize for *Time's Encomium*, a work composed entirely on and for the Mark II.

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#### ABSTRACT

This article examines the role electronic music and musical instruments played in the musicological discourse of the mid-twentieth century by analyzing two early sf stories about synthesizers: Charles Harness's novella "The Rose" (1953) and Lloyd Biggle, Jr's short story "The Tunesmith" (1957). It argues that science fiction echoed both the concerns of critics fearful that new electronic forms would "dehumanize" music and the optimistic rhetoric of those who dreamt of the technology's enormous potential. I argue that by examining sf's contribution to the perception of electronic music and musical instruments, one can find a prescient analysis of the consequences of an increasingly technologized culture, as well as a farsighted and thoughtful analysis of a nascent technology that would soon become one of the most significant cultural developments of the twentieth century.