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The Commercialization of FM Radio
1964-1980

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"Major Armstrong's baby is a baby no more," announced the trade journal Broadcasting in September 1973. "It is past the toddler days when licensees owned FM stations for their subcarriers which allowed them to beam a Muzak service to area stores. It is past the pre-teen-age days when only the rich and educated knew about FM and could afford to buy a set. It is even through with its period of adolescence when it weathered its identity crises by proving that it was not AM through over-blown subjectivism and under-developed selling and production techniques. FM is symbolically 21 years old now. It is old enough to drink and suffer the pitfalls of excesses. It is old enough to pay its own way. And, more and more, big enough to do its own thing."¹ This is the sort of pronouncement Edwin Howard Armstrong had desperately dreamed of reading ever since the 1930s. Now, twenty years after his suicide, the radio industry was marvelling at the FM boom of the early 1970s.

A few figures only begin to convey the magnitude of the FM revolution. In 1964, total net FM revenues were \$19.7 million. Ten years later, that figure had increased thirteen times to \$248.2 million.² In 1962, according to the FCC, there were 983

commercial FM stations on the air; in 1972, their number stood at 2328. Four years later, there were nearly 3700 FM stations on the air.² By 1972, in cities such as Chicago and Boston, it was estimated that 95% of households had FM sets.³ A few years later, that figure was true for much of the country. And soon, more people were listening to FM than AM. After the infamous and tragic fight to the death between Armstrong and David Sarnoff over the dissemination of FM radio, Armstrong, at last, had won. What factors led to this revolution? Why did FM finally become so appealing? What was FM broadcasting that slowly but surely stole increasing numbers of listeners away from AM?

In this paper I would like to explore how technical improvements, regulatory changes and, most importantly, cultural upheaval, interacted to produce this revolution. I will be arguing that while technical refinements, overcrowding in the AM band, and regulatory changes were obviously critical factors in the FM explosion, that it was, primarily, the emergence of a profoundly anti-commercial, anti-corporate ethos in the 1960s that caused FM to flower. This ethos was marked especially by a contempt for what had come to be called mass culture: a disdain for the "vast wasteland" of television and for the formulaic, overly commercialized offerings of radio, and a scorn, first on the part of older intellectuals and, later, on the part of the

¹Broadcasting, 24 September, 1973, p. 32.

²Broadcasting, 13 September 1976, p. 50.

³Newsweek, 22 May, 1972, p. 57 and Christopher H. Sterling and John M. Kittross, Stay Tuned, 2nd. ed. Wadsworth Publishing Company, 1990, p. 379.

counterculture, for the predictability and mindlessness of mainstream popular music.¹⁰

The quest for fidelity, in other words, was not only a technical quest driving the improvements in FM transmitting and receiving, but it was also a cultural and political quest for an alternative medium marked by fidelity to musical creativity and cultural authenticity. The quest for fidelity meant the reduction of noise, not just from static, but from the hucksterism of America's consumer culture. I would like to suggest, then, that certain technologies--particularly communications and transportation technologies such as wireless telegraphy, cars and motorcycles, and the computer--have allowed for--even invited--oppositional, anti-establishment uses primarily by white middle class men and boys expected and eventually compelled to integrate into institutional bureaucracies, yet yearning to defy and postpone such integration. Their use of these technologies did allow them to rebel. But it also provided them with critical technical expertise that would subsequently become valuable on the job market.

Certainly FM, itself invented by a man torn by the desires

¹⁰Broadcasting, 24 September 1973, p. 31.

¹¹For criticisms of mass culture see Bernard Rosenberg and David Manning White, Mass Culture: The Popular Arts in America, The Free Press, 1957; for the counterculture ethos see Charles Reich, The Greening of America, Random House, 1970; Todd Gitlin, The Sixties, Bantam, 1987; the classic intellectual critique of popular music is Theodor Adorno's "On Popular Music," SPSS, vol. 9, no. 1, 1941 and "A Social Critique of Radio Music," Kenyon Review, vol. 7, no. 2, Spring, 1945; see also Simon Frith, Sound Effects, Pantheon, 1981.

to rebel and to succeed, was one of these technologies. Howard Armstrong had made his fortune in the teens and twenties as the technical golden boy of RCA. But by 1935, with Armstrong's technical vision and Sarnoff's corporate agenda moving in very opposite directions, Armstrong's attitude toward his erstwhile corporate benefactor soured. With RCA's decision in 1935 to spend \$1 million developing television, while doing all it could behind-the-scenes to thwart FM, Armstrong's efforts to promote FM on his own were informed by an increasingly anti-industry stance.

But this stance was not without its contradictions. Armstrong wanted to expose what he saw as the technical myopia and cynicism of the corporate giant RCA; he was willing to do this, however, with the help of established corporations such as General Electric, and with the upstart firm the Yankee Network of New England. In the summer of 1939, when Armstrong began broadcasting on a regular schedule from W2XMN in Alpine, New Jersey, the Yankee Network also established experimental stations near Worcester, Massachusetts and then on Mt. Washington in New Hampshire. General Electric publicly endorsed FM and began manufacturing receivers. And Armstrong himself launched a one man public relations and marketing campaign, touring the country and speaking to a variety of groups on the superiority of FM. By the fall of 1939, the FCC had received 150 applications for FM stations; three years later, over forty FM stations were in regular operation.⁶ Some of these were independent FM stations,

and others were owned by AM stations. And so, despite a withdrawal of financial support, public denigration of FM's performance, and lobbying with the FCC to keep FM out of the spectrum, RCA failed to stop FM completely. In 1945, however, RCA and other members of the radio industry succeeded in persuading the FCC to move FM to a higher position in the spectrum, meaning that all pre-war transmitters and receivers were obsolete.⁷ So from the earliest beginnings of its technical, business and regulatory history, FM was an industry outcast, an anti-establishment technology marginalized by vested corporate interests. It is not surprising, then, that FM's renaissance would be pioneered by those very much outside of-- even at odds with--the media culture those corporations had created.

The immediate catalyst for the FM explosion in the 1960s came from the FCC. Since the late 1940s, those FM outlets owned by AM stations simply broadcast the exact programming that its AM parent did. But by the early 1960s, FCC Commissioners Robert E. Lee and Kenneth Cox argued that frequencies had become so scarce that in the face of increasing demand, duplication was "a luxury we can't afford."⁸ The FCC had, in 1962, ordered a freeze on AM license applications while it tried to address the overcrowding in the spectrum. The solution the FCC chose was to promote more

⁶Lawrence Lessing, Man of High Fidelity, New York, Bantam Books, 1969, pp. 188-203.

⁷Lessing, p. 212.

⁸Broadcasting, March 29, 1965, p. 88.

aggressive commercial exploitation of the FM band. In May of 1964, the FCC issued its nonduplication ruling, which was to take effect in January of 1967. In cities of more than 100,000 people, radio stations with both AM and FM could not duplicate more than 50% of their programming on both bands simultaneously. Although the edict affected only 337 of the country's 1560 commercial FM stations (and of these, 137 had already been programming separately), the ruling nonetheless helped promote much more enterprising exploitation of the medium.⁹ Between 1964 and 1967, five hundred new commercial FM stations, and 60 educational stations took to the air.¹⁰

Obviously, the FM boom was not prompted by these regulatory changes alone. Technological and economic factors played a role as well. In the late 1940s and early 1950s, about 80% of the FM stations were owned by AM stations in the same market. Because of the programming duplication then allowed, FM sounded just like AM; the only differences were that there was no static and the receivers cost more.¹¹ The few independent FM stations broadcast either background or classical music, and featured few if any commercials. As a result, FM continued the decline that had prompted Armstrong to take his own life: by 1957, there were only 530 FM stations on the air, 86 less than five years earlier. The FM audience consisted primarily of those devotees to the classical music stations that broadcast in the country's largest

⁹Newsweek, 28 November 1966

¹⁰Sterling and Kittross, p. 633.

cities.¹¹² As Business Week noted, "the exclusiveness of the programming and the high cost of FM receivers kept audiences small."¹¹³

Beginning in 1958, however, FM began to experience a resurgence. The number of stations began to increase, and so did the audience. The AM spectrum had gotten so crowded, especially in major cities, that by the late 1950s there were few or no slots left. The only way to start a new station was to use FM. The slackening of the TV boom made investment money available for FM. And, the reduced price and improved quality of FM receivers, particularly those imported from Germany and, later, Japan, made FM more accessible and attractive to potential listeners.

Between 1960 and 1966, the annual sales of FM radio receivers increased more than five-fold, and by 1967 over one-third of all radio sets sold were equipped with FM reception. In 1960, there were approximately 6.5 million households with FM; by 1966, that number had soared to 40 million.¹¹⁴

These early listeners were usually better educated Americans with "high culture" tastes who preferred FM's music, intellectual fare, and lack of commercialism. A study done for the National Association of FM Broadcasters in the winter of 1963-64 concluded that "FM penetration and FM listening both increase as household income and head-of-the-house education increase." Those homes

¹¹¹ Sterling and Kittross, p. 323.

¹¹² Sterling and Kittross, p. 323.

¹¹³ Business Week, September 24, 1966, p. 173.

¹¹⁴ Media/scope, May 1967, p. 12.

that accounted for the bulk of FM listening were also those homes that watched the least amount of TV and, in fact, listened to FM rather than watch TV during the evening prime time hours.¹⁵ FM listeners were concentrated in major metropolitan areas such as New York, Chicago, Los Angeles, Washington and Boston and listened primarily to "middle of the road" music, which ranged from Frank Sinatra and Mantovani to Dave Brubeck. But in the largest metropolitan areas, there was greater diversity in programming and a devoted listenership to classical music.¹⁶

Increasing numbers of FM stations also had a compelling new feature: they were broadcasting in stereo.¹⁷ The desire and quest for a more pure, lifelike sound, for a sound that could replicate actually listening to a symphony or a quartet or a soprano live, drove one of the major technological revolutions of the 1960s and '70s, the transformation of the phonograph into the stereo system. This revolution was deeply interconnected with the proliferation of FM listeners and stations, because these new stereos featured extremely sensitive FM receivers that were now connected to two separate and often large speakers.

While the nonduplication ruling and the technological improvements in both transmitting and receiving equipment, as well as the virtual closing of the AM spectrum, spurred this revitalization of FM, another major factor would transform FM's content and appeal: the rise of 1960s youth culture.

¹⁵Broadcasting, April 12, 1965, pp. 36-37.

¹⁶Media/scope, May 1967, p. 12.

Bound together by rock and folk music, contemptuous of the commercialization that seemed to infuse and debase every aspect of American culture, and hostile to bourgeois values and the profit motive, members of that loose yet cohesive group known as the counterculture were revolutionizing almost every aspect of American culture, from its popular music to its language and clothing.

Particularly hateful to these young people was what they saw as the lockstep conformity of American life that made everything from work to popular music joyless, unspontaneous and false. They wanted something different: they wanted their lives to be less programmed, less predictable. They wanted to see and hear things in a much less mediated, yet sensually heightened fashion. To achieve such transcendence from bourgeois constraints on lifestyle and the senses, many began doing drugs, most frequently marijuana and hashish, but also psychedelics. The use of such drugs helped increase the appreciation of and demand for improved clarity and richness in sound reproduction. And the sounds these young people were listening to, especially folk music and rock, gave expression to their critique of mainstream culture rarely heard on television or radio. It is no surprise that when some of these young people, primarily men, worked their way into FM radio stations, that they would deliberately use their positions to challenge every aspect of what people heard and how they heard it on the dominant media, AM radio.

At this time, AM radio was characterized by incessant commercials, short songs no longer than three minutes, and repeated promotional jingles. One study found that a typical hour on a top 40 station consisted of 22 commercials, 73 weather/time/contest announcements, 58 announcements of the station's call letters, one three-and-a-half minute newscast and maybe twelve songs. Tom Donohue, one of the maverick pioneers of underground radio, summed up the counterculture assessment of such broadcasting. "The bulk of popular music radio programming in this country is devoted to absurd jingles...babbling hysterical disc jockeys...The tempo is Go! Go! Go! The air is replete with such blather as 'here comes another twin spin sound sandwich' and 'here's a blast from the past, a moldy oldy that'll always last.' Top 40 radio, as we know it today and have known it for the last ten years, is dead, and its rotting corpse is stinking up the airwaves."¹⁷

Some of the earliest of these "underground" or "progressive rock" stations, as they were called, which went on the air between 1967 and 1969, were KMPX in San Francisco, KPPC in Pasadena, KMET in Los Angeles, WOR and WNEW in New York and WBCN in Boston. These stations represented a very different response to FM than that of the radio networks. CBS radio, for example, which had fought the nonduplication ruling bitterly, and knew its

¹⁷Sterling and Kittross, p. 381.

¹⁸Quoted in Peter Fornatale and Joshua E. Mills, Radio in the Television Age, Woodstock, New York, The Overlook Press, 1980, p. 117; study of AM radio cited on p. 127.

FM stations, as well as many independents, didn't have the money or inclination to develop entirely new programming, came up with an assembly line response. It began, in 1966, producing a show for syndication called "The Young Sound," which consisted of "contemporary music from the mid-1950s to the present in new instrumental versions that retain the beat, rhythm and tempo of the original selection."¹⁷ The show offered a total of 120 hours of one hour tapes of continuous music coded for automatic switching and broadcast. The pre-packaged program was available to any station willing to subscribe, and such automated shows economized on live engineering and announcing staffs.¹⁸ It was this very kind of response to the possibilities of FM that provoked a defiant, anti-commercial reaction among young people disgusted with the formulaic cynicism of American mass culture.

The underground stations threw all the conventional industry rules and responses out the window. They eliminated advertising jingles, the repeated announcing of call letters, and the loud, insistent, firecracker delivery of AM disc jockeys. They repudiated conventional market research which sought to identify the "lowest common denominator" and thus reinforced the predictable repetition of top forty AM. As one program director of a progressive rock station acknowledged, his market research consisted of seeing who was appearing at the Fillmore in San Francisco and "asking around among college students."¹⁹ College

¹⁷Broadcasting, July 31, 1967, p. 96.

¹⁸Business Week, September 24, 1966, p. 176.

stations around the country, not surprisingly, pioneered and embraced the underground format.²²

Instead of being required to play only from a tight play list determined by a programming manager, disc jockeys on progressive rock stations were given wide latitude to play what they wanted. They also sought and responded to listener requests. They avoided most top forty music and the playing of singles. Instead, a low key, at times somnambulant voice talked to the audience in what was called a "laid back" and intimate fashion in between long segments of music that included album cuts of rock, blues, folk, jazz, international and even, on occasion, classical music. Progressive FM stations especially delighted in playing the longer cuts of a song, some of them as long as twelve or twenty minutes, for an audience who could hear such music nowhere else on the spectrum. These listeners were usually also the fans of new rock and folk groups such as Richie Havens, Big Brother and the Holding Company, and Cream, whose albums were selling well and concerts selling out, but who couldn't get airplay on AM. Listeners--most of whom were educated, affluent young men--were extremely loyal to such stations.²³ Progressive rock stations also specialized in information on the anti-war movement and countercultural activities in general. As one industry analyst observed, underground radio "was the first really new programming idea in 10

²¹Broadcasting, 11 August 1969, p. 46B.

²²Fornatale and Mills, p. 133.

years."²³⁴

The new format was not just a breaking away from old trends and practices; the new format was very much a political statement, a reaction to the slickness, impersonality and assembly line techniques of the mainstream media. Most of all, the format as well as the content of underground radio comprised a thoroughgoing critique of the crass and rampant commercialism of all the mass media, and of AM radio and the music industry in particular. As Tom Donohue noted, it was "the radio of reaction," especially a rebellion against tightly controlled formats, shorter and shorter playlists, and "the ever-closing circle of musical regimentation."²³⁵ While underground radio represented only a tiny portion of FM stations, its impact on programming formats and content was enormous, precisely because it was so fresh, new, and compelling to listeners.

These two very different expressions of FM's early anti-commercialism--first, the classical stations and then progressive rock stations--both represented the reactions of educated, primarily white male elites against the state of mass culture in 1960s America. It is important to emphasize that like the FM listeners of the early 1960s, young people who turned to FM also scorned television and watched very little of it.²³⁶ Separated by age and possibly by political orientations, these early devotees

²³³Broadcasting, 11 August 1969, p. 46C.

²³⁴Broadcasting, 11 August, 1969, 46B.

²³⁵Broadcasting, 2 October 1972, p. 42.

²³⁶Fornatale and Mills, p. 129.

of FM nonetheless shared a vision of what culture, and radio, should and should not be. They also shared a devotion to musical fidelity, whether they preferred listening to Mozart or Jimi Hendrix. But they would also come to be pitted against each other, as the competition over FM stations, and over the disposable incomes of young people, began to push classical stations out of certain markets, to be replaced by rock stations.²⁷ And the desire both groups shared, for musical fidelity and for a medium insulated from the marketplace, would become coopted by the very success of FM. It was the democratization of the quest for fidelity that compromised what form that fidelity would take.

What happened in the 1970s, after this proliferation of stations and upheavals in program formats, was the need and desire on the part of owners of FM stations to make a profit. It is important to remember that the FM spectrum in the late 1960s was inhabited by non-profit college stations, by independent underground stations, by other independent stations run by those much more interested in profits than politics, and by the networks with a bottom line mentality and stockholders to please. They all faced a vexing economic and cultural tension surrounding FM. FM had become so popular, after all, because of its lower number of commercials, so determining how to maximize profits was tricky.²⁸ As Broadcasting noted in October of 1974, FM accounted

²⁷Business Week, September 24, 1966, p. 173.

²⁸Broadcasting, 13 September 1976, p. 50.

for one-third of all radio listening, but only 14% of all radio revenues.³⁰ One reason that so much experimentation had been possible with FM was precisely because advertisers exerted very little influence over the medium. Prejudiced by the notion that "FM listening was the province of eggheads and hi-fi buffs," advertisers had eschewed FM until the early 1970s, despite industry efforts to promote the FM audience as highly desirable because it was upscale.³¹ As one ad executive put it in 1967, "There is no real hard information on the FM audience, its composition or its buying power. For some time now it [FM] has been good for such things as airlines, luxury items and the like, but we still aren't sure whether we can risk selling soap or food in the medium."³¹ The incursion of more systematic market research into the FM industry to ascertain just who this audience was and how it could be captured began to rein in the diversity and experimentation of the late 1960s.

In fact, encouraging the proliferation of the more free form underground format was deemed strategically unwise by network executives. "We think we know how many people there are who want this kind of radio and statistically there aren't enough to make our stations profitable," noted an ABC executive. "We could not continue to operate at great losses by appealing to an audience that just isn't large enough to support a commercial radio station."³²

³⁰Broadcasting, 7 October 1974, pp. 41-42.

³¹Broadcasting, July 31, 1967, p. 58.

Yet industry analysts had identified the major audience for many FM stations as young and affluent, and advertising agencies were already beginning to develop targeted advertising to audiences segmented by demographics and different media. Commercial FM stations and advertisers alike wanted as large a portion of this market as possible. The youth market, alienated though some of it was, was nonetheless a big market. As advertisers and owners of FM stations recognized this, more and more stations were converted to some type of rock format, thus edging out the early FM pioneers, the classical stations. By 1973, according to Newsweek, there were just over 30 full time commercial classical stations, a decline of 50% since 1963. ³¹

To appeal to the younger market, the ABC-FM network developed a hybrid format with the musical predictability of the AM format but the announcing style of underground. In 1971, CBS-FM did the same. Looking at their target audience of upper-income, college educated people between the ages of 18-34, WCBS in New York played a mixture of rock, folk and other popular music and restricted advertising to eight minutes per hour (many top forty stations had eighteen minutes of advertising per hour). WCBS also offered "bonus music periods" for listeners--101 minutes of music without commercials, to remind listeners that the station's dial position was 101.³⁴ Promotional gimmicks,

³¹Broadcasting, July 31, 1967, p. 62.

³²Broadcasting, 13 March 1972, p. 51.

³³Newsweek, 19 March 1973, p. 83.

³⁴Broadcasting, 23 August 1971, p. 67.

ironically, promoted anti-commercialism.

In other words, the industry sought to coopt some of the stylistic innovation of underground while purging it of left wing politics and too much musical heterogeneity. As Broadcasting noted, radio, even FM, "must serve an audience with one specific product and do it consistently." What such initiatives began to do was exploit some of the iconoclasm of FM in order to turn the anti-corporate ethos to the industry's advantage. After all, what FM managers had to do was convince advertisers, who had remained very leery of FM, to use the new medium while simultaneously convincing their audience that FM was different from and superior to AM, and that it recognized and respected its audience's reaction against over-commercialism.

As a result, these middle years of FM's flowering and transition in the early 1970s were a time when the medium--its form and its content--was still fluid, experimental and open to possibilities. This was especially true of educational FM stations, which had nearly doubled in number between 1969 and 1975, and were less pressured by the need to show profits--or, for that matter, even pay their mostly volunteer staff. By the end of the decade, however, with the collapse of the counterculture and ravages of "stagflation," the pressures that came from the demand to maximize profits made FM straightjacketed, frozen into new, rigid formats targetted to very specific audiences. As early as 1972, for example, WCBS in

New York had switched to a "tightly run oldies format" which had proved to be hugely successful with a large and varied audience.³⁵

In November of 1974, Broadcasting featured an article entitled "FM Rockers are Taming Their Free Formats." The article noted that many progressive stations were adopting one of the techniques of AM stations, the tighter playlist. The article also noted the increase in market research, "more study of audience tastes as measured by sales and requests, more attention paid to national sales and airplay." As one FM programmer noted "We're seeing a nationalization of tastes." Albums out of the mainstream, once the mainstay of early FM, were now no longer given a chance at many stations. The playlist was agreed upon by committee or determined by the program manager, as it had in AM during the 1960s.³⁶

Accompanying this trend toward homogenization was the adoption by different stations of a very particular, tightly circumscribed format: oldies, soft rock, album oriented rock, or country and western, with very little if any overlap. Each station and its advertisers were, then, geared to a very particular fragment of the once "mass" audience. As Advertising Age noted in 1978, "With the increased emphasis on specific demographics, stations are finding it imperative to implement tight format control to ensure that the target audience is being reached. The day of the disc jockey who controls his individual

³⁵Broadcasting, 2 October 1972, p. 42.

³⁶Broadcasting, 25 November 1974, pp. 47-49.

program is quickly becoming a dinosaur."³⁷

With the new, more systematic research and tighter formats came increased advertising revenue and, thus, increased success. By 1977, FM stations saw their revenues soar to \$543.1 million, a nearly 30% increase over the previous year. FM receivers were now in 95% of all American households.³⁸ And a new business was booming: automated programming services that sold syndicated formats to FM stations around the country.³⁹ The assembly line techniques that underground djs had deplored now very much informed FM programming.

What this meant for rock music was a new regimentation based on market research and a strict hierarchy of musical success. AOR stations (Album Oriented Rock) played album cuts by the most successful artists such as Fleetwood Mac, Elton John or Linda Ronstadt. It was very difficult for new groups or new music to get airplay on these stations.⁴⁰ By the early 1980s, the only national outlet for such new groups was a new format still in its fledgling days: MTV. The initial success of MTV indicated how frozen, in both format and content, the once free form and rebellious rock FM had become.

In the 1980s, FM achieved the dominance Howard Armstrong had only dreamed of. By 1979, FM stations in cities such as New York, Chicago, Boston, Detroit, Dallas and Los Angeles were

³⁷Advertising Age, 29 May, 1978, p. R1, R26.

³⁸Broadcasting, 22 January 1979, p. 32.

³⁹Broadcasting, 25 July 1977, p. 74.

⁴⁰Advertising Age, 29 May, 1978, p. R26.

outstripping AM stations in popularity. In all of these cities, five or more of the top-ten rated stations were FM and, nationwide, FM accounted for more than half of all stations in the top-ten ranks of the top-50 markets.⁴¹ Ten years later, it was AM that was scrambling to find new formats to attract the legion of listeners who had defected to AM. FM was clearly the dominant band for music; as Broadcasting noted "younger audiences...are not prone to tune to an AM station unless there's a tornado or something and they want to hear the news." In 1989, the fastest growing format for AM was the talk show.

Oppositional reactions against the dominant culture--by the working class, by women, by minorities, and by the educated bourgeoisie--have burst forward at various moments during our history. They represent serious, often passionately felt debates about what culture should be, and debates about the extent to which the demands of the marketplace should shape cultural practices and products. The early uses of FM represent one such moment. The desire for both audio and cultural fidelity very much drove the early FM explosion, as did a counterculture which rejected bourgeois values and hungered for heightened musical experiences. And while it is certainly not acceptable to say such things in this era of "Just Say No," I would like to suggest that the use of drugs at this time influenced the technical and corporate history of the hi-fi industry and of FM radio.

But one of capitalism's greatest strengths is its ability to

incorporate the voices and styles of the opposition into this larger framework, and to adapt such opposition to its own ends. The cultural benefits are, of course, that mainstream culture does change, is enriched, and does, at moments of technological uncertainty and cultural upheaval like the late 1960s, provide brief periods when diversity can really flower. Whatever he might have thought of the sort of rock music blasting over FM in 1967, I can't help but think that Major Armstrong would have had sympathy with the anti-corporate ethos that informed underground FM. And while I also think he would have been deeply gratified by the ultimate victory of FM over AM, that he, like I, might bemoan the regimented, bottom-line homogeneity that accompanied this success and has made the FM of today not unlike the AM of yesteryear.

⁴¹Broadcasting, January 22, 1979, p. 42.