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CHAPTER 2

Harnessing the Echo

Mythic Echo, Echo in Antiquity

Can architecture be heard? Most people would probably say that as architecture does not produce a sound it cannot be heard. But neither does it radiate light, yet it can be seen.
—Steen Rasmussen[1]

suave locus voci resonat conclusus
(How sweetly the enclosed space responds to the voice)
—Horace, *Satires,* I, iv, 76, speaking of people who recite their works in the Roman Baths[2]

Already the microphone has crossed the threshold of the lips, slipped into the interior world of man, moved into the hiding places of the voices of consciousness, of the refrains of memory, of the screams of nightmares and of words never spoken. Echo chambers are already translating not just the space of a set but the distances within the soul.
—Jean Epstein[3]

Both reverberation and echo are reflected sound. Echo occurs when a sound is reflected in such a way that the source sound is distinctly reproduced, as when a shout bounces off a distant, relatively flat wall, for instance. Echo might be single or multiple, depending on how many times the sound bounces. Reverberation, on the other hand, occurs when sound is reflected either so many times that no single, discontinuous repeat of the source sound is heard, or when the reflective surfaces are too near the listener to allow subjective aural separation (as in, say, a tiled bathroom)

Reverberation does much to define what we perceive as timbre, volume and sound coloration, and largely determines our perceptions of how particular sounds are located, whether they are near or far. If all real-world sounds were to be somehow stripped of their cloaking of reverberation, it would be a wholly disorienting, dead, almost spaceless and depthless world.[4] Lower amplitude reverberation though, like much of the totality that composes "hearing," is something of which we are frequently not conscious, however much it may affect our subjective experiencing of place and space.

Echo, which, scientifically speaking, is merely a specific type of reverberation, is more readily noticed. To hear one's own voice "emanating" from the chasm, cliff or mountain, or even to hear one's footsteps bouncing off a distant wall—such phenomena have long been found intriguing, in the ancient and modern worlds, in both pre- and postindustrial cultures. That which is not the self seems to talk to us with our own voice, using our own sounds. The obvious atavistic suggestion posed by the phenomenon of echo is animist: that the nonhuman world "talks," that it possesses human characteristics. But other questions then arise: Does the world resemble the self or is the self simply a much lesser, relatively inconsequential emanation of the world? So where am "I," really—here or there? And is there really an "I" to ask the question? The phenomenon of echo is profoundly ambiguous: it suggests on the one hand an irreconcilable dualism, while simultaneously hinting at a transcendent monism, that all in fact may at base be one. Yet even in this latter lurks the suspicion of total alienation, that the "one" might be the universal prison of the narcissistic self.

And this is before we get to the added degree of abstraction that recorded reverb and echo entail. Before investigating concrete instances of sound-recorded reverberation, it is illuminating to look at some preexisting traditions of understanding, deploying and manipulating echo and reverberation.

In a culture that privileges the visual sense over all others, materiality is most commonly mediated in visual terms. We rely on visual representations to gain any sort of notion of "what things are like." Photographs, drawings, blueprints, floorplans, artists' impressions, maps—diagrams all translate the material world primarily into visual images. Written and verbal descriptions of place and space, of building and architecture also rely primarily on the invocation of images in the reader's mind, in the "mind's eye." Yet as writers such as Rasmussen, Schafer and Lamb attest, and as the whole practice of "sound art" seeks to demonstrate, although culturally undervalued, sound is also a semiotically rich attribute of physicality. Physical forms might just as well be described and catalogued in aural, tactile or olfactory terms. If place, space and physical form were to be perceived or described in terms of their acoustic and aural properties, a rich substratum of signification might be accessed. This layer of meaning might contain, in surprisingly unproblematic form, many of the attributes of place that lie just below the surface of conscious perception.[5] The discourses of architectural criticism, for instance, make frequent use of non-specific, aestheticist terms such as "atmosphere," "mood," "charm," "grace" and so forth, that upon closer sonic investigation might be much more closely and specifically described.

It is unlikely, however, that sound taken alone could equal the almost limitless extent and depth of significations afforded by the visual sense, and it is no part of this book to claim such. Operating as a counterpart to the visual, tactile and olfactory, however, as a neglected, often only dimly registered aspect to physicality, sound and sound qualities might act as a kind of other, a commentary upon, a subtext to that which is primarily perceived.

Some of the mythological formulations of the phenomenon of echo construct it precisely in this binary, dualistic way. Echo appears as a minor but significant character in Greco-Roman mythology, sometimes as a daughter of the earth goddess Gaia.[6] In Ovid's account,[7] Echo is a beautiful nymph, fond of woods and sports, and a favorite of Diana. She is, however, inclined to ceaseless chatter and always seeks to have the last word in any exchange. Zeus (or, romanized, Jupiter) has Echo detain his wife Hera (Juno) in ceaseless small talk, while he adulterously cavorts with nymphs. Hera comes to suspect Echo's role in the deception and decrees that the nymph may henceforth speak only when spoken to, and then may only repeat the last few syllables uttered to her by others.

Later Echo observes and falls in love with the beautiful and vain Narcissus, and follows his footsteps, longing to address him, but is obliged to wait until he chooses to address her. He eventually calls on her to show herself, but when she does he spurns her.[8] Heartbroken, she hides herself away in the recesses of the woods, living in caves and among mountain cliffs. Over time her flesh wastes away, her bones change into rocks until nothing is left of her but her voice. She remains however ever ready to reply to anyone who calls her. Narcissus goes on to the reflexive exploits for which he is better known. His record of overweening self-regard, however, is first evidenced in his encounter with Echo.[9]

The Ovidian version of the myth suggests a fundamental dualism: by the end of the story the human self, the masculine Narcissus, is alienated from his complement, the female Echo. As a result of this neglect, Echo is subject to a kind of atrophy. The remnants of her existence are eventually displaced into the landscape. All that remains is the residual aural effect (although Echo is still sentient). Echo and Narcissus are both losers here. The underlying thematics are of splitting, of reduction, of loss of the self. The Echo and Narcissus myth is in some ways a "fall" story, although, unlike other golden age narratives, Narcissus and Echo never enjoy a prior state of wholeness from which they fall. What is lost is the *chance* of wholeness, rather than the actuality. Recalling the notion of participation from chapter 1, while the myth of Echo and Narcissus speaks of the alienation of the physical world from the human subject, it also signals a residual participatory possibility. Full participation may no longer be possible; we cannot, like the Bororo (as cited in Keil 1994) *be* parakeets. But a potential participatory nexus remains; Echo waits to answer any who may call her. A limited reunification with nature is possible, but only in the sonic realm.[10]

Other accounts place Echo as the focus of violent and traumatic events. Earlier Greek versions, for example, have Echo as a musically inclined nymph who inhabits deep woods. Although very beautiful, she denies the love of any man or immortal, thus attracting the resentment of many. The god Pan, a rejected suitor, has the shepherds (his followers) tear Echo's body to pieces and then scatter the remains far and wide. Gaia, the earth goddess receives the pieces into her bosom, and retains Echo's voice and talents for answering and imitating sounds and voices.[11] In yet another telling, Pan strikes Echo dumb, save for the power to repeat utterances. The shepherds become infuriated by this habit of hers and eventually tear her to pieces of their own volition.[12]

In one western Australian Aboriginal account, echo is personified as a malevolent child-stealing personage named Balyet (alternatively named Marali). Originally a beautiful girl, whose beauty caused two blood brothers to fight to the death, Balyet has been made a complete outcast, so much so that not even death will accept her. Like the Greco-Roman Echo figures, Balyet's body wastes away over time (although she remains technically a living woman and not a ghost). She haunts high rocky gullies, visible only at night, and then only as a mist. Lonely and painfully childless, she calls to children, seeking to lure them away from their homes. Those who respond are led away from family, and taken in Balyet's cold, killing embrace. When Balyet realizes the child is dead, she retreats screaming into the mountain gullies. Those children who manage to escape usually become ill and die. Young girls are especially at risk from Balyet.[13] Whereas Greco-Roman Echo is very much a secondary character, sentient but incapable of initiating dialogue, Balyet retains autonomy. Even in her final reduced form she initiates action, albeit action antagonistic to humans.

At this point explorations of mythic echo and its semiotic implications must desist, although some of the tensions and dualities briefly indicated here will be revisited when the emergence of "distant," secondary and echoic voices in sound recordings are looked at. Indeed, although they may seem to be at a great remove, certain echoic slapbacks, synthesized reverb and electric guitar effects employed on a number of blues and country recordings in the mid-twentieth century directly relate to and play out the same questions of the self and the occupation of spaces that so concerned the ancients. Not only that, but these twentieth-century low-art forms employed precisely the same trope—echo—to continue and in some cases partly to resolve the investigation.

While echo is largely a phenomenon of the natural world, the phenomenon of reverberation figures in human history more as a secondary (although frequently a key meaning–fixing) quality of the built environment. Echo is often mythologized as a disempowered (though mocking) female voice. We also find reverberation to be gendered (as male); rather than dispossessed and mocking, it is associated with seats and sites of power, with pomp and circumstance.

Reverberation is produced when sounds are emitted inside a space enclosed by hard surface materials. This production may naturally occur in a cave dwelling, but less so in a hut, tent, cabin, lean-to and so forth. Reverberation acts as an amplifier of sounds, both by causing sound events to last longer and through "consonance"—the reinforcing of midrange frequencies. The temples, mausoleums, palaces, ziggurats, and legislatures of antiquity were highly reverberant spaces, and this quality provides specific acoustic "framing" of utterances made within them. In the preindustrial soundscape, where human cries and shouts, the bleatings of herd animals, the clatter of hooves on stones, the pounding of grain, the rattling of armor were among the loudest of everyday man-made sounds, the architecturally amplified voice must have held special connotations. Certainly, we have only to consider how reverberant modern-day public buildings—churches, war memorials, law courts, art galleries, public libraries—seem to "naturally" produce in us a hushed awe (despite our being relatively inured and desensitized to sonic effects). It is more than likely that the "aura" of reverberation in the ancient world was a quality much associated with the pronouncement from on high, be it from pharaoh, emperor, king, priest, governor, satrap or magistrate.

Just as there exists a correspondence between the reverberant utterance and secular power, so too is there an ancient nexus between the reverberant spaces and the sacred or magical. This is exemplified in the sacred grottoes and caves of preurban societies, and later by the acoustic properties present in temples, shrines, mausoleums, right down to the modern church, mosque, temple, synagogue or wat. Schafer cites instances of "magical" acoustics in the ancient world: the Neolithic cave of Hypogeum in Malta with a resonating cavity in the wall that gives an amplified "oracular" quality to the male voice;[14] a mythical room in a Babylonian ziggurat where whispers were reputed to last forever (a precursor of the sound-recording apparatus); an actual room in the Ali Qapu in Isphahan, whose highly polished walls produce extremely long reverb; the Chinese legend of a black box, into which a king may speak orders and send them around the kingdom[15]—another mythic precursor to the recording device. (Indeed, at its moment of invention, Edison's first tinfoil recording device more resembled natural echo than it did the mass-produced phonograph record: "One minute Edison was shouting 'Mary had a little lamb' and the next minute, with his mouth shut, he was shouting it again," thereby fulfilling "Emerson's prediction that we would 'harness the echo.'"[16]

There is an integral and enduring connection between what might be called "reverberancy" and the sacred. The ancient mystery cults of the Eastern Mediterranean—the mysteries of Eleusis, Dionysus, Orpheus and Isis—had as their focus the death and rebirth of a god, with an entombment often at the very center of their respective mythologies. Enclosed spaces—both natural and constructed—were used by these initiatory cults for their rituals, wherein the postulant might undergo his (symbolic) death and ecstatic rebirth as an initiate.[17] Shamanistic practice likewise makes use of the sacred cave, wherein the shaman might have his visions (just as Christian mystics would later make similar use of the bare cell, as site for contemplation, spiritual practice and in time, possibly, mystical transformation).[18]

The Roman cult of Mithraism also used specially constructed vaults for its rituals, and like other Mediterranean mystery cults used symbolic death and rebirth experiences to engender ecstatic states in its practitioners.[19] Mithraic ritual practice had a direct influence on early Christianity, as did its architecture, exemplified in such things as the central placement of the altar, the use of faced-stone building materials, the maintaining of an ambience of institutionalism and high solemnity.

Instead of being a place of private and privileged experience (as were the sites used by the mystery cults), however, the Christian church building enclosed an entire collectivity, the Christian community, and offered, rather than ecstatic experiences, the simultaneously more democratic but more diluted promise of salvation to any who might seek it. Architectural decisions made by early Christians had direct acoustic outcomes, and the specific acoustic properties of these spaces, especially their high degree of reverberance, played a key role in determining and shaping the practices conducted within, sonic and otherwise. During the Constantine period, Christians began to adopt the basilica type of building to house growing congregations. Krautheimer describes the history of this building type:

> [A] basilica was but a large meeting hall . . . a hall to transact business. . . . On a dais, the tribunal, the magistrate and his assessors would sit in court ; surmounting it, a shrine sheltered the effigy of the Emperor in whose presence alone law could be dispensed and business contracts validly concluded . . . a number of basilicas might be assigned different functions: stock and money exchanges, clothing bazaars, florists arcades, special law courts. . . . Army camps had their riding and drill basilicas, opening on a sanctuary where the eagles of the legion and the emperor's effigy were kept. . . .
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> . . . [S]acred overtones grew stronger with the growing import of the cult of the Emperor's divinity. The palace basilica in which he sat enthroned was ipso facto a

religious building. The drill basilica of a barracks became religious ground as the garrison paraded and swore loyalty before the emperor's bust. In forum basilicas, his effigy consecrated official and private business.[20]

The basilicas of the early Middle Ages operated acoustically in two key ways. Drawing on the ancient traditions of the "speaking" of secular power, the cathedral acoustics served to amplify and give substance and import to the utterances of the priest, both ritual and sermonizing. The priest himself derived his authority as a kind of local delegate for the pope in Rome, who derived his authority from Saint Peter by apostolic succession from Christ. The utterances of the priest, while not underwritten by any supernatural guarantee of certainty (priests are neither soothsayers nor oracles, nor even adepts in the gnostic or magical sense of the word) are backed by the institutional power of the Christian church, representing in the Middle Ages immense centralized political power, as well as spiritual authority. Church acoustics both enabled the priest to be heard by a large congregation, and gave his voice a quality of singularity, strength and authority. In the very early days of the church the sermon was of prime importance in winning converts, but by the Middle Ages in central and western Europe, where church Latin was not the vernacular language, the homily became less important than the ritual of the Eucharist itself.

The medieval cathedral did more acoustically, however, than simply enhance the priest's performance to the congregation. Cathedrals, says Schafer, are "acoustic machines" whose purpose is to get the attention of the deity and make Him listen.[21] The most notable acoustic property of cathedrals and large basilicas is the extremely long duration of sound reverberation inside them. Bagenal and Wood demonstrate that these buildings are indeed sophisticated resonating machines, producing reverberations of up to twelve seconds' duration. Furthermore many cathedrals are said to possess a "sympathetic note": a tendency to particularly favor certain frequencies, usually around A or A-flat. These acoustic qualities discouraged the use of vernacular speech patterns, as the long duration of reverb muddies the sounds. If vowels are intoned slowly, however, and spoken around the pitch of the "sympathetic note" they will possess great carrying power and amplitude. Thus over time the delivery of sermons and the recitation of prayers, according to Bagenal and Wood, evolved into chant. Plainsong began as simply spoken psalms.[22] Indeed, the very development of polyphony, they argue, could be seen as a by-product of medieval church architecture. In a sense, everyday speech is here being turned into a specifically stylized verbal form: song. And, as Bagenal and Wood point out, the architecture itself is acting as a musical instrument: "It was found that so great was the unifying tone effect of the church as an instrument that more than one tune could go on at the same time and if certain musical rules were kept, the result would be pleasing. . . . [Polyphonic music] depended on human voices using the church as their major instrument."[23]

This notion would later find an important direct rhyme in twentieth-century practice, when Brian Eno (and others) would come to see the recording studio as a kind of musical instrument.[24] Later, I shall argue that some of the "religious" intensity and monastic inward focus of the church was also to be re-created in the recording studio, sometimes knowingly. But to return to the medieval church, not only was it a resonating musical instrument; sometimes it also possessed apparently "magical" properties that were a direct result of its reverberant character: "a mass by Fairfax—the mediaeval organist of St Albans—was composed with *a fourth part supplied by the church.* Even if this is no more than legend, it shows that the building was recognized as an instrument."[25] The church building is a kind of communication exchange, with messages moving from the deity through the agency of the priests to the faithful and from the faithful to God. The acoustic "animating" of the building interior provides a kind of theatrical effect that enables the cathedral to represent simultaneously both heaven (God's home) and "the world" (humans' home). The long reverberations of the church building echo the workings of political power, spiritual authority, human sociality and individual transcendence all at once, while the appearance of the "fourth voice" hints at the lingering presence of a residual paganism.

The church then is a kind of conduit linking the congregation with two remote seats of power, heaven and Rome. The churches of the Reformation on the other hand were built to accommodate more immediate communications, between minister and flock, and among church elders, municipal officials, deacons, and so on.

> The Reformation was the culmination of a long reform movement between opposite temperaments as to whether the true source of Authority was Christ's body, as presented in the central office of the Church, or in God's Word—the Scriptures. . . . . . The pulpit in the reformed church took on a special importance, for the scriptures once established, required ceaseless expounding and explaining.[26]

Generally speaking, Protestant churches of the Reformation were built or modified so that the ratio between the number of the congregation and the volume of air in the building lessened, so that reverberation became less, thus allowing the use of vernacular speech from the pulpit (and incidentally the development of new styles of music). The church interior was "desacralized," rendered much less reverberant, as the institution of the church

itself was demoted in relative importance, and the authority of local church councils was correspondingly enhanced. As well as housing the meetings of the faithful, the church now had to provide a meeting place wherein governing bodies might discuss church business, argue and make decisions.

Bagenal and Wood link the development of the cantata form to the specific acoustics of the reformed church. They describe the Lutheran church of Saint Thomas's at Leipzig, where for a time J. S. Bach was the organist. The church featured numerous staircases, wooden galleries and "swallow's nests"—family "theater boxes" for the town burghers. Acoustically, these furnishings greatly reduced the reverb duration, down to perhaps two seconds. Furthermore the church has no "note," or region of response. Thus Bach was able to compose a "busier," often rapid tempo music: fugue, cantata, passion music and set pieces in any key he chose. The church was in some ways then nearer in acoustic character to a later concert hall than a cathedral.[27]

Indeed, as Bagenal and Wood point out, it was only at this time that purpose-built music halls and opera houses began to appear in Europe.[28] Hitherto college halls, churches and even large rooms in houses were the main sites of formal music performance (although "low" music, then as now, was made in taverns, brothels, shebeens, camps, farmhouses and the like). Following on from the Protestant church tradition, these purpose-built halls were designed to produce much shorter reverberation times.

It has been suggested that with the rise of rationalism and the retreat of religion, first during the Renaissance and later during the Enlightenment, the notion of "high art" emerged as a secular replacement for religion. Certain pseudoreligious trappings began to adhere to "high art": the "correct," cultivated mode to be employed when approaching Art became one of respect, reverence and awe. So too emerged the romantic notion of the artist as fundamentally different, as the singularly privileged bearer of "vision," as a kind of secular mystic.

The impact this notion had on the production and consumption of music was to foster a growing split between music makers and audiences, as reflected in the spread of concert halls and opera houses as temples to high culture. As Lawrence Levine has demonstrated, the "sacralization of culture" was associated with the appearance of strict behavioral codes, both statutory and informal, imposed on the erstwhile heterogeneous public spaces of libraries, art galleries, public parks, theaters, concert halls and opera houses.[29] Parks for instance became "didactic landscapes" and "moral spaces."[30] The spirited audience participation that had characterized musical performance earlier in the century was rigorously stamped out. "Low" and vernacular elements (such as minstrelsy or "singalong" material) were

increasingly excluded from "good" music programming, in favor of a shrinking canon of predominantly European-composed works. The character of the music theater changed drastically over a relatively short time:

> Concertgoers were increasingly lectured on the elements of proper behavior. In 1892, Edward Baxter Perry told them they had "no right" to sit through a concert "stolid and indifferent," to think about business or domestic affairs, to read the old letters accumulated in their pockets, to trim their fingernails, to crunch peanuts, "or even to take a nap." Attention, he announced, "is a rigid rule of the concert room." Silence, he reminded them, "is to music what light is to painting." . . . Gradually such injunctions became an integral part of the rules governing audience behavior. Intermissions were introduced to allow the audience to stretch, talk, promenade and then presumably subside into reflective quiescence when the music resumed. . . . [L]ights were dimmed in concert halls to further focus attention on the performers rather than the audience.[31]

The new emporia of the emerging mass culture—movie houses, music halls, vaudeville theaters—began to ape the trappings of high culture, imposing policies of "cleanliness and order," and seeking to banish "vulgarisms and coarseness."[32]

This behavioral disciplining of fin de siècle audiences was part of the larger development, Levine points out, of the long-term split between the private and public spheres of life described by Norbert Elias.[33] Levine has traced the growing differentiation of social functions during the late nineteenth century, which finds pointed expression in the cult of etiquette and the slew of etiquette manuals published in the United States. Decorum, circumspection, strictly controlled bodily carriage, meticulously, even obsessively monitored personal appearance, the suppression of affectivity—all became de rigeur for the bourgeoisie and "respectable" working class in public. Levine talks of the impact this had on public entertainment:

> Reactions and emotions had to be carefully governed. In the sense that opera houses, symphony halls, and art galleries, as well as the larger movie theatres and vaudeville houses reflected this process they were mirrors of society. But they were more than that; they were active agents in teaching their audiences to adjust to the new social imperatives, in urging them to separate public behavior from private feelings, in training them to keep a strict reign over their emotional and physical processes.[34]

These two independent processes—the growing splits between "high" and "low" culture, and the further separation of life into public and private spheres—were both at their peak at the precise moment that the phonograph[35] came onto the scene in Western societies. Its uses were to an extent shaped and determined by these factors, as well as by the inherent physical and technical attributes, and limitations, of the apparatus itself. In the acoustic period of sound recording (up to about 1925) practices emerged to

which the spatially disruptive recordings of early hillbilly and blues present a kind of counterpractice—which itself became a continuing practice, a tradition even. Thus, although this is not a history of the phonograph and gramophone, least of all in the acoustic period, we must look briefly at some of the early spatial characteristics pertaining to both devices, in both their production and reception aspects.

"Whispering": Early Phonograph Recording

The early phonograph and later the gramophone were subject to strict technical limitations. Even at its best, acoustic gramophone recording could not achieve a frequency range greater than 168 to 2000 Hertz (Hz).[36] (The audible range of frequencies in a concert hall, by comparison, is about 20 to 20,000 Hz.) Early forms of the apparatus, such as Edison Cylinders, recorded within an even narrower frequency range, greatly restricting what could and could not be satisfactorily recorded. The male human voice, if kept steadily modulated, might register on the apparatus, and so might midrange musical instruments. Larger orchestras were problematic, as were instruments in the higher or lower frequency ranges. Particularly well suited were brass instruments and brass bands, and single male voices.

In the earlier phases of the phonograph recording industry, there was no suitable way of duplicating cylinders; players would perform a piece simultaneously into a maximum of ten recording machines lined up around them, producing ten cylinders. When the "take" was completed the machines would be reloaded and the process repeated, for hours on end.[37] With disc recording came greater efficiencies in duplication, but performers were still obliged to crowd around the acoustic recording horn. And despite steady improvements in frequency range, the same midrange instruments—pianos, brass, banjos, etc—were generally favored throughout the pre-electric recording period.

Early sound recording and playback was ambiguously situated in relation to then reigning notions of high and low culture, and displayed a slightly schizoid nature as a result. Edison originally saw the device mainly as an aid to commerce and education;[38] others saw it as a means of archiving and distributing the finest in culture. But when commercial recording got under way in the United States in the 1890s, the great bulk of material was produced for coin-in-the-slot machines, the prototype to the jukebox.

With the playback device still cumbersome and requiring acrid storage batteries to run, its major use was as a machine of public entertainment.[39] Coin-operated machines, located in taverns, bars, diners, railway stations, amusement parks and arcades, ferry houses and the like, returned owners up to fifty dollars a week,[40] but required a steady supply of fresh cylinders.[41] Material recorded during this period included Sousa marches, polkas and Stephen Foster melodies, spoken sermons, jokes and recitations, cornet, clarinet and piano pieces, whistled melodies, bird calls, short orchestral pieces and anthems. Catalogues listed musical selections under categories such as "Sentimental," "Topical," "Comic," "Negro" and "Irish." Musical comedy was also very popular.[42]

Yet another well-established category was the "Descriptive Record." Gelatt describes one such recording, "Down on the Suwannee River." Over its two minutes' playing time, says Gelatt, "it spun out the excitement of Pulling in the Gang Plank, Steamboat Bells, Whistle, and Dance on Board with Negro Shouts and Clogs."[43]

The cultural product that found its way onto the early Edison Cylinders and gramophone discs, was then in the main "low":

> [H]owever much the advertisements prated of a 'musical education of the young' . . . the phonograph still showed all the earmarks of a cultural pariah. Columbia and Edison had made a few tentative infiltrations into the giant domain of great music that was supposed to envelop the American home in the aura of uplifting art, but the bulk of their efforts pointed in the direction of pure home-grown 'corn.'[44]

But while the recorded material in the cylinder period might have been low or middlebrow, there is little to indicate that it was generally anything but professional and disciplined in its arrangement and execution. The requirement that recording artists spend day after day making multiple copies of the same piece was an obvious barrier to quirky amateurs, and undisciplined "folk" performers, as it tended to discourage improvisation and spontaneity.

The recording apparatus itself imposed strict spatial disciplines on artists. Richard Jose, a singer of sentimental ballads described the recording process in 1907:

> It's the most secret thing in the world—for the singer. You're locked all alone with a band in a big bare room. Your back is to the musicians and your face to a bleak blank wall through which protrudes a solemn horn. A bell rings—one. That is to get ready, for the receiving instrument is so sensitive that if you moved your sleeve against your coat the sound would register. Somebody outside presses the button—two. The band starts the prelude, then you sing, turning neither right nor left, always looking and singing into that protruding horn. And you can't even let your breath out after your last note; you must close your lips on it and wait for the little whir within the horn to cease.[45]

These production constraints thus favored seasoned troupers: musicians, raconteurs, singers and comedians from the vaudeville circuits and highly disciplined, professional brass bands such as the immensely popular John

Philip Sousa and his United States Marine Band.[46] Such performers were able to produce on call carefully controlled, calibrated and thoroughly "road-tested" performances of favorite songs, recitations and orations, which might have already been performed thousands of times onstage.

Regardless of whether the records were played back in private or public space, the performance itself was generally located firmly within the public sphere. It "minded its manners." "Vulgarities," if used at all, were carefully pitched to stay firmly within the realm of the acceptable; voices were modulated just so, even when clowning (*especially* when clowning). Scarcely for a moment did the professional entertainer let slip the veneer of the performance, of controlled proximity to (or distancing from) the audience. Despite gestures of the spontaneous in the content, the mark of the professional was, and largely remains, unbroken control, seamless delivery and unfailing self-awareness. Recordings made by the professionals came imbued with their own spatial codes; they constructed their own virtual proscenium arch.

While the performances then were located firmly in the public sphere, the disposition of the playback apparatus itself—whether in public or domestic space—created certain new local juxtapositions of (and apparent anomalies between) the public and private. To play a descriptive record such as "Morning on the Farm," for instance, in one's own parlor was, according to the blurb in the catalogue, to open an imaginary window on a farmyard scene: "so real and exact that it requires but a slight stretch of the imagination to place one's self in that delightful position, the result of which is the drinking in of copious drafts of fresh air and numerous other pleasures attainable only on the farm."[47] This "sound picture" overlays the fictive spatiality of the "picturesque farm" onto the actual space of the "parlor," without challenging the integrity of either space. The descriptive record's pictoriality might be seen as an aural extension of, say, a framed picture of a rural scene hanging on the wall in the same parlor. Although the space "depicted" on the recording may be nominally "other," like the painting, the spatiality of the recording is largely coded, controlled and stabilized within and by the bourgeois domestic space in which the record is played.[48]

With the advent and rapid ascendancy of flat disc recording in the early 1900s, recording expanded in quantity and scope.[49] Both recording activity and sales of players and records expanded into Europe, Australasia, and Asia. Companies sought to expand markets by widening the range of material on catalogue. The most influential and active of the first-wave recording producer-engineers, Fred Gaisberg also conducted recording trips throughout Europe and the Far East, recording a wide range of material:

Gypsy singers, professional tenors and baritones, "romance singers," tavern musicians, court musicians, "traditional music," orations, military marches, soldiers' songs, synagogue cantors and church choirs, "negro dittes" and so on.[50] The Gramophone Company published separate catalogues in English, Scotch, Irish, Welsh, German, Italian, Spanish, Viennese, Hungarian, Russian, Persian, Hindi, Sikh, Urdu, Arabic and Hebrew records. Unlike the southern United States field trips of the early electric period twenty years later, which produced a virtually worldwide appetite for "hillbilly music," the material recorded on the Gaisberg field trips did not "travel" back to the hubs of distribution in England or the United States. Rather, the recordings were seen as being suitable only for the markets local to where they were recorded: recordings of Japanese musicians for sale only in Japan, Burmese recordings only in Burma, and so on.[51]

Despite the overwhelming technical difficulties faced, record companies also sought to exploit the worldwide craze for operatic arias by offering abridged operatic selections (records were generally limited to two minutes' playing time) with minimal piano accompaniment (orchestral recording was still, in the early 1900s, extremely problematic). In general, recording producers sought professional members of prestigious opera companies—singers with local standing, but without international reputations.[52] One such of these opera singers was Enrico Caruso, first recorded by Gaisberg in 1902, to immediate commercial and artistic success. Recordings were subsequently made (by Gaisberg and others) of some of the most famous opera singers, those with the international reputations. Histories of recording recount numerous anecdotes of the encounters between these great stars and the recording apparatus. "Looking back," writes Gaisberg,

> it is hard to realize my state of nerves at the responsibility of recording Patti, Melba, Caruso, Paderewski and other stars in those pioneering days. . . . In those days of star worship, an artist's patience with us was short, and to ask one to repeat an aria because of any fault other than her own would probably send her off into a tantrum that would ruin the session.[53]

Gaisberg recounts long, prerecording negotiations with the tenor Francesco Tamagno, after which Gaisberg's brother went to the singer's mountain home, and set up the recording machinery in the house's music room. Over the three-week period, nineteen release-quality recordings were made.[54] Later Gaisberg and his brother went almost as supplicants to the castle home of the famous diva Adelina Patti, where they were received by underlings, put up as guests and, having set up the apparatus, were then made to wait two days until the diva was prepared to sing. It took an entire week to record a few selections.[55] This stands in contrast to the businesslike

two hours in which the not yet famous Caruso's first ten selections were recorded. Significantly, for this latter session, Caruso visited Gaisberg's studio, rather than the reverse.[56]

It is not difficult to see a spatial micropolitics at work in these anecdotes. The "personal space" of the famous singer is a privileged, hierarchically coded zone. The recording engineers are "received," as though by royalty, and they are careful to demonstrate by their behavior that they recognize the underlying royalty/artisan relationship.[57] Given the immense popularity of opera singers at the time, and the unique social status they enjoyed, this is not wholly surprising. "At the turn of the century," writes Gelatt, "the opera singer was at the peak of his glory . . . [the great stars] were objects of adoration, [inhabiting] an exhilarating and resplendent society."[58]

The famous opera singers of the day were favorites with European royalty, and were frequent guests at royal courts, summer houses, ski lodges and so on. Thus by a kind of virtual "one degree of separation," the gramophone owner who bought and played these recordings was granted a vicarious audience with the singer, which in turn meant a proxy admission to the highest social circles possible: European royalty. The gramophone was a medium notionally linking the home listener to the hitherto unimaginably remote complexes and ensembles of European royal power. Conductors and opera singers who rubbed shoulders with the aristocracy of the Old World might be intimately (if only virtually) present in the domestic bourgeois parlor, via the agency of the gramophone apparatus. The territorializing force these virtual presences exerted on the etiquette-obsessed middle classes of the early twentieth century is not hard to imagine.

Certainly, some compensatory (de)territorializations might also operate; the opera singers' intimate space too, has been invaded, and the subsequent mass reproduction and distribution of the "log" of that spatial invasion—the sound recording—enables a mass audience to "get closer" in a sense to the singer than any listener in any opera house ever could have. Given the narrow frequency and amplitude range recordable in the acoustic period, however, the degree of vicarious intimate invasion was necessarily severely limited. In balance, the power in the case of early acoustic operatic recording operates "centrifugally," from the centers out. Once the recording reaches the domestic sphere, although it might in theory be subject to any number of indignities and disrespectful behaviors, the then current strictures of "polite behavior" ensured a transmitting and replicating of codes of social class, of high and low, right into the space of the parlor.

To further establish the "high" credentials of the gramophone and to remove the stigma of saloon and barroom novelty, manufacturers began to design players "that would be accepted, like the piano, as a fine piece of furniture."[59] In late 1906 the Victrola went on the market in the United States and quickly became ubiquitous in the American domestic parlor. Sales of Victor's highbrow Red Seal Records, priced on a scale according to the records' "eminence," rose accordingly:[60]

> A collection of Red Seal Records established one as a person of both taste and property. Along with the leather-bound sets of Dickens, Thackeray and Oliver Wendell Holmes, Victor Red Seals became a customary adjunct to the refined American parlor, to be displayed with pride to impressionable guests and relations.[61]

Rival companies followed suit, building more and more ornate Victrola-like parlor phonographs, such as Columbia's Grafonola. Meanwhile the Edison cylinder player, for which a mass-producing duplicating procedure had been devised, continued to service the "low" end of the market, still providing the humorous orations, marches and vaudeville songs, as sales gradually leveled off, and then began to decline.[62]

In England, the Gramophone Company had long been recording, to general commercial success, leading music hall entertainers, such as Dan Leno, and Victor in the United States followed suit around 1910 by recording famous U.S. vaudeville entertainers such as Sophie Tucker, Al Jolson, Stella Mayhew, Nora Bayes and others. These artists were generally backed on record by theater pit orchestras; thereafter a combination of two cornets, two clarinets, trombone, oboe, flute, tuba, percussion, two Stroh violins and viola became the basic standard recording ensemble for popular selections.[63]

In the years following 1911, a craze for "hot dance" swept America and then Europe, evoking a further dramatic effect on recording—on how (and what) records were made, and on how they were consumed. A wave of new dances—Tangos, One-Steps, Hesitation Waltzes, Bostons and Turkey Trots—which shifted natural accents to the off-beats, appeared among upper-class Americans and, largely via phonograph records, spread through the social classes. The dance craze ended the reliance of the record companies on military bands and had a sudden deterritorializing effect on the acoustic spaces in which records were played:

> the turkey trot and other hurry-up dances had been inspired by Afro-American theatrical and sporting figures . . . freed ragtime couples from the strait jacket of the nineteenth century's figure and set dances. Irving Berlin's "Everybody's Doing It," "Snooky Ookums," and "Alexander's Ragtime Band" . . . and other Tin Pan Alley hits in this new manner, set feet to moving, even in the world's finest social circles. People danced to lose weight or to be rejuvenated, and some of the best medical minds believed that dancing aided digestion . . . dancing made people, whatever their origins, feel the equal of anyone in society.[64]

The production side of the process was also being deterritorialized. The popular figureheads of the dance craze were the famous ballroom dancing

couple, Vernon and Irene Castle, backed by the multiracial Syncopated Society Orchestra, under the leadership of James Europe. The Castles and Europe supervised Victor recording sessions for the new dance records, to ensure that the music was sufficiently "hot" for dancers. The persona of Irene Castle, in particular, played a major part in determining how these new dances and new social behaviors were received by mass audiences: "A free spirit, who served as the embodiment of the liberated woman, Irene smoked cigarettes, was among the first to have her hair bobbed."[65] Columbia made dance records led by their own expert, who, rather than standing stock-still in front of the recording horn, danced the new steps to the music of the studio orchestra while speaking instructions into the horn.[66]

By a kind of participatory complementarity, a similar "loosening up" of decorum occurred on the reception side of the recording apparatus. The parlor phonograph, playing hot dance recordings for domestic social gatherings reconfigured domestic space, predicating extravagant and libidinous movements of bodies, marking out new and, to some extent liberatory, territories.

If the hot dance and later the jazz craze that followed it then undermined some of the more stringent etiquette restrictions of late nineteenth-century gentility, and took recorded dance music away from the rigid territorializations of the military brass bands, it nonetheless instituted new territorial regimes. In one sense the fox-trot and hot dance crazes represented an *embourgeoisement* of the phonograph audience; any phonograph listener might become a vicarious participant in the Castles' glamorous social world, a temporary member of the "make believe ballroom." In contrast, the listener to an operatic phonograph record had only been "allowed" to appreciate and witness, mutely and passively, the supreme talents of the aristocratically connected grand opera singers. The persona of the opera singer on record was too aloof to notice or care how the lowly listener behaved. But the new hot dance record "cared"; it invited listeners to participate, to make precise spatial appropriations within the listening space. It treated the domestic space as though it were a public space, a ballroom. The instructions being spoken out of the phonograph speaker, the syncopated, percussive rhythms, the swaying and swirling strings and clarinets—for all that they may have been liberating, so were they limiting, as if to say, "You may go this far, but no further."

And the new bands that enjoyed the greatest commercial success, similarly, were often those best able to enact simultaneously liberatory and "despotic" elements into their performance. The strictly disciplined, formally dressed, brilliantined "lounge lizard" look of the Paul Whiteman Orchestra well typifies the simultaneous containment and release rituals of the dance-era bands. Although the supper club / cabaret look of the new orchestra might have contrasted with the parade-ground punctiliousness of the military band, the level of discipline within each was not necessarily dissimilar.

Contemporaneous with the dance crazes of the acoustic recording period was a shift in "fine music" recording from opera singers to symphonic recordings. Unable to compete with Victor/HMV's opera catalogue, which featured such unassailable luminaries as Caruso, Melba, Tetrazzini and McCormack, British companies signed contracts with famous conductors such as Thomas Beecham and Sir Henry J. Wood, and recorded selections from Tchaikovsky, Stravinsky, Grainger, Richard Strauss, Wagner, Beethoven and others.[67] Abridged movements of string quartets were also recorded. Gelatt writes: "In England and on the Continent, orchestral records had 'arrived' by the end of World War I. Acoustically they were good enough to afford at least moderate satisfaction to critical listeners; commercially they were on a par with the old-style celebrity vocals."[68] He continues: "The phonograph was attracting a new kind of listener—the serious intellectual connoisseur of the arts who collected records with the same gusto as the novels of Virginia Woolf or the poetry of Ezra Pound."[69] In 1923, British novelist Compton Mackenzie and Christopher Stone (very much Gelatt's "new kind of listener") founded the magazine *Gramophone,* with the aim to "review . . . records in the way a literary magazine reviews books."[70]

In keeping with its new domestic importance, as purveyor of hot dance music or classical orchestral selections, the phonograph became larger and ever more elaborately finished: there was a minutely curlicued "Louis XVI" Victrola; a Columbia "Donatello," five feet high and featuring paintings of symbolic figures (Intelligence, Justice, Temperance and Peace); or the "Queen Anne No. 5," finished in Chinese Chippendale. The highest priced domestic units sold for up to two thousand dollars in the United States.[71]

It was into this regime, with its distinct high and low recording cultures, each with its own relatively stable spatial codes, that the electrical recording emerged in the middle of the 1920s. This emergence roughly coincided with the sudden, almost accidental opening up of the "race" and "hillbilly" markets, the former mainly in the U.S. south, the latter worldwide. These happenings in combination set in train whole new spatial codes, both in record production and consumption.

In the mid-1920s two crucial but separate developments in sound recording coincided. The first was the development at Bell Laboratories of a fully electrical recording process. Under the new process, audio input was picked up by condenser microphones (replacing the large fluted horns of the acoustic process), amplified by means of vacuum tubes and recorded

using an electromagnetic recording head.[72] At the same time Bell Laboratories developed a much improved acoustic playback device, which used a nine-foot exponential-horn, segmented so as to fit in a domestic phonograph cabinet.[73]

These two separate developments combined to alter dramatically the qualities of recorded sound in three significant ways: gramophone records now played back much louder than before; the recordable frequency range was immediately extended by two and a half octaves, to 100–5000Hz (the very best acoustic recordings had never broken the 168–2000 Hz frequency range); and lastly, recordings became capable of picking up room ambience—of carrying, in other words, significant sonic information about the spaces in which they were made. Of this last point Gelatt says, "the 'atmosphere' surrounding music in the concert hall could now be simulated on records. Musicians were no longer forced to work . . . directly before a recording horn but could play in spacious studios with proper reverberation characteristics."[74]

It was at this point in the mid-1920s that the opposing recording philosophies of "realism" and "romanticism" began to assume major importance. By the time the major recording interests in the United States and Britain began to adopt electrical recording methods, radio broadcasting had already been using microphones for some years. (In the United States, regular live broadcasting of big-name dance bands and orchestras had started as early as 1921.)[75] Much of the technical expertise for early electrical phonograph recording then was provided by technicians already schooled in radio broadcasting, who brought with them the methods, aesthetic premises and prejudices extant in that medium.

The so-called realist school derived from radio practices associated with broadcasting smaller ensembles. Sound sources, whether human voices or musical instruments, were recorded on-mic, in an acoustically dead studio, with all voices[76] then carefully balanced to create an effect of evenness. As one sound engineer wrote in 1930: "In radio broadcasting it usually is desirable to present all sounds as coming from approximately the same plane—that of the microphone. And so levels are raised and lowered to bring all sounds out at approximately the same volume."[77]

Yet another technique, also from radio, arose out of the difficulties engineers had in miking larger orchestras. The use of single microphones led to badly out of balance sound. In response a multiple miking system was devised whereby a number of microphones were so placed as to pick up all parts of the orchestra more evenly. The various inputs were then mixed down into one signal. An inevitable by-product of multiple miking was the intrusion of more "room" into the recording, as more reverberation, echoes and incidental noise were picked up. Separately placed microphones also tended to pick up "spill": the same sound signal recorded by differently placed microphones fractionally apart, creating an out of phase effect, or if far enough apart, an echolike effect. Yet another radio technique derived from radio drama involved slightly off-miking to produce the effect of aural depth. Given the narrow pickup range of early microphones, sounds recorded relatively off-mic tended to sound much "further away" than in fact they were.[78]

With electric recording, suddenly it became possible to represent space in a wholly new way. Earlier "descriptive recordings" such as "Morning on the Farm" had lined up sound effects and provided elaborate verbal cues in order to construct an almost comic-book spatiality. But with electrical recording, suddenly a real sense of spatial depth was possible: the sounds coming out of the phonograph had some of the same sensory qualities as real sounds in a real physical space. Small, varying degrees of reverberation "attached" to separate voices imparted a sense of actual dimensionality, a lifelike roominess in recording. A listener might now apprehend a recording and experience a sense of a physical space, other than the one he was actually occupying.

The potential to record either with or without "depth" then presented record makers with a serious technico-aesthetic problem. A split soon arose whereby it became broadly acceptable to record classical orchestral music so as to include room ambience (and thus aural depth), while "popular music" was in the main recorded "dry," with little or no discernible depth and minimal reverberation. The voices and sounds of high art were accorded virtual sonic space, while low art was denied it. To reprise Read and Welch from chapter 1, the realist approach (that is, depthless recording) provided "an effect of intimacy, *the orchestra and soloist being transported into the living room,* the singer or soloist singing just for you" (my emphasis).[79] Romanticism conversely had the effect of seemingly "bringing the listener into the studio or auditorium."[80]

Classical recording was quick to take advantage of the new capability for aural "largeness." Electrically made recordings of massed choirs were released—led by Columbia's live recording of a choir of 850 singing "Adeste Fideles" (1925).[81] Some commentators like Compton Mackenzie continued to claim a preference for acoustic recordings. This stance was countered by a technical writer at *The Gramophone* who wrote about his disc of "Adeste Fideles": "I brought it home and put it on my . . . gramophone and the result overwhelmed me; it was just as if the doors of my machine were a window opening on to the great hall in which the concert was held."[82] The development of electrical recording, then, with its dramatically increased "fidelity,"

closed a loop. The spatiality of the concert hall was virtually overlaid upon the space of the home; in a sense, it obliterated the domestic space. The home listener was granted a virtual access to the acoustic regime of the concert hall, an acoustic regime that had already embedded in it whole ensembles of history and class and race politics, highly ordered codes of privilege and exclusion. The aura of sacralized "high art" carried a pointed implication: it was incumbent upon the listener to prove himself worthy of the art, rather than vice versa.

But the spatialities were not necessarily all simply metaphoric codes of class and exclusion. Apart from extrinsic political territorializations, there were intrinsic, prior musical spatialities, best typified by the steadily increasing "pictoriality" in Western orchestral music. In a development that roughly corresponded with the rise of landscape painting, eighteenth-century European composers such as Vivaldi, Handel, or Haydn used musical means to denote events (and sites) in nature: the trilling of piccolos and flutes to represent birds, crescendos to denote the storm and so on. "The descriptive piece of music [of Handel, Haydn and Vivaldi]," says Schafer, "turns the walls of the concert hall into windows, exposed to the country."[83]

As discussed in chapter 1, dynamic variations may have a strongly spatial subjective effect: an orchestra instrument voiced softly might suggest relatively greater distance from the listener; higher amplitude, nearness. Furthermore, the rises and falls in melodic lines might suggest the existence of a vertical spatial axis—we speak of "high" and "low" notes. Purely scalar effects might then suggest movements through space, ascents to the heavens or descents to the underworld. By the nineteenth century, scalar renderings of vertical space, the use of amplitude dynamics to suggest horizontal space, and the use of particular instrument timbres to imitate "real world" sounds all combined to create in European orchestral music a new, much heightened sense of "dimensionality." Even the most nondescriptive, abstract music, music that did not seek to suggest actual space or to "be about" anything, was nonetheless constructed within the same dynamic spatial planes.

Thus orchestral music came to have a kind of world-making capability. With the coming of romanticism, these worlds became in turn emblems or externalizations of the composer's (and, to an extent, the conductor's) inner state; the musical landscapes (and by implication actual landscapes) became a "screen" onto which was projected the inner state of the composer. The imagined world was an emanation of the soul. Under romanticism, the "great artist" became a world-creating demiurge, singularly empowered to fabricate the sublime dreamed world—be it rendered in musical, visual or textual terms. The represented outer world thus is turned inside out, the chain of reference moving back one remove: the orchestra "refers to" outer, natural spaces (or something like them), which in turn refer to, or are contained within the inner world of the composer.

As a number of commentators have pointed out, the increasing discipline and complexity of the symphony orchestra roughly paralleled the increasing complexities and disciplines of the nineteenth-century factory.[84] The composer might be seen as the entrepreneur, the controller of the productive forces, while the conductor is a kind of plant manager.[85] The members of the orchestra must remain attached to their instruments, in their respective sections of the orchestra, their bodily movements restricted to only those required to operate their instrument (not unlike the requirements put upon factory workers). The audience members listen reverentially, sitting stiffly in their seats, held in place by the strictures of "good manners," of correct public behavior. The conductor alone is allowed freedom of movement; he may gesture extravagantly, his face may contort and his hair may become disheveled as he is transported by his musical passions. He may chide members of the orchestra, or even the audience; he may even refuse to play if all is not to his satisfaction.[86]

The composer and conductor then have dominion over the spatiality; they oversee and direct its construction, and they alone are privileged to range across it. The private ownership of the playback apparatus and expensive orchestral recordings imbued the gramophone owner with a sense of reverence and duty toward the apparatus. The spatial constraints of the concert hall were "transmitted" via the recording, to the listening space. The territorializing power of the concert hall (itself an enactment of haute bourgeois hegemony) was to operate, via the apparatus, within the listener's very parlor.[87]

But the parlor was nonetheless private space, and an artistically literate and socially empowered bourgeois gentleman such as Compton Mackenzie specifically opposed the territorializing force of the apparatus. The power codings of the symphonic gramophone record conflicted with his own class- and gender-based sense of dominion over private space. Indeed, his aim in founding *The Gramophone,* to "review records in the way a literary magazine reviews books" was a kind of taking back of dominion over space, a reassertion of autonomy; his and his associates' aim was to "talk back" to the apparatus. In the founding issue, Mackenzie thus irreverently suggests that chamber music might be played in the morning as an accompaniment to the listener's preparations for the day, the first couple of movements played while the listener has his morning shave.[88] The joke's mild roguishness is predicated on an awareness of the gramophone's domestic

spatial "laws." Mackenzie and his ilk, it implies, as privileged, musically literate listeners are above the petit bourgeois, proxemic dictates that the apparatus would seek to impose. While the apparatus is in his possession, in his house, he will use it as he sees fit.[89]

High-art performers were generally shrouded in a pseudoaristocratic mystique that rendered their audiences as little more than humble supplicants. Dance orchestras, vaudeville artists, humorists, reciters and whistlers, on the other hand, played the part of humble supplicants to their audiences. High art might have been seen as bettering and uplifting its audiences but the sole benefit that more quotidian entertainments were seen to be offering was at best a temporary diversion for the duration of the performance and no longer.[90] The contract in the latter case is quite straightforward: the audience member has paid someone who really is "no better than them" (indeed perhaps of considerably lower social status) to provide a service. The relationship more resembles that between a tradesperson and a client.

The mere entertainer (as opposed to the "artist"), approaches his audience humbly, with elaborate courtesy, begging its indulgence. In requesting the audience's close attention, the entertainer is in effect intruding on the audience's psychic "space," appropriating *its* time. In the case of the dance orchestra, the contract is even more specifically "trades": the musicians are paid to provide a highly proscribed musical program. In a cabaret or ballroom setting, the musicians' role and status might most resemble that of the waiters, doormen and so on; they are, at base, paid functionaries. In the dance orchestra boom of the teens and 1920s, however, leading bands commanded high fees, and bandleaders such as Paul Whiteman, Leo Reisman and Fred Waring were clearly high-status individuals. Nevertheless, it is unlikely that they would have been talked about then as bearing any kind of immanent "greatness." Underlying their success was the clear understanding that their high status was dependent on their being able to provide high-quality service to their audiences, to "deliver the goods."

Pre-electric recordings, made before any significant spatiality was even possible, fell in with these existing social codes. The recording was always "on its best behavior," even in its most apparently informal manifestation: the frantic "hot dance" rhythms might have parodied the martial correctness of the brass band, but the lines of discipline within the orchestra held nonetheless. With electric recording and the possibility of aural "space" being included on the recording, it is not difficult to see how (relative) depthlessness became the rule.

The electric-era popular recording might also be typified as a kind of skilled tradesman, visiting the home in order to perform a service. Such a visitor would be expected to mind his manners, to not take liberties. Sonically, the aural regime of the house, the "rules of the house" perhaps, take precedence over the whims of the self-effacing visitor. The high classical recording might enter the humble abode rather more grandly, more like an aristocratic visitor. The householders make special allowances. The most comfortable chair is made available, the good china brought out. The visitor's whims are indulged. He is allowed to territorialize the space. The high classical recording's own (virtual) spatial codes "trump" those of the actual space in which it is played. But the popular music recording was there for the buyer's benefit, rather than vice versa.[91] It was "product" rather than "art." It was without "aura."[92]

As a commodity, the phonograph sound recording strove to present a closed seamlessness, a "gloss" that excluded negatives, contraries and misgivings. In audio production terms, this effect was realized through the "single plane" aesthetic, the conceit that all sounds were emanating from the one plane (even though the amplitudes might vary between voices). The mainstream Western popular recorded music of the period 1925–1935 demonstrates in the main a notable degree of relaxed professionalism in the work of the singers and vocal groups, and a high-level, unhurried, unfussed combinatory competence in the work of ensemble instrumentalists. Tin Pan Alley popular music of that time by and large seems to fully and nearly perfectly "occupy its territory," so much so that there is generally little or no sense of territory. The sound just is. There is little reverberation or echo to suggest a space incompletely or ambiguously occupied. The insouciant, nagging, disquieting voice of the mythical Echo has here been all but excluded. There is no "other" lurking just out of sight, just offstage.[93]

This new textural closure was achieved in a short time. The differences between, say, Paul Whiteman and His Orchestra's acoustically recorded "Whispering" (1920) or Isham Jones Orchestra's "Swingin' Down the Lane" (1923) on the one hand and such early electric recordings as "Three O'Clock in the Morning" or "Changes" (both by the Whiteman band, 1926 and 1927 respectively) are particularly marked. The electric recordings with their greatly increased frequency response demonstrate a much enhanced warmth, or swelling of the lower frequencies, that both enables low-register instrumental harmonies and "rounds out" the timbre of mid- and higher register voices.

But the effect is much more than strictly timbral. The rich, warm, lower register harmonies that electric recording enabled were best shown off at less frantic tempi, and bandleaders, arrangers and producers were quick to experiment with the new sonic potentials. The result was a sudden loosening in feel, an easing of the mechanistic, "crazy clockwork" sound of the

earlier hot dance records.[94] The early electric recordings often suggest a certain louche, indolent quality, perhaps best and most famously demonstrated in the emergence of the crooners in the late 1920s.

Recording engineers and musicians of the early electric period nonetheless were able to achieve remarkable consistency and evenness of texture. Indeed, the flowing, graceful parallel lines of the instrumental voices and vocal harmonies, the warm, smooth-toned clarinets and cellos and the closely synchronized reeds—all combined to create a kind of sonic analogue to the molded chrome, lacquer and Bakelite look of art deco consumer products and architecture.[95] The relaxed, polished ambience of early electrical recording, however, was paradoxically dependent on stringent internal disciplines. While realist recording practice sought to locate all voices on the one imaginary plane, it did not in the case of the big orchestras accord equal value to all voices. Indeed, ensemble voices are so compressed that individual sonic identity is frequently effaced. Strings, for example, are so blended that most listeners would not be able to discern individual voices within the harmonies. Vocalists and soloists on the other hand are selectively forefronted; not through the deployment or particular absence of reverb but simply through the use of amplitude differentials—louder rather than softer. The popular ensemble in the Whiteman, Waring, Lombardo style is typified by this strict (though variable) sonic hierarchizing. Every voice had to "know its place."

Which is not to say that depthless recording was necessarily inherently repressive. Mainstream realist recording practice was able to, at times, produce "democratic" refiguring of sonic hierarchies. A notable feature of the recordings of the various Count Basie–led bands, for instance, made from the mid-1930s through to the 1950s, is the ever present vamped guitar strumming of Freddie Green. Regardless of how "hard driving" the front line is, the guitar is almost continually up front—at the very least, present—in the mix. Green played a relatively quiet f-hole–type acoustic guitar, which he strummed in a steady, controlled style. During the thirties, the steel string guitar in a band setting was still most often regarded as a member of the rhythm section, part of the "second line"; guitarists rarely took solos. But here the second-line voices are accorded an importance on par with the front-line voices—directing equal attention to the "engine room" of the band and undermining the privilege of the front line. The rhythm section is doing much more than simply providing the beat. It is adding enhanced harmonic qualities to the rhythm, adding greatly to the complexity and subtleties of the rhythm, providing whole new complexes of what Keil calls "participatory discrepancies": microtonal and microtemporal "out of tune" and "out of time–ness" that serve to

involve the audience and create what might be called "color," "drive," "swing," "groove."[96] Whereas the strictly arranged, strictly disciplined Whiteman/Waring/Lombardo bands "deproblematized" relationships between voices by hierarchizing all, in the recorded music of the Basie band (and many others) whole networks of relationship—and new potentialities for discord—are opened up. The number of musical relationships between voices grows exponentially. But rather than producing cacophony (in the case of the Basie band at least) the big band sense of grace and ease was combined with the drive and spontaneity more usually associated with smaller jazz group recordings, the influential recordings of Louis Armstrong and the Hot Five. The effect is of an energized but comfortable, dehierarchized relationship between figure and ground.

Perhaps not surprisingly, the Basie band is regarded by many as the single most evolved exponent of "hard-driving" swing music. It laid the stylistic basis for the Benny Goodman, Artie Shaw and Glenn Miller big bands that so dominated the popular music industry through the late 1930s and 1940s, as well as for both bebop and the jump boogie rhythm and blues of the postwar period. The Basie band's "combinatory democracy" production philosophy stands in sharp contrast to the "combinatory despotism" of the Whiteman/Lombardo/Waring–style bands. But both effects were enabled by the so-called realist production methodologies.