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THE LONELY LISTENER

Invisible Sounds
Sounds from the Loudspeaker
Invisible Sounds - Invisible Music:

Such notions as these could easily be mistaken as being merely paradoxical, especially since one would normally assume sound and music to be a singular auditory event. From this perspective, to allocate hearing to a human sense seems more relevant than segregation from a human sense, as with the word "invisibility".

On the other hand it is also not obvious, that notions like "Invisible Sound", or "Invisible Music" be regarded as superfluous tautologies (or that complementary notions like "Visible Sound" or "Visible Music" would be considered as obvious paradoxes). Questions addressing isolated hearing and seeing would be insufficiently answered if one only used "Sound" and "Music" to unravel them, these being standard concepts informed and governed by experience. "Heard" and "Seen" appear mainly as notions that lie close to each other; our language not only frequently combines the aural with the visual, but also descriptions of aural experience are heavily influenced by visual means (for example, one reads and understands music via notated symbols, or due to the visual action made by a performer).

Sounds from the Loudspeaker can clarify for us how audible and visual experiences are formed by the differentiated and historically developed conditions they arise from: as a general rule archived recordings, or sounds broadcast on the radio, will be purely audible, without one being able to see how the sounds were made. Invisibility becomes concrete as soon as the heard event is released from the visual phenomena that caused it. The hearing that distinguishes (i.e. the ordering of the audible from the general experience of common phenomena) becomes often difficult and sometimes even impossible: one hears something without being able to identify it, how a sound arose and from where).

When sounds from composed music are projected from a loudspeaker, then various hearing situations can emerge depending on whether or not the music is conventionally notated. Sonic projection of traditionally notated music can stimulate the kind of active listening, where one reconstructs the music back to its written form, - this has even been observed, if under partially determined conditions.
From this perspective, further considerations for projected music will alter the main question from concerning merely the viewable, to addressing the issue of visualization (i.e. the transferal of music into image). If this Visualization can be taken beyond the limits of conventional notation, this would result in somewhat uncontrolled audible phenomena, which can be recorded, archived, and graphically represented on computer screens, without too much difficulty. This yields innovative problems regarding the uncommon difficulties of legibility of traditional music practice, the allocation of the heard and the seen, also that visualized Sound and Music can essentially remain unseen.

Sound Event and Heard Event
Sounds from here and beyond the Here and Now

If we were to isolate the poly-aesthetic sensual experience, the phenomena that could arise might include invisible sound, invisible music and acousmatic listening situations.
Examples of this can be found in many different historical eras and experiential areas.

The famous story that Pythagoras used to teach his students from behind a curtain (thereby allowing the students to concentrate on what they were taught instead of being visually distracted), can be seen as an early, but by no means the earliest, example of an acousmatic listening situation. Listening to voices in complete darkness or even hearing sounds in a forest by day, could be cited as acousmatic situations even more ancient: listening to the song of a hidden bird in a forest can be considered as acousmatic a listening experience, as hearing music played in a church by a hidden organ. In this and in other conventional listening situations remain, of course, important fundamental conditions belonging to the traditionally trained ear: especially the fact of being bound to *here* and *now* is a fundamental attribute of the listening experience; more precisely put, it happens only here and only now, and at no other time. In this sense every listening experience is spatially and temporarily limited and unique: it is neither transportable, nor can it be repeated. This binding of sound and heard event, to the here and now becomes fundamentally placed in question when the sonic events are conserved and reproduced technically, for further transmission and broadcast.
Through these means, novel relationships between sound events and listening events are made possible: the same sound event can initiate numerous other, different listening events: for example, the transmission of a concert to different living rooms, live and direct from the concert hall, or, when historical documentary recordings of musical performances, or historical events are heard by many listeners, all under different listening conditions. In the era of acoustic and audio-visual mass communication, the conditions of acousmatic listening have been fundamentally changed.

Recordings:

Conserved Sounds - Sounds beyond the Now and (Here)

DOCUMENTARY AND COMPOSED SOUND ARCHIVES
The oldest sound-recording

[sound-diagram]

Speaking Laughing

Example: The first ever sound recording (Thomas Alva Edison 1877)

The first known recording conserves the voice of the inventor:
as the story goes, Thomas Alva Edison quoted a popular song ("Mary Has A Little Lamb"), and then burst out laughing.
Whoever gets a chance to hear this recording, will find it difficult to understand what is being said, in view of the very rudimentary technical quality.
Only the laughter of the inventor allows itself to be relatively clearly recognized.
So, it becomes clear that already in the first archived recordings, different elemental areas of the listening experience have been documented:

-Voice/Human Speech
(Sound of the voice, speech rhythm, conditional understanding of individual words)

-Noise
(Non-verbal vocal sound: laughter)

-Music
(indirect relationship: quoted song text)

It isn't the unique sound event tied to the here and now, which is heard, but its Sonic image* or Heard Film: a technical reproduction of the originally heard event and its sound event. Essential for the difference between the original audible event and its archived sound, in this relationship is the, Overcoming of the Now:
on an archived sound recording, one can hear how Edison's voice once sounded:
as a (technically produced and reproduced) voice portrait, and as acoustic photography.
In the recording, the voice, naturally, cannot be presented in its original, but in a sound image that results from a mixture of the possibilities and limits of the recording technique of its time, and also a result of restoration techniques.

(*Translater's note: the term 'sonic image', appears often in this text, and refers to:
-the immediate impressions evoked by sound,
-hence, the acousmatic correlate of the term "mental image" and
-as an abbreviation of the word "imagination".)

Media Sound of the Second Degree: Music from recorded Sounds

In the early days of recording, the results were often incomplete and unwanted, however much, much later (as a deviation from the clean, mechanical rendering) exactly that quality was keenly sought.

The sonic image came to be accepted as an alteration from its sonic original: this sonic image was characterized as having a reduced filter spectrum mixed with distorted noise, resulting from the apparatus used (i.e. a playback machine). In terms of technique of recording, copying or playback, this degree of sonic alteration resulted in the frequent search for a recording/playback technology that could reproduce the original as faithfully as possible (hence the "hi-fidelity" of the ideal sound). On a higher level (of the development of recording technique), this trend consciously led to technically manipulated, high quality sonic images, developed out of technically formed low quality sonic images. This process has quite possibly influenced nurturing refined and differentiated deviations and "blurring" techniques; an acoustic correlation to this can be found in stunt-film or stunt/trick photography.

A characteristic example of music produced using technology of a superior quality, can be found within the highly creative area of composition naming itself musique concrète: a technically defined sonic art par excellance. ***Bidule en ré*** (1969) by Bernard Parmegiani, is a tape piece consisting of record noise (crackling and rustling), as well as short, looped, recorded fragments. The techniques used here are the same as in the earliest musique concrète productions (in 1948), in using mechanical ostinati, made up of "closed record grooves" (where the grooves on a shellac or vinyl record are contrived to loop back in on themselves, rather like on a "scratched" record).

This music reminds one of the beginnings of sound conservation (dating back to 1877), and of a technogenic music composed from fragmented and conserved sound loops (dating back to 1948). While Edison's first recording still remains faithful, at least, to the "Now" of the recording-date (this eventual separation from the "Now" is only completed when the recording enters the range of reception), Parmegiani's tape music (in terms of production technology) releases itself from the "Now" of a specific recording situation: when using either crackling or feed-back, vocal or instrumental, textural or figurative sounds, his materials are related together creating formal coherence, thus welding the fragmented into an artificial continuity.

Example: Bernard Parmegiani: <u>Bidule en ré (1969)</u>

Bernard Parmegiani: Bidule en ré (Beginning)

(-1st diagram-)

1st Section: Noise 2nd Section: Sonic Signal + Noise mixed together

(-2nd diagram-)

2nd Section/Beginning: 3 Sound Signals S1, S2, S3 (upwardly transposed vocal sound)

S1	S2		S3	
3 Pitches	Slow Rumbling	-faster		softer (Feedback)

(-diagram-)

2nd Section/Beginning/Detail: 1st Sonic Signal S1

Echoed Voice	Pitch 1	Pitch 2	Pitch 3 + Noise

Historical <u>Music</u> Recordings

Sometimes recorded sounds function as a (mostly outdated) historical document of the situation in which they were recorded. For music, this could be a very real, concrete recording situation (especially in the early stages of recording technique, in which only the best, most coherent run-throughs were recorded and reproduced; completed versions, put together out of several takes and edits, weren't yet possible). If the sonic image is obviously more important than its conformance to the exigencies of a written score, then such recordings are of especially high value.

The documentary value of recorded music is certainly greater, if made in the absence of a precise score, or if transcription (into traditional notation) proved impossible or unsatisfactory. An example of this can be found in countless ethnomusicological recordings, - especially in recordings containing pre- and early history of Jazz -an intercultural type of music, that, despite its share of being western, goes a long way to evade the solutions offered by traditional western notation. Historical recordings of Ragtime and Dixieland Jazz (from the early 20th century) can reveal specific performing practises that evade accurate transcription (at least for traditional western notation). However, in addition to the notated and composed substance, interpretational details, the means of sonic production also contributes importantly to musical meaning.
This becomes clear when one compares popular music (oriented primarily towards the sonic image) with serious art music (oriented and influenced by a written score).

Examples of this can be found in comparing *Ragtime*-Music (recorded around 1900) and the ragtime allusions (composed at approximately the same time) by Charles Ives or Claude Debussy, or in the *Dixieland*-music recorded around 1917 and the Jazz allusions in the music

written around the same time by Igor Stravinsky).

Music of the First and Second Degree: Played and Conserved Music

Given the era of technical reproduction, technically produced music is the attempt to not only include the reception of, but also the production of music. In their documentary value, such recordings differ clearly from conserved interpretations of traditionally notated music. In essence, production can differ from composing traditionally notated music, -especially in the relationships between musical invention and sonic realization, and also, partly, in the relationship between composition and improvisation. A characteristic example for this, is music which grew out of the interesting field between composition and improvisation, between musique concrète and Jazz:

Jazz et Jazz by André Hodeir

In ***Jazz et Jazz,*** Hodeir combines instrumental sounds, partly in their original, partly as technically manipulated sonic images (here it is often given to a humorous dialogue between "natural" and "technically deformed" melodic phrases). His short piece is an early example for the novel combinatory possibilities of apparently incompatible styles loudspeaker music and the art of invisible sounds can offer.

Example: André Hodeir, Jazz et Jazz (1951)
Hodeir: Jazz et Jazz
Extract: Frequencies above 300 Hz.
Melody a): (upward) Motive technically manipulated
Melody b): instrumental (Piano), answering motive (downward)

Radio:
Broadcast Sounds- Sounds beyond the Here (and Now)

Documentary Radio Sounds

A Historic Radio Announcement

The principal opportunity open to auditive mass communication is the spatial and temporal multiplication of sound events. An incredible degree of repetition: -of the same event heard frequently at different times, and of limitless possibilities of dissemination -of the same event simultaneously in different locations.
Both possibilities appear in extremely varied forms of combination.
Yet, compared with its principles, it can be said to attach different media to it: while the recording can overcome the Now, the radio is able to overcome the Here.

The recording of Alfred Braun's radio announcement was made in 1923, the year German Radio was established.

It begins with the words:

Attention, Attention!
Berlin Voxhaus is speaking.

What follows is then a celebratory announcement:

You (i.e. the band) *are going to bring you a Foxtrot:*
<u>As soon as the Jazz band plays.</u>
Already in the first year of German Radio, when (during the economic crisis) the numbers of listeners were extremely low, it was possible for popular music to simultaneously reach many different locations, i.e. to overcome the <u>Here</u> of the broadcasting location.

Example: The first Radio Announcement (Alfred Braun, Berlin Voxhaus, 1923)

A Historical Radio <u>Hit</u>

The new mass medium, Radio, spread in popularity after the end of the world war, at the same time as a thrown away piece of civil property, i.e. radio machinery, operated during the war. Radio managed to quickly become the new medium of entertainment, which was sung about in a rather lurid popular radio song, performed by Max Kuttner (-caught, at the time, in a metamorphoses between opera tenor and radio star).

TRA-RA, TRA-RA, TRA-RADIO!
Wherever you go,
sit or remain,
Everyone's talking about the Radio,
From the cellar to the attic room
all have become besotted.

Some Maidens,
Whenever they're sleeping,
Go to bed ready to receive
And enjoy with the ear
Of their favourite Tenor
Horizontal
Ideal.

The beautiful Adrienna	*JINGDERA TATATATATA RADIO*
Has a high antenna	*JINGDERA TATATATATA RADIO*
From across the land of man	*JINGDERA TATATATATA RADIO*
She receives their program	*JINGDERA TATATATATA RADIO*
TRA-RA, TRA-RA, TRA-RA-DI-O	

A Historical Radio Report

The German radio of the Weimar Republic presented itself as apolitical, as an individually useful medium of entertainment. This changed drastically as soon as the Nazis took over power. The same day Hitler was named chancellor (30th January, 1933), the radio program, broadcast directly from his office, aimed to mobilize the whole of Germany towards his regime. This became clearer not only through the choice of words, but also the tone of voice employed. The reporter starts off pompously celebrating the new Chancellor, after which a window opens allowing the drone of the German national anthem in, sung by a throng of Nazi SA soldiers (SA, German for "Storm Division", or stormtroopers).

By broadcasting this en masse nationalist singing (January 30th 1933), the German Radio helped seal Hitler's take over of power, with whom Goebbels (at that time the "Gauleiter" (Regional Director) of Berlin) and other supporters of the new chancellor had also been celebrating. The scores and spreading multitudes of marching men singing the national anthem accompanied by military drums became a political event.
For every radio listener, even for those listening outside Berlin, this key event became a live experience.

Essential to this is the radiophonic conversion of what is heard: the SA soldiers' blaring loud singing is accompanied by coarse military drumming, a radical sonic image that differentiates itself from the melody Joseph Haydn composed in 1797. This melody was set to the text of the Austrian King's Hymn, a melody Haydn, in his old age, continued to play, every day, on the piano. Originally written as a calm and expressive orchestral movement (as accompaniment to the "Song of the Folk"), Haydn's melody retained its original character, even in other versions: as a Lied for voice and piano and as a theme in a movement for string quartet. A radical change of function makes itself known, when the melody to the text of the German national anthem is sung by masses of people, accompanied by military music - and also, when broadcast live on radio. This conversion goes even further than in the mutation of the "Marseillaise", which began life as Saloon music, in the house of the Mayor of Strasbourg (incidentally, the mayor's wife was to remember this song as "delightful" and "somewhat joyful") , afterwards becoming the song of the Marseille voluntaries, to its later dissemination as a war song from the country's capital to the rest of Europe and the whole world.

It is true, however, that the "Marseillaise" stands for more important historical events than the German national anthem: it stands for the era of revolutions, from 1789 until 1917, not only for the French ambition as a world power during the age of both world wars. The German national anthem is tied to other political music of an ideologically similar function, which, at least in the 20th Century, played an even stronger role in terms of mass communication: the transformation of a hymn for prayer to a song to conquer the world with, the traces of which (in military music, as well as after 1945) persist, and is *still* recognizable in many arrangements.

Radio broadcast 30.01.1933

(-Diagram)

Radio announcer	German national anthem	fade-out
In the Chancellors' Office	Music announces itself (Hymn) (coming from outside)	

Radiogenic Media Art: Composed Media Sounds - Second Degree Music

Acousmatic music can articulate itself as an art "free of aesthetic bias", the rules and inner-logic of which are intrinsic to it, and from which any audible expectation produced arises from the here and now. On the other hand, one can understand it as an "experientially defined" audible art and on the other hand, as an art that could appeal to a listener's previous knowledge. In the former case, audible art integrates itself into an inner-musical, developing coherence, whereas in the latter case, the developed relationships of the extra-musical and of media history can be worked through by it. An especially complex example of the co-operation of these two aspects was a work that provided a whole evening of tape music. This could be described as a large scale, inner-musically integrated form process and, as well as this, a music that appeals to the individual audible experiences of its listeners in its use of transformed and unrecognizable, semantically determined speech, noise and musical recordings:

Hymnen (1966-67) by Karlheinz Stockhausen.
On the one hand, this composition links national anthems from all over the world, on the other hand, they are placed in specific positions on the piece, even particular national anthems are placed in the foreground (for example the German national anthem), to create a spectacular distancing, or separation.

Stockhausen: Hymnen (German national anthem, beginning)

1. *Einigkeit*
2. Drum roll
3. *Einigkeit und Recht*
Rechte und Freiheit
Freiheit
4. *für das deutsche Vaterland*

5. *danach lasst uns alle*
alle
alle
alle
streben
brüderlich
mit Herz und Hand

As the title indicates, national anthems from all over the world can be used as an important starting material, a fact not only decisive for the artistic conception, but also for the reception of this work. Interesting in this connection is the fact that the composer deals with the national anthems of his own country as he deals with the those of most of the other countries. During three of the four main sections ("Regions") of the piece, the musically dominating anthems (there are two revolutionary anthems: the Internationale and the Marseillaise, two anthems from countries which were, at the time of its conception, the dominant world powers: USSR and USA, and also partly the "neutral" Swiss anthem),
are richly combined with the anthems of other countries, however the German national anthem is only combined with itself:

2 Recordings were made at a time when Germany was split into 2 countries:

a vocal/instrumental and a purely instrumental recording are montaged to interlock with each other and, above this, everything heard is made to refer back to the German anthem, despite sharply cut sound edits and illusive contrasts. For example:

- *Einig-*...(Drum roll)

- *Blüh im Glanze dieses...*
Insert: Beginning of the Horst-Wessel Song (2nd national anthem, 1933-45)-
...*Glückes*

The text used is the 3rd strophe of the German national anthem, which since 1952, is the official anthem-text of the German Republic (that later even after a reunited Germany, remains binding for both halves, i.e. for the whole of Germany). At the beginning of this strophe a drum-roll can be heard (this drum-roll is evocatively and discontinuously integrated), at its end (where the text reads ...*blühe deutsches Vaterland*) one hears shouts of "Hurra" with gunshots mixed in. At the centre of the melody and on the final chord of the first section the music is suddenly interrupted, hanging vocal pitches transform themselves into spreading glissando lines (creating a calm and spatial atmosphere).
These, and other details make clear how strong the difference is between a music composed out of a conscious transformation of political music media and a mass media manipulative operation (an example being the use the German national anthem was put to, during the radio broadcast on 30.01.1933, described above):

In this case it is not about the mass medial multiplying an experience shared by a (popular) community, but an aesthetically differentiated unmasking of a form of manipulation peculiar to the mass media:
Song phrases are cut and become constantly interrupted, afterwards contrasted and continued, or as it were repeated stutteringly (due to this means of technical hacking and chopping, the polemic increases):

Einigkeit + Drum-roll	2 syllables + 1 rolled strike	3 (Accents)
Einigkeit und	*Rechte*	5 (Syllables) voices-instruments
	Rechte	1 (Syllable) voices-instruments
	Rechte und Freiheit	4 (Syllables) voices-instruments
	Freiheit	2 (Syllables) purely instrumental

At the points where the anthems aren't sung, replaced by purely instrumental passages, the text seems somewhat "strangled". For a listener who knows this text, they should find that the thread doesn't get completely cut.
Above this there is an appearance of several montage pieces, consisting of reworked anthems, reworked not via fragmentation but (partly to do with loop construction) and sonic distortion ("Hacking"), so that one is made conscious of the problematic key ideas in the text even during the changed sonic images (where possible, sometimes also revealed to be questionable):

<u>Einigkeit</u> und <u>Recht</u>	*für das deutsche <u>Vaterland</u>*
Danach lasst uns <u>alle</u> streben	*<u>brüderlich</u> mit Herz und Hand-*
<u>Einigkeit</u> und Recht und Freiheit	*sind des Glückes Unterpfand.*

Blüh im Glanze dieses... Glückes. blühe, deutsches Vaterland.

Unity and Justice and Freedom
For these let us all strive,
Unity and justice and freedom
Prosper in this fortune's blessing,
For the German fatherland;
Brotherly with heart and hand.
Are the pledge of happiness.
Prosper, German fatherland.

The composer himself described his approach from a perspective, probably very different for most listeners (something which has, since the beginning and for the general history of reception of this piece become evident). Stockhausen searched for a primary material that could reach as many people as possible, a sonic material that would be well acquainted with from daily experience. Therefore it seemed to him that the national anthems from all over the world would be most fitting. He assumed an overriding familiarity with this material because, according to his conviction, it would be recognizable -even after the most complexly divergent electronic transformation: in music of the second degree, well-established and found music is radically reshaped and transformed.

The transformation of previously found and (from experience) very familiar sound material was an aspect that appeared, to the composer, to be obviously most important. Many listeners tended, at least those experiencing this piece for the first time, to notice less the transitional processes inside the music, concentrating rather on the way these processes determined and changed the overall meaning. In their musically original form, constellations of re- and newly shaped national anthems can present a new world as a musical idea, within which many different elements are related to each other. Further, in *integrative Audio Art,* the isolated person can experience changes of meaning from these constructions, in turn articulated by superordinative form processes.

In Stockhausen's ***Hymnen***, acoustic media art can still be described as a music that opens itself to the real audible world, allowing a more immediate relationship for other examples of musical intervention of the (second) reality of the media-heard world:
as composition made up of media sounds.
Admittedly Stockhausen's piece is a radiogenic composition, since it was produced in an electronic studio of a Radio broadcasting house (in particular the WDR (West-German Radio)). Further, it used numerous noise and musical recordings (for example, sounds from radio-theatre archives, especially recordings of national anthems from all over the world) belonging to this institution, or were at least ordered from elsewhere (especially for this production), all of which needed the presence of the composer to realize this piece.

On the other hand this music stands in an intimately musically developed context:
in contexts with which the listener can very easily identify, if he didn't happen to hear the piece as a four movement symphony (as was the case with one of Stockhausen's longest assistants, Johannes Fritsch). Many other perspectives on this work would unfold, if one were to study the genesis of this work, as opposed to merely listening to it: at the time this piece was being realized, a great mass of available sonic material and studio techniques appeared to make the realization of this piece impossible, the piece is a truly enormous accomplishment, which is the reason why in the program note (for the world premiere), Stockhausen described the present version as "provisional" -as a variable that could be shortened, performed partially and also extended (-be it the music itself, or the form the purely concert version should take as well as the possibility of including novel audio-visual constellations).

Variable Media Art - Technically Produced <u>Uncertainty</u>
Stockhausen's *Hymnen* appears variable and formally open, and this may be due to the fact that, shortly before the premier, the composer started working through several sections of *Hymnen,* which he didn't finish. After this, further performances used the same version as the world premiere, Stockhausen eventually coming to prefer this as the definitive piece (the work was now clearly finished and complete; originally the concert version was to include 4 live musicians whose job it was to react to the sounds coming from 4-channel tape part; in the end this was abandoned, the priority being laid firmly on the solo tape version; for a version completed in 1969, there are orchestral excerpts planned for the middle section, which are either notated fairly completely or are sporadically detailed; this version of the piece has remained untouched in Stockhausen's work list).

The open and multifaceted character of Audible Media Art appears to offer itself as an alternative to aesthetically traditional and fixed arts. An especially radical, if somewhat eccentric position in the context of Media Art, is provided by the modes of chance and uncertainty as practised by John Cage. This is a Media Art with, more or less, precisely formulated directions for action, leading to unexpected and unpredictable results, as the examples quoted show:

-An ensemble player operates a tape machine with a freely chosen recording of "classical music" (Credo In Us, 1942);

-24 musicians control the loudness and frequency of their radios according to precise and complexly composed rhythms, without any member knowing what eventually gets sent to the loudspeakers (Imaginary Landscape no.4, 1951);

-The notation of a composition is simply the plan of montage, the sounds chosen may be extremely differentiated (Tape Collage of various recorded fragments: Imaginary landscape no.5, 1952);

-Variable tape collage piece: given are the parameters of sound and sonic transformations, without specifying either sound or sonic transformations themselves (Williams Mix, 1952);

Acousmatic art presents such and similar compositions, the rule being that, from the listeners perspective, importance is not placed on discovering what the composer heard a long time ago but, ideally, the listener should be as astonished as the composer by the sounds deriving from precise actions and the unpredictability they cause.

Unpredictable in the sense that these early media compositions by Cage are not the same thing as the tape music by Stockhausen. The tape recording is not the realization of a given score (this doesn't even refer to the detailed, previously unpublished pre-compositional sketches, heavily influenced by the various multifaceted process of production, or previously developed structural ideas, with ongoing checks and balances); the sonic image is its "text" (and not something composed or determinable as in a score).

This was so determined that the "free" live reactions the 4 soloists made, which the composer had initially preferred for a concert performance, (because he must have feared the risk involved with a pure loudspeaker version for the concert hall) were, in the end, considered to be unsatisfactory; the general verbal instructions he had afterwards formulated hadn't always yielded the best results. Traces of these experimental directions, initially unpredictable, can

reveal themselves during the process of producing tape music and in its sounding end effect. For example, in the complex processes of denaturalizing the primarily popular sound material, or further still, during the initially, seemingly chaotic, montages and mixtures of "disorganized" short-wave recordings, gradually transforming themselves into the building-blocks of a clearly directed formal process (heard at the beginning if the piece). This and similar examples refer to the fact that this particular media-composition by Stockhausen represents a special case for its oeuvre; previous compositional positions are productively put into question and are placed in dialogue with other compositional positions. This productively contradictory fact is referred to by the 4 dedicatees of the work, who further represent the four main sections of this piece: Pierre Boulez, Henri Pousseur, John Cage and Luciano Berio. This aesthetic multidimensionality is a special case in Stockhausen's work, especially in the media art of invisible sounds. The sounds, and the sonic contexts composed out of them, remain ambiguous, not only in their immediate immanent coherencies, but also how they, by implication, redefine the relation between the purely musical and the extra-musical, and specifically the relation between musical vision and transmusical experience.

Media Sounds as Historical Documents: A Historical Radio War Song

When listening events are broadcast to the masses via technical media, or shared as conserved sound, then the question arises as to if and how much it has to do specifically with a medial distribution of specific listening events. In the case of a popular historical song, on radio or Gramophone, the answer seems to appear very quickly. Here, though, the question addresses music for, or music that sounds from a loudspeaker.

Even then, when these simple melodies are sung by listeners, or innocent imitators, without the aid of microphone or loudspeaker, the primary purpose doesn't necessarily change -just as little as it would if one were to whistle or sing Beethoven's 5th Symphony. This question becomes more difficult to answer when dealing with politically functional music, for example, the problem of politically motivated combat songs.
In most cases these are not only directed at the masses to mobilize singing (i.e., for a vocal/instrumental performance by the crowd, as was the case during the initial years of the French revolution) but, recently, and often (and perhaps even of utmost importance), to spread its message to the masses via melodies, just like, for example, in the years during the national socialist dictatorship where this was practised intensively. In those days, it wasn't rare to hear songs sounding from loudspeakers, songs that were already known, perhaps previously learned, from school, from the army or even from the SS.
One of the most famous examples that one might be able to locate in the grey area between Live and Loudspeaker singing, is the national socialist war song "Siehst Du im Osten das Morgenrot?" (Can You See The Sunrise in The East"), with its refrain "Volk ans Gewehr!" ("People, to your weapons!").

Composed in 1937, 2 years before the beginning of the 2nd World War, this song presents itself in jagged, dotted rhythms, in a grim, archaically modal/minor key. Almost 2 years after the take-over of Poland, signalizing the beginning of the 2nd World War, the great conquest of the east with the attack on the Soviet Union had begun; this song, commissioned by Goebbels, sounded less honest. The four notes at the beginning of the Refrain, that should harmonically belong in D minor, appear in the military band introduction to this song, in a happier F major; a typical sonic image of orderly military music.

The image of this music accompanying jubilant soldiers, marching in radiant sunshine, was exactly how the weekly national socialist news program presented the joyful, affirmative mood of the new war song, the whole staging of which followed specific ministerial instructions, for example, the extra programmatic weight rendered by the war-music quotation from "Les Preludes": "*Nach Osten brausen die Heere ins russische Land hinein*" ("*To the east, the army march into Russia"*) (the standardized tonality, made suitable for the masses - in extreme ideological contrast to the Solidaritätslied (Song of Solidarity) by Brecht and Eisler - accidentally betrays the deceptive verve of the melody).
During the opening bars and even over the course of the whole song, the accentuated notes in the rising melody present themselves as ideal "Blitzkriegs-musik" (lightening war music), but as soon as the tonic returns, as meaningless and hollow. The refrain of this song ends with the words *Führer befiehl, wir folgen dir* ("*Führer, command! we will follow you*").

History as Radio Collage: A Radio Play of Historical Recordings
The change in function of historically important recordings to serve as material for a media composition is an obvious but rarely distinct or consistently realized idea. It not only assumes that media art articulates itself clearly through this material, but that the media sounds used remain recognizable as such (even after mixing, mounting, and other technical transformations). Against this backdrop, an important piece of tape music was composed by Georg Katzer (1983) that made use of distinct and historically significant recordings, 50 years after the take over of power by the national socialists, as a production for East German Radio. In this radio collage, Katzer concentrates on montage structure using original recordings from the NS period. This work resulted in a kind of "audible film" of this period, portraying events leading up to and during the 2nd World War. The representation of the 2nd World War begins with a brief montage, piecing together events shortly before and the outbreak of war itself:

Noise: Breaking Glass

Music: Volk ans Gewehr! (People, to your weapons!) (War song)
Speech: *Seit 5 Uhr 45 wird jetzt zurückgeschossen.* (*Since 5.45 am, we have been shooting back"*)
(Speech given by Adolf Hitler to the German Parliament (Reichstag) on the first day of the 2nd World War)

The illustrative noise (destructive noise: breaking glass), stirring music (*Volk ans Gewehr!*), and demagogic sentence, follow one another in a sharply cut sequence:
The noise of the initial signal (a sound representing the whole of the 2nd World War), the confrontation of music (with text) and speech (without music) proves a historically evident relation between music and war: as the song announces war in the east, the attack on Poland (1939), commences, introduced here as "audible film" and heard as a dress-rehearsal for the attack on Russia, in 1941.

War noise, war music and war speech appear here in a clear montage-logic, further occurring in all larger relationships of this piece, -for example, during the continuation of the section consisting of contrasting montage, where Hitler's alleged intention (proclaimed in 1938, during the crisis in Sudetenland) as the *last intention I have in Europe,* is confronted with recordings made of him in the years directly following, about the wars against Poland, France, England and Russia.

The climax and turning-point of this development is the often quoted Fanfare by Liszt that (just like all other musical quotes) articulates itself in extra-musical- and even changes-of-meaning. This occurs especially in contrast to the original quotes (from political speeches), during the portrayal of the closing stages of the war, after the in Stalingrad turning-point, where the notorious Sportpalast (or Total War) speech made by Goebbels, moves into the foreground, replacing Hitler's voice.

Georg Katzer : Aide-Mémoire

1. Signal : Destruction Noise (Cracking, Splitting)
2. Male Song with sharply accentuated accompaniment from military band: Volk ans Gewehr..." (People, to your weapons...)
3. Adolf Hitler at the Reichstag Parliament (1.9.39): "Seit 5 Uhr 45 wird jetzt zurückgeschossen." (Since 5.45 am, we have been shooting back)
4. Applause and cheer (from members of the Reichstag Parliament).

COMPOSED HISTORY AS A BASIS FOR NEW RADIO ART
Radio Play as Historical Document

In an epoch of repression and political manipulation, represented by national socialism (1933-1945), audible media, especially live media, can play an important role: with the loudspeaker, a mass of widely scattered listeners can be simultaneously reached and spoken to. The first important example of this is the program broadcast from the Chancellors office on 30.1.1933. As a culmination and turning-point in the totalitarian expansionist NS radio policy, one can cite a program broadcast across Europe, on 24.12.42. During the program, which many stations (either real or, as with Stalingrad, fictional) within NS control were called upon (some "responses" were either real or simulated) to use the Christmas carol "Silent Night" (Stille Nacht) as the background ether which, due to an unfortunate technical hitch, became inadvertently de-figured into a shuddering funeral dirge.
This program was broadcast to different countries (then occupied by German troops) at a time when movements of resistance began articulating themselves, even on the radio. Most notable for media history, was that significant reportage of resistance activity began in one of Pierre Schaeffer's experimental radio studios (Studio d'Essai, RTF), in Beaune, 1942. Schaeffer was a pioneer in Radio who, during the time of the resistance, had the courage to record readings of secret resistance poems in a state-run and state-controlled radio studio during Vichy's time in government: "on Sunday mornings, whilst the collaborators were still sleeping." Most programs, recorded at that time, were planned for broadcast, as soon as France had liberated itself. Schaeffer's long and complex radio play La coquille à planétes (The Planet Shellfish), which he produced himself, belongs in this category. During one scene, the historical context, within which it was realized, reveals itself clearly: one hears sirens - the acoustic signal, heard in Europe, announcing further onslaught of airborne warfare.

Pierre Schaeffer: The Planet Shellfish (Excerpt)

1. Screeming siren
2. Female Choir: 3 calling motives
3. Speaker: *C'etait le hurlement*
4. Female Choir: 3 calling motives varied
5. Speaker: *C'etait gemir pour commencer*

World War Reminiscences in Earlier <u>Loudspeaker Music</u>

Pierre Schaefer's underground work in radio established clear signs for the installment of alternative radio practise during and after France's liberation: during the liberation of Paris (in August, 1944) Schaeffer founded the radio station for a newly freed country, which, by using the sound of ringing bells in every city, organized and reported on the progress of resistance activity (-these historical recordings have been preserved and are well worth listening to). Schaeffer's pioneering activity in Radio, whilst aiding the resistance, paved the way towards his more innovative radiophone activities later.

In the period immediately following the war, he was successful in setting up an experimental radio studio at the Paris Radio Station, enabling him to realize the first productions ever of the nascent Audible Art, which he christened "musique concrète".

Schaeffer was solely responsible for these initial productions; he began collaborating with Pierre Henry in 1949, a working relationship that was to last many years. During 1949 and 1950, Schaeffer and Henry produced the first and, until then, aesthetically most ambitious work of musique concrète: the **<u>Symphonie pour un homme seul</u>** (Symphony for a Lonely Man).

The beginning of this piece, recognizable as signature characteristics typical of Pierre Schaefer, contain beating noises, calling voices and vocal utterances - sounds that the author associated with his own traumatic experiences of Gestapo terror, during the resistance.

Pierre Schafer: Symphonie pour un homme seul (Beginning)

Montage change.....voice.....Signal - prepared piano

Beating	Struck Sounds	Voice							
a	-b	-c	a	-b	-c	a	-b	-c	d.....d.....d+.....
		shorter.....				very short			
					softer			very soft	

Pierre Schaeffer and Pierre Henry are the most important pioneers of emancipated radio art. At

that time, they were successful in inventing a method of technically producing sounds and music, that would decisively influence and shape the further development of radio practise and radio music.

- RADIOART:
Composed Media Sounds
Reality and Virtuality

Broadcast and conserved audible events can be presented in different forms - whether as a documentation of reality communicated via the media, or as a manifestation of the possibilities of medial production and presentation. In both cases, the function of representation has evolved differently, especially considering the problem between the accuracy (desired or actually achieved) of representation and (be it consciously desired, be it de facto achieved) its *virtuality.*

Just how difficult locating the difference between these and similar categories can be observed in one of the most famous examples of radio history : *The War of the Worlds* by Orson Welles, produced and broadcast in 1938. Here, radio art proves itself as the art of pretence: at its extreme, listeners mistook the finely crafted, radiophone fiction for radiophone fact (this happened frequently during the first broadcast):
in this radio play, Orson Welles presents a fictive invasion by aliens from Mars as a pseudo live news report. This, however, was so convincing and believable that many listeners took flight in panic and fear. The intelligence with which Welles sets about dramatizing this radio play is apparent in the particularly effective radiophonic silence:
the silence here is a deceptively catastrophic interruption of a live news report - specifically prepared by the increasing rise in pitch and speed of the reporters voice, and in the scream that is heard in the background. After this abrupt silence (the effect of which is more alarming placed directly following the reporter's panicked speech) the (pseudo) studio functionary announces, with soothing and calming words "The program has been interrupted." Smothering over the impending doom of an invasion from Mars, an opinion is quoted from an expert during a Dinner, after which music is announced and broadcast (a gentle Chopin Etude).

All members of the cast do their utmost to imitate common radio practise as faithfully as possible (a set of professional habits that seem to have persisted to the present day);
the voice of reporter, the screaming victim and the studio announcer/moderator, all stand out clearly from one another. The total silence produces the longer-lasting effect following directly after the short interruption of the pseudo broadcast: silence as interruption, arresting radiophonic communication. The power of this silence creates a clear dramatic accent, appearing temporarily lessened by the events immediately following. However, during the rest of the program, this accent allows the tension to increase still further right up until the catastrophic ending.

Reporter's voice.....Silence.....Studio Speaker.....Piano music
normal.....faster Interruption - Announcement
...+ scream Quote

Orson Welles, The War of the Worlds (CBS, 1938): Interruption of News Report (1'16")
(Loudness notation/waveform representation)

Sound of siren , Car-horn signal.....
+ Scream.....

Orson Welles, The War of the Worlds (CBS, 1938): Beginning (0'26")
(Pitch notation / spectrogram)

Radio as Musical Instrument
Radio about radio as fiction:

It is under this aspect that radio art presents itself in Orson Welles' radio play **The War of the Worlds**(1938).
Radiophonic innovation is achieved here through Orson Welles' (already a pioneer in radio, later to become a film pioneer) media specific perspective on radio. Shortly afterwards, composer John Cage had the idea of using technical media as a musical instrument: to compose by employing technically produced sounds that serve musical ends. At a relatively early stage, Cage's compositional development had already led him to cross aesthetic boundaries. During a secondary stage (after early experiments with novel pitch structures), he became interested in approaches involving the emancipation of noise from sound and, in a subsequent stage towards a progressive notion of instruments and sound production, formed ideas concerning the extent to which technical media could be subsumed as a new type of instrument.

Examples of this can be found in:

-Tape machines, or radios complete an instrumentarium of noise instruments (CREDO IN US, 1942),

-or they are used to produce unpredictable sounds, articulated by an exactly notated rhythmic structure (Imaginary Landscapes no.4, 5, 1952),

-as the main element in a freely notated (not only sonically, also rhythmically free) radio sextet (Radio Music, 1956).

The result of this was a practical and directly accessible form of composed/performed musicalization of media art, going much further than music had hitherto gone.

Radio Art as Media Collage
Sound recorded by technical media heard from a loudspeaker as invisible sound, can result in many diverse sonic constellations. These can go a lot further than the range belonging to conventional music, since such constellations can contain (next to traditional musical sounds) noise, vocal sounds and spoken words. This is especially obvious when recorded media sounds serves as a starting point for an audible art work, progressing on to becoming a media collage. Such pieces can be put together so that they aren't only received as innovative musical compositions, but also as a new kind of audible piece.

In the politically unstable year of 1968, Ferdinand Kriwet realized One Two Two in the Radio-Play studio at West German Radio (WDR) -then managed by Klaus Schöning. Kriwet named this a "listening text" to denote a new kind of media composition which was, at the same time, an example of the "New Radio Play". This piece differs from a conventionally notated piece of music just as radically as from a traditionally conceived radio play: the musical score presents neither conventional musical notation, nor the existence of a normally written out text. Instead we are presented with a detailed plan of montage. The notation, indicating precise durations in seconds, specifies the sequence of the recorded material and its superimposition. On listening to this piece, and taking into account the date of its realization, it becomes apparent to what extent a set of rules for montage logic could establish itself, hence creating a coherence relevant to its time; this development was similar to silent film, decades before (approximately towards the beginning of the 20th century). With regard to the introduction of montage in image and sound, the consequence of this technically conditioned time-lag, was that montage techniques in radio play and music, were practised several decades after their discovery as image-montage within silent film. However, unfortunately, later on , as sound-film was being developed, film-music as a real or deceptive Live-Music could be considered and conceived of, but not film-like montage structures in music itself.

Walter Ruttmann's sound montage Weekend is a thoroughly original resetting of the visual montage principles present in his silent film, Berlin. Die Sinfonie der Großstadt. This is by no means a mere schematic transferal, a convenient exchange of medium to address another sense organ, but came about after Ruttmann's research into the characteristics and phenomena of listening itself. Weekend (1930) is an exception, but one which was to remain forgotten for almost half-a-century.
Since 1948, with Pierre Schaefer's initial studies in noise - themselves assembled out of record fragments - one can deduct that the principles of montage music had firmly established themselves. However, despite the fact that Kriwet's radio piece was produced two decades later (4 decades after Ruttmann), the montage structures don't reveal a composer as a helpless imitator, or as one having unconsciously recovered and (re-)discovered something.
This is due to the nature of and variety in his material, derived from what the media of the day could offer. With such material, Kriwet managed to reach a larger audience, already acquainted with montage film technique, than either Walter Ruttmann, or the first composers of musique concrète with their progressively denaturalized sounds were; such fragmentary sound material was too far away from one's daily hearing experience.
Against this tradition, Kriwet turned his attention to the daily sounds belonging to the media world of his time. Using this material, he discovered the same montage principles that Walter Ruttmann had already discovered in 1930 (for it only to remain forgotten). Examples of Kriwet's montage technique can be found in the speech sequences by which neighbouring fragments use the same word, or the same number of vocal sounds, present in different situations:

Ruttmann:
Male voice (energetically): *ich verbitte mir das!* (I forbid myself that!)
Another male voice: (politely) *Bitte* (Sorry)

Kriwet:
Male voice (during *countdown* in Boxing) (Sober): *7 - 8 - 9 - aus*
Another male voice (Football World Cup, 1954)
(radio reporter, Herbert Zimmermann) (enthusiastically): *Das Spiel ist aus!*
(The game is over!)

In contrast to Ruttmann, Kriwet confronts not only the audible experience, but also the concrete acoustic and audiovisual media experience of a particular time and in a particular country. When, for example, the gong signal on German television is heard, the news announcer says:

Gong Signal - (News Announcer:) *Hier ist/* (Here is/)

After the second word there is an edit, after which the expected continuation should be:
/die Tagesschau des deutschen Fernsehens,
(the daily news on German television)

But instead a word (as expected: contrasting, redolent and loaded) spoken by another male voice is superimposed:
Hier ist/ Wunderbar
(Here is/ Wonderful.)

The superimposed words that follow this remind one of the other words that could have been used instead of *"Wunderbar"* (before the originally expected word eventually appears):

Male voice: *deutsch*
Deutscher
deutsches
Deutsch/

News Announcer: */die Tagesschau des deutschen /*
(/the daily news of the German /)

Before the premature, edited and interrupted television announcement (that is, after the penultimate word), the days of the week are read off in different languages:
this reminds us of the daily basis upon which television and the daily news are broadcast.

In this piece, scraps of noise, speech and music are sewn together to create both a multicoloured, audible landscape of the 60's and an audible-film containing the experienced media world of the time.

A Radio Play on the 1968 Revolution

In the era of auditive and audiovisual mass media, possibilities of sound production, transformation and projection are at the disposal of technically produced listening art, differing greatly from the potential inherent to traditional live communication.
This is particularly apparent in music: listening art is no longer bound by the limits of the human voice and/or conventional instruments - limits which were previously believed to be impossible to transgress. Furthermore, anything that can be picked up on a microphone and sent out of a loudspeaker can be used as potential sound material.
The possibilities this opens up are, on the one hand, a completely unprecedented repertoire of sonic effects and, on the other hand, the technical storage of the presumably well-known elements of our daily listening experience; this opens up hitherto unsuspected regions of production, projection and distribution, for further discovery and research.
This becomes clear in the newly determined relation audible art (this nomenclature pertains to a context going further than the traditional meaning of the word "music" will allow) has to sensually

perceivable reality. Acoustic traces of the real, audible and experienced world must no longer be translated stylistically, i.e. into given pitches structures and culturally standardized instrumental or vocal timbres (as in program music). In addition, technically modern storage, transformation and projection of sound phenomena become directly accessible to further artistic structuration (even without recourse to abstract recoding in standard parametrical values, symbols of notation or sonic constellations). Prototypical for the relation between music and audible art, continuously developed since the 1960's, are audible pieces preoccupied with political crisis' (especially where, even after technical manipulation, the traces of important historical recordings used are still clearly audible).
This is evident in the audible pieces which thematic the political events of 1968, a year of revolution - examples can be found in Non Consumiamo Marx, by Luigi Nono and (from a different political and aesthetic perspective) Solitoude by Francois Bayle.
Since both authors differ clearly from each other politically, the techniques used and the choice, and general handling of the material differs also. Their solutions are arrived at when addressing the various conflicts between collectively and individually determined sounds, and between daily and musical experiences.

Most evident is the use of the collective vocal utterance (crowds of people shouting (Bayle) and agitative political speeches (Nono)) in confrontation with the individually determined sounds (singing soprano voice (Nono) and fragmentary solo guitar music (Bayle)). In both cases the possibilities and limitations of political music gradually materialize placing music, in its conventional sense, in question.

A Radio Play on the 1989 Revolution

More or less coincidental historical constellations can and have left their traces on music and audible art. A remarkable example is where an important twentieth century revolutionary year occurred exactly 200 years after the most important year of revolution in the eighteenth century. Both years of revolution represent spectacular political change, the consequences of which were far reaching - even for the development of music; despite there being only a few examples, this was very quickly apparent.
Yet more seldom was the deliberate correlation of both revolutions (1789 and 1989) in music. One of these rare exceptions is a musical work closely related to both revolutionary years: Mein 1989, a piece of tape music by Georg Katzer, realized in 1990.
This piece is the sequel to Mein 1789, written a year earlier, a work programmed for the 200th anniversary of the French revolution: both pieces emerged as commissions for the loudspeaker festival in Bourges, both as contributions to projects run by international associations.

Everyone taking part had to confront the joint theme:
1989: the historical remembrance of the 200 year-old revolution
1990: the contemporary commemoration of a one-year-old revolution.
During the performances in 1989, it was noticeable that, of the compositions, (many of which thematised a collective musical reflection on the French revolution) the expectation that a new revolution was due (or at least the end of a revolutionary era that found its end in the 1989 revolution), was strongly felt. This was clearly evident from the east-German contribution, in Georg Katzer's work Mein 1789.

The piece begins with a text (read by the composer himself) by the presocratic Greek philosopher, Anaximander, on the formation and disappearance of things, and on the origins that lie at the root of both processes. Further on in the piece, there are passages read from the Declaration of Human Rights (outlined in 1948); the rendering, however, is a polemic caricature, as if the reader is in the process of discovering clearly betrayed illusions.

The (east) Berlin composer, Georg Katzer, sees himself as a critical citizen in a (partial) state, the political identity of which, as a member of the previous "socialist camp", was even then, closely related to the year 1789, as well as a later year of revolution, 1917.
The technically changed, "mutilated" reading of the "Declaration of Human Rights" (a caricature reminiscent of Orwell's "Animal Farm") appears in Katzer's 1989 radio play as the denunciation of a subsequent abuse (-an abuse referring to both the French revolution and further revolutions, and also particularly since the Russian revolution of 1917 in its relation to the events leading up to 1989).

Katzer's musical reflections on the 1989 revolution are strongly related to his music on the French revolution, since both pieces share the same introductory reading. Significantly contrasting the second work with the first, Katzer foregoes the central position his own raised voice has (-in Mein 1789, one hears the polemicizing caricature as a form of individual protest). Instead, in Mein 1989, he presents us with a pseudo revolutionary dictator who, in his self-deceptive certainty, doesn't realize that his tyrannical reign is at an end. In his final year in office, Erich Honecker ridiculously asserted that the Berlin Wall would probably still be standing for a further 50, or 100 years. Katzer makes the deluded stupidity of this statement clear by coupling it with heavy noisy accents (an obvious reminder of how the "Mauerspechte"* demolished the Berlin wall) and by ironic estrangement of the dictators' voice in presenting it as a sequence of stuttering loops.

(* In the days and weeks that followed the fall of the Berlin wall, people came with sledgehammer to chip off souvenirs, demolishing lengthy sections in the process. These people were nicknamed "Mauerspechte", or 'wall woodpeckers'.)
(Page 41)

Georg Katzer: Mein 1989 (Beginning)

1. Metallic hammering		"Mauerspechte"
2.	*Die Mauer*	Erich Honecker
3. Metallic hammering + shouting crowds		"Mauerspechte"
4.	*So viel sei aber jetzt schon gesagt:*	continuation of Honecker's speech
5. Blubbering Noises		
6.	*(Die Mauer)*	stuttering
7.	*Sie wird in fünfzig und auch in hundert Jahren noch bestehen bleiben*	normal
8.	*(bleiben ...)/ wenn die...*	echos

9. + crowing
4. Metal hammering (*4 accelerando)

Both pieces by Katzer belong in the context of international composer associations that represent perspectives dealing with politically relevant world-historical changes, by composers from differently involved countries (invited were not only composers from France, but also Cuba, Germany and east European countries, still occupied by the then Soviet Union. In this piece, and in comparable pieces, there are indications of possible directions for technically produced, acousmatic music, -directions inaccessible to Live-Music using conventional means. These being the opportunity for a differentiated listening, not emerging as a result of arbitrarily disparate (or exclusive) cultural socialization, but from creatively working through experiences that, potentially could happen to anyone.

Acousmatic listening is determined by separating the process of producing the sound from the heard experience: in order to bring forth the desired hearing experience, it is neither necessary or important to identify how a sound arose in the first place (as with recording), or what is happening in the present (as with live manipulation).
The manner in which heard events differ between the sounding event itself and the process of its sonic production, can be described as a generalization of the difference between sounding music (as form) as its compositional genesis (as structure).
When reflecting on music and audible art (especially the important theoretical and practical aspects of their development in the 20th century), the difference between form and structure becomes especially significant; take, for example, the historical comparison between a primary formal orientation, as in concrete music, and a primarily structural orientation , as in serial music. Attempts to synthesize both directions tend not to ignore given priorities (i.e. form, for Francois Bayle, or structure, for Karlheinz Stockhausen); this kind of synthesis can be found less frequently than in music whose point of departure decidedly separates both areas (i.e. on the one hand, varied structuralists like the younger John Cage, Pierre Boulez, the young Karel Goeyvaerts and Gottfried Michael Koenig, and on the other hand strict formalists like Pierre Schaeffer or Michel Chion).

For the dawn of technically produced music and audible art, not only were the tendencies of aesthetic development important, but (similar as in the history of film) also other factors, such as the technology available and socio-economic conditions.
At that time (and in later stages of development), it wasn't always clear if, and to what extent, certain technological innovations should already be available before becoming legitimately explorable for aesthetic use, or if , and to what degree, it could yield primarily aesthetically motivated solutions.

For the larger technological-aesthetic development, the initial solution, the aesthetic conversion of found technologies, was seen to belong to the foreground. During the latter stages of development, a secondary preoccupation slowly gained significance: the aesthetically motivated search for new technologies.
Pierre Schaeffer, founder and long standing director of the first important, professional electroacoustic research and production studio, knew and made use of both possibilities.
We are no longer less well-informed about his first musique concrète productions in 1948 (at the

Paris Radio Station) than we are about the works signalizing the initial phase of electronic music at Cologne Radio, in 1951. In both cases, discourse has concentrated on specialized technical details of production and on general technical aesthetic aspects than on any aural/analytical description of the day-to-day conditions of studio production. Descriptions of production processes, as well as of audible results run into large, elementary problems (as is often the case). Even the most basic questions addressing whether, and how far one can equate technically produced and heard results with the word "composition" as an activity of putting something together (and/or developed according to a plan), become difficult to answer simply.

After Walter Ruttmann's pioneering sound montage, Weekend (1930) - allowed to be quickly forgotten for decades - the world had to wait 18 years before a studio production of comparable historical importance (in turn opening new possibilities for the medium) could emerge: this was Etude aux chemins de fer (the locomotive study) by Pierre Schaeffer: the first realization of musique concrète ever made. Both pieces have been published in the form of unconventionally notated, incomplete and fragmentary code. Despite our knowledge of the time, of the coding and the methods used, it is not possible to notate these works accurately, or satisfactorily.

Solitary montage segments can be heard in isolation, but can't be properly notated:
the only thing that does seem possible is to employ the catchword "Montage Piece" to name this new category, -however, only allowed when fragments of recorded, audible events are edited, so that their source of origin remains recognizable (this being more the case with Ruttmann and frequently less possible with Schaeffer). Schaeffer himself stressed that it wasn't necessary to listen to his first concrete work from a fixed and unchanging perspective, but, and in keeping with its composed formal contour, it can (and sometimes should) change: it would be possible, even if only briefly, to listen to this piece as "anecdotal", which donates a kind of listening that orients itself to every day experiences (this being, however, the category musique concrète was and is regularly placed in - often unfairly). More importantly is that barely identifiable (seeming or actual) sounds and relationships are frequently and rapidly combined or relayed by further sounds bearing an enigmatic or puzzling character.

The piece begins with a singular signal, with short, whistling accents, identifiable as the starting signal of a locomotive leaving a train station (once the superimposed sounds have been registered by the listener, the effect these sounds have afterwards is as a response, rather than as an introduction).
The signal and general noise of departure, present themselves simultaneously as *outside recordings* recorded from the perspective of an observer standing on the station platform. After an intersection, the perspective of listening becomes suddenly altered: rumbling train noises indicate the perspective as being situated inside the train, hence it is an *inside recording.*

During an opening, that could generally be described as "anecdotal" (i.e. based upon daily events), for the rest of the piece the ear has to acclimatize itself to other types of sound constellation: the terse and fragmentary clips derived from a noisy recording of a traveling locomotive, become firstly repeated as mechanical ostinati (rather like the looping effect heard on a scratched vinyl record, the "closed record grooves") and secondly, placed in a situation of changing montage when confronted with its own variations. From the montage scheme Schaeffer published, it is evident that the number of paired noise ostinati and noise variations become regularly shorter: 4-4, 3-3, 2-2, 1-1.
However, this plausible and regularly sketched montage scheme is , judging from the recordings

available to us, mostly unrecognizable. As a consequence of the fixed design (of ever shortening sound-clips), the contrasting section that follows, occurs earlier than expected:
Striking noise-accents grouped in pairs (these are perhaps traces of what Pierre Schaeffer named the "beating piston cadence" in his manuscript sketches).

These "cadential" noise signals conclude the first *sequence of sounds* (an ending that can be heard as the formal pendant to the introductory whistle-signal). Directly after this, a new sonic signal announces the beginning of a new sequence, presenting itself as a variation of the previous music. In fact, each sequence begins with such a sonic signal over the course of the whole piece, until the final signal (after this, the piece ends, and there are no more sequences. From this perspective, and also due to its marked significance, it can appear as a further pendant (also) to the signal at the beginning).
On the CD edition of Schaeffer's musical oeuvre, there are 2 versions included (the original and the revised). Judging by the recordings and written documents available to us, it is difficult to be clear about how these versions should be considered, and if longer versions existed as well as these two (earlier publications on this work cite a longer duration). The questions raised remain, for the time being, unanswerable, since necessary information about the detailed concept of the original version remain, as yet, inaccessible.

By coincidence, the same questions surrounding early works musique concrete, are also relevant to the early works of film history. These address:

a) the problem of authenticity in different montage works,
b) the relation between the original and its version(s),
c) the relation between notation and the results of production

... and so on and so forth.

Pierre Schaeffer was very clear that, for his musique concrète (not only when discussing his "locomotive study"), one should concentrate primarily on the sonic result, and not on the steadfast written score attached (-the written versions were often made after the tape was completed). This is especially relevant due to the priority Pierre Schaeffer placed on his relationship with the sound and avoidance of theoretically abstract pre-structuration.
However, making a justified statement about the sounding result (and its variations), becomes even more difficult in the absence of any regulative theory (-for traditionally notated music, a regulative theory is accepted as a given fact). A totally different state of affairs is apparent in the realizations of early serial electronic music; one of the earliest examples (accompanied by some very detailed documentation) was Karlheinz Stockhausen's electronic Studie I, realized in 1953. This piece raises the question of whether the written and notated serial structure (protocoled in detailed sketches), or the reality of the heard tape, make up the essence and actual "text" of this piece - this being more difficult to answer than with early musique concrète. Radical serial composers (such as Pierre Boulez and Karlheinz Stockhausen as young composers) found the experimental and empirical nature, and lack of pre-composed structural thinking in the early concrete music, totally at fault -this being an issue they stated emphatically.
On the other hand, particularly for the young Karlheinz Stockhausen, it turned out that his rigorous planning could (due to practical solutions and direct experience whilst working in the electronic studio) be revised if it led to obviously better sounding results. In this respect Stockhausen distanced himself from the abstract theoretical rigour of his initial studio work, as

this anecdote clearly illustrates:
In 1952, Stockhausen, who was the first person to realize the electronic music of Karel Goeyvaerts (a friend and colleague at the time), suggested adding some pragmatic sonic modifications to his (Goeyvaerts') pre-composed structures, i.e. using reverb to smoothen the pitch mixtures allowing a degree of timbral flexibility. Goeyvaerts, who conceived his electronic music primarily at his desk, strictly declined following this advice.

Stockhausen's conspicuously unorthodox pragmatism, in contradiction to his own theoretical rigour, was an important factor in determining not only his compositional profile, but essentially his contribution to supporting the standing acousmatic listening had. This included:

- placing importance on the realities of studio practice
- breaking apart the ideological barriers of the day between "concrete" and "electronic" music, and in so doing,
- breaking with the ideological barriers inherent in serially pre-composed music.

Sound Process : Continuous Time (Composition as a Processual Development)

Stockhausen's Gesang der Jünglinge (-the date of the world premiere being 1956) was the first electroacoustic studio production after having realized two purely electronic works. Here, electroacoustic means a work that does not only relate purely synthetic and electronically produced sounds with each other, but also includes recorded sound: in this case, the voice of a singing boy.

Gesang der Jünglinge begins with a sonic structure that superimposes isolated sounds, that aren't necessarily parametrically predetermined, but mixed together as in a "Live" Studio performance. In the final version, there are 4 channels in total, of which 3 are used for the structures heard at the beginning. After the opening sequence, the 4th channel comes into action using different sound structures. The pointillist tones are over-layered, dense assemblies, at times shooting around in pitch-space, at other times appearing to orbit the room (passing deliberately from speaker to speaker) to then gradually disappear (using narrowly filtered pulses). These dense layers are gained from "clouds of sound" transforming the choirboy's singing, into a virtual, polyphonic choir:
purely electronically generated sound processes (as at the beginning of the piece) present themselves in a similar sound continuum like (as occurs a little later) the virtual, multiplied polyphonic song. Such sonic phenomena and formal processes show how already, during the beginnings of electroacoustic music, early indications pointing towards acousmatic listening could occur.
Approaches naming themselves "new continuity" (an aesthetic of which could only partially describe the work) crystalized in the work of other composers over the 1950's, for example: Pierre Henry (**Concerto des ambiguités**, 1951; **Le voile d'Orphée**, 1953), Iannis Xenakis (firstly in Orchestral pieces: **Metastaseis**, 1953-54; **Pithoprakta**, 1956; afterwards in pieces for tape; **Diamorphoses**, 1957; **Concret PH**, 1958), and also Mauricio Kagel (electronic music for tape **Transicion I**, 1958), amongst others.

Only in the 1960's could continuous sounds be introduced into music, although not as novel and artificial constructions, but as quasi-natural rivers of sound and sonic foundations. For example, the experience of gigantic waterfalls (in this case, the Niagara falls) inspired the cascades of glissandi in the "4th Region" of Hymnen (1966-67) by Karlheinz Stockhausen or the tranquil atmosphere of a sea shore, as in Luc Ferrari's Presque rien Nr.1(1969).

The boundaries between real and virtual sonic inspiration and sound effect can also become unclear, or even explicitly questionable. A good example of this problem comes from a tape piece by Bernard Parmegiani, from 1970. This is an audio-visual work containing film images (produced by Parmegiani himself). The sonic landscape could be best described as an aesthetic-technological alternative to Pierre Schaeffer's locomotive study, to the first productions of musique concréte itself.

L'oeil ecoute (The Eye Listens)
Here the sound of locomotives appear differently than in Schaeffer's Etude aux chemins de fer (1948), i.e. not as pasted together montage structures, but as continuous and multilayered streams and processes of sounds. This artificial continuity, differentiated by filtering and layering, can be explained as an attempt (via heightened technological dexterity) to intensify a flowing and highly varied, if simulated, nature. Acousmatic listening and understanding of continuous sound processes differs essentially from a listening engendered from the ideology of fixed parameter values and the attempt to fix and subsume sound.
In electroacoustic music with complex formal structures, there are many cases where neither the complexity of the sounds, or the multi-dimensional variability of their temporal change, can be satisfactorily described by our given categories -
be it under the catchphrase of *edited time,* based in fermati and sudden changes -
be it under the phrase *flowing time,* based upon strong transitional and transformational directions (including climaxes and 'dead point', points of change and teleology) as well as gradual changes. In certain cases the description can be simplified when change is identified as the transformation of a specific sonic material, or of a certain sound event.

Sonic Transformations: Change (Composition as Structural Alteration)

The relation of significance, or field of tension between the "faithfulness to the original" and the "technically transformed", between "identifiable" and "non-identifiable/enigmatic" sounds, can, at different stages of the technological-aesthetic development of electroacoustic music, always change in shape or manner. In constantly changing constellations, the emphasis can lie (during a piece of acousmatic music) on a rapidly increasing mystery, (for example in the constant condensation and amplified speech and vocal transformation in "I am Sitting in a Room" by Alvin Lucier) or it can lie in the opposite direction, in increasing demystification. An example of this can be found at the beginning of the second part of Stockhausen's Hymnen, where, after having shot upwards from out of the depths, a curious swirling "flood of sound" gradually becomes transformed, via slow, sliding reverse transpositions (not always progressing in a straight line but sometimes heard to oscillate) until being recognizable as the vocal jumble of a mass of people. Both possibilities: *mystification and demystification* connect the members of the parisian research group (made up of several composers) GRM, who realized a group project called Germinal. The miniature pieces (which all had one sound as their starting point) consisted of digital transformational processes (for example in Léo le jour by Daniel Teruggi, a piece

consisting of the vocal sounds his son made as a baby, or in Etude numérique aux syllabes by Alain Savouret, made up of the spoken syllables that go to make up the name *Don Quijote).*

Alain Savouret: Etude numérique aux syllabes

Initial Sample:	Treatment		
DON	3 complex sounds	3 groups with syllable permutation	Combination (complex, groups)
QUI-			
JOTE			

The pieces in this cycle can be performed so that the initial starting sample is heard in isolation, after which the computer-Etude, lasting only several minutes, is performed.
These kind of presentations can inspire the listener to consider the advantages and disadvantages of conscious identification, to reflect on acousmatic listening in general, acknowledging and separating possibilities and limitations, and maybe go so far as to establish the relationships within these materials.

In this and other examples, what can really occur in the attempt at demystification, is an increase in the mystification of the sounding result (the contrary of this can also be provoked, where a process of mystification ends up encouraging demystification). It is also possible that these boundaries (between mystification and demystification) can even become blurred, for example when Christian Zanesi (in his piece Grand Bruit, 1994) presents his initial, over-dimensional sample (a 20-minute recording of a traveling metro-train, described as the starting material), using a process of filtration so strong, that one would be at a loss in guessing what the original sound ever was.

Precisely with regard to a computer music which is strictly related and limited (to either one or to a few initial samples), can one question (now on a higher level) the value in using a strict choice of material, and in the transformation of this material.

SONIC ART

(Music from Sounds - Montage and Treatment of Sound)

SONIC COMPOSITION

(Fragmentation and Multiplication - Contrast and Transformation)/

THE LONELY LISTENER

Already at the dawn of the 20th century, Luigi Russolo, along with his Noise Orchestra and the music he wrote for it, provided a decisive impulse in developing the then popular music into an

art of uncommon (i.e. either aesthetic or developed) sounds. The shock caused by his inventions (at that time innovative) was slightly lessened by the fact that the quasi-concertant performance was visual as well as aural : during the performance, one could not only clearly follow the actions, one could also read the notation.

Walter Ruttmann went a step further than Russolo in transferring the production of sound from the concert hall to the production studio (for example, in the most important example of related and already related sounds: the Sound Montage).
In his audible piece Weekend, he superimposed *invisible sounds.* The recorded/edited sounds and audible events, used for isolated montage sections are, to a great extent, taken from common, everyday listening experiences. However, constellations subject to montage will differ fundamentally from the everyday (Live-) heard experience. A similarly strong contrast can be found when considering how montage structures in silent film also differ fundamentally from the everyday (Live-) visual experience.

Pierre Schaeffer surpassed Ruttmann's art of invisible sound in that he introduced new techniques of fragmentation and (partial) sonic treatment (i.e. removing the onset attack of a sound (essential to help identify sounds with); magnifying time and transposing down or accelerating time via upward transposition; mechanical repetition (as in the "locked" grooves, or loops in records and tape); playing backwards; filtering, reverberation, envelope changing, amongst many other treatments). These new technologies were used to distance the sonic images of the world of relatively easily identifiable sounds, hence concentrating on acousmatic listening enabling a stronger concentration on the sounds themselves, independent of the need or the relevance of identifying them.
Schaeffer created (at first by himself, then in collaboration with Pierre Henry) a totally new sound and audible art, allowing differentiated structures, transformations and relationships to the smallest, most elementary sonic unit, to create larger formal coherences.
His approach went beyond traditional or conventional composition practises, that normally start with using scales or other parameters. Even in the smallest, apparently insignificant or anecdotal details, one recognizes how radically the sense of hearing has been changed:
In his radio play L'aura d'Olga (1962) he sets an array of different and short sound clips (prepared by Bernard Parmegiani) as a fictive "Top-of-the-Pops" hit-parade for an imaginary person, subject to experiment.
The sound archive, that he established (along with Pierre Henry) consists of countless (often edited from very complex recordings) isolated samples that can be played in an endless ostinato pattern. These sound patterns constitute the basic material of classic concrete music - in this function, it serves as a concrete "model of contrast" to the "abstractly" defined pitches, as in conventional music. Consequently, the radical degree to which our conventional understanding of music has changed can be illustrated in the following examples:
In 1951, Monique Rollin (one of Pierre Schaeffer's assistants) realized a short tape study Motet, whereby she reconstructed the pitch material of a motet, from the middle ages, in a synthetic tape-montage: Each voice receives its own singing pitch (some of which are chosen according to their phonetically natural note) which then, conforming to the durations of each voice, are mounted onto the tape lengths determined by the degree of transposition. What was originally notated as a polyphonic song becomes transformed into the artificially built pseudo song of Homunculi (a kind of weird, alchemic Frankenstein).
The narrow steps that the melody follows lead to a lightly distorted, ironic, but in no way eccentric, transpositional effect.
Other effects emerged a year later in Pierre Henry's piece Vocalises(1952). In this instance, the

sung pitches are transposed in even larger intervals, creating grotesque sonic and associative deformation -an effect made yet more extreme due to its serial structure (-remembering this work, Henry stated that serial technique could be useful, if one could somehow gear it towards mounting and superimposing sounds). This piece can be understood as a parody on several levels: as a criticism of concrete music and serial-electroacoustic music, as well as an early attempt at overcoming the antagonism of the musical thinking of the time.

The difficulty that arises in differentiating between the initial material and the variations gained via technical treatment, is usually formidable; a few rare cases contradict this rule, to cite one very famous example:
the Terminus work series by Gottfried Michael Koenig, realized in the 1960's, takes a singular material (a knot of glissandi) and uses a tree-like, branching model to govern the degrees of transformation. The importance here is on the relationships between the variations of transformation (with differing degrees of similarity), rather than the fact that they all stem from a singular material. These singular variations are mostly clearly differentiated from each other, deviations the ear clearly grasps.

This kind of analogue tape music certainly lacks resemblance to the digital etudes the GRM collective project, Germinal, realized (in 1985). Here the sounds that represent the point of departure don't end up playing the most crucial role; their function would only be strengthened if the original sounds were played before the etudes' performance, remaining as a constantly retained sonic substance. The music which results doesn't separate between the initial sounds and their electronic mutations, but is intimately aligned in its creating a continuous, transformational process. This engenders a range of formal contours alternative to those a classical piece of musique concréte might consider. An example of this can be seen in the 1st movement of Pierre Schaeffer's Etude aux objets (1959) which is built out of minute particles, at times simple, sometimes as sonic objects mounted together. In this first movement the montage sequence , (made up of many dissimilar sound objects) introduces each sound object, consecutively, in stereo channels, after which they are superimposed stereophonically. Even this music resembles a mere acousmatic variation of classically articulated music.

The largest number of concrete sounds are exposed, during this montage structure, as abbreviated fragments, minute, and hence "removed". In spite of Schaeffer's prohibition of sonic mutation, the independence the sounds gain from "anecdotal" worldly association is such, that one begins hearing them as autonomous sound objects.
Since concrete and electronic aesthetic production practises (in terms of production technique and aesthetics) began nearing each other, the antagonism between "original" and "transformed" recordings of more or less well-known sounds has, lost its meaning (a process begun already in the 1950s). Although dependant on other aspects, it later gained substance due to the increasing growth of computer music:
early computer music* played a decisive role for synthetic sound production - computer generated transformation of recorded sounds came much later - and has gained significance since the late 1970's and early 1980's.

(*In contrast to the analogue-produced music of the 1950's, with which previous work on recorded sounds began. The phrase "early computer music" refers to the production of purely synthetic, electronic sounds).

One piece that represents an early example of a computer music, where the transformation of recorded sound becomes meaningful, is Erosphère (1979-1980) by Francois Bayle. In this piece, Bayle uses computer transformed recordings of his own speaking voice; the text lines "la fin du bruit" and "toupie dans le ciel", after being computer-technically varied, remind one of concrète poetry. The computer transformation of the sequences of syllable and words go so far that the boundaries between computer-transformed speech and a simultaneously "speaking" computer appear to blur over. Hence, the field of discourse between natural, deformed and synthetic sounds, gains a renewed significance.
Simultaneously, attention becomes redirected back to the new radio play, acoustic art and electroacoustic music, especially when considering that out of the whole development of technically produced audible art, a context of presently standardized conditions of production and reception, under the patronage of tape, CD, DVD, etc and radio (and in seldom, if fortunate cases, in television and films) has arisen.
In the isolation of the studio, sounds are produced for the isolated listener before a loudspeaker , this can be observed in 2 examples, both technically and aesthetically far apart from each other, in which different vocal sounds can be heard:

- the vocal sound of the last, frightened survivors (presumably threatened with death) at the end of Orson Welles' The War of the Worlds.

Welles End
Siren, Hooting signal

2X2L 2X2l isn't there anybody (on the air)?

- the conserved voice of the radio pioneer Pierre Schaeffer as the main material for the loudspeaker music Arkheion La voix de Pierre Schaeffer, by Christian Zanesi. The sonic image is of a voice speaking from the isolation of the recording studio, -a sonic object different from the speaker and "isolated" from the listeners themselves.

Christian Zanesi: Arkheion (The Voice of Pierre Schaeffer)

Pierre Schaeffer's voice(1).....Pierre Schaefer's voice (2)
halting soft, melancholy
the lonely speaker in the studio- separation of humans
the lonely listener in front of the radio

Here, invisible sounds affirm the existence of a new world of experience, way beyond manipulative mass media: stimulation to renew the listening experience, the use of which, every "lonely listener" is solely responsible for.

c
Reporter's voice Interruption Announcement Announcement:
calm.....faster Interruption-Information piano piece
+ scream
Announcement

Orson Welles, The War of the Worlds (CBS, 1938): Interruption of a news-report (1'16")
(Loudness notation / Waveform representation)
Siren tone, Hooting signal
+ Scream

Orson Welles, The War of the Worlds: Interruption of a news-report, beginning (0'26"):
(Pitch notation/Spectrogram)

Georg Katzer: Mein 1989 (Beginning)

1. Metallic hammering "Mauerspechte"
2. *Die Mauer* Erich Honecker
3. Metallic hammering + shouting crouds "Mauerspechte"
4. *So viel sei aber jetzt schon gesagt:* continuation of Honecker's speech
5. Blubbering Noises
6. *(Die Mauer)* stuttering
7. *Sie wird in fünfzig* normal
und auch in hundert Jahren
noch bestehen bleiben
8. *(bleiben ...)/ wenn die...* echos
9. + crowing
4. Metal hammering (*4 accelerando)

Georg Katzer : Aide-Mémoire

1. Signal : Destruction Noise (Cracking, Splitting)
2. Male Song with sharply accentuated accompaniment from military band: Volk ans Gewehr..." (People, to your weapons...)
3. Adolf Hitler at the Reichstag Parliament (1.9.39): "Seit 5 Uhr 45 wird jetzt zurückgeschossen." (Since 5.45 am, we have been shooting back)
4. Applause and cheer (from members of the Reichstag Parliament).

Christian Zanesi : Grand Bruit (Initial sample: Metro sound)

Christian Zanesi : Grand Bruit (composition: transformation of a long metro sample)

Savouret: Don Quijote

Initial sample:	Transformation:		
Don	3 complex sounds	3 groups with	combination
Qui-		syllable permutation	(complex
Jote			groups)

Welles End
Siren, Hooting signal

2X2L	2X2l	isn't there anybody (on the air)?

Orson Welles, The War of the Worlds, Ending

Christian Zanesi: Arkheion (The Voice of Pierre Schaeffer)

Pierre Schaeffer's voice(1).....	Pierre Schaefer's voice (2)
halting	soft, melancholy
the lonely speaker in the studio-	separation of humans
the lonely listener in front of the radio	

1st sentence	2nd sentence	3rd sentence	Laughing
(unclear)	Mary had a little lamb	(unclear)	ha - ha - ha - ha -

Bernard Parmegiani: Bidule en Re (beginning)

Hodeir: Jazz et Jazz
Extract: Frequencies above 300 Hz.
Melody a): (upward) Motive technically manipulated
Melody b): answering motive (downward), instrumental (Piano)

Radio reportage, 30.01.1933

Radio announcer		German national anthem	fade-out
Chancellor's office	introduction of...	anthem (heard from outside)	