



Theoretical Framework

The Contemporary Urban Condition

Electronic media has enveloped the world, connecting anybody, anywhere, anytime. It has fundamentally changed the way in which information, both public and private, is sent and received, and has thus restructured the relationship between physical place and social place, and the way social space is inhabited. As a result, the physical structures that divided society into many distinct *spatial* settings have been reduced in social significance (Meyrowitz, J. 1985:vii). The resultant homogenized places and experiences have become common denominators that link all of society regardless of status (Meyrowitz, J. 1985:viii) – “wherever one is now - at home, at work, or in a car – one may be in touch and tuned-in” (Meyrowitz, J. 1985:308). The planning of Modern cities has also contributed to the downfall of true public space, being predicated on “the erosion of public space and the proliferation of spectacular media” (Fernandez, M. 2007:80). Socially oriented activities have been shunned in favour of places of commerce and production; in essence the mall and the factory have replaced the public square. People no longer *participate* in public space; they are merely *customers* in it and thus shirk many of the responsibilities necessary to maintain *place* on a variety of physical and metaphysical levels (Atelier Bow-Wow in White 2009).



▲ Fig. 5-7
The changing social place of architecture: Ancient Roman Agora, Athens, Greece; Menlyn Park Shopping Centre, Pretoria, South Africa; Wireless Internet Access, Anywhere, Anytime.

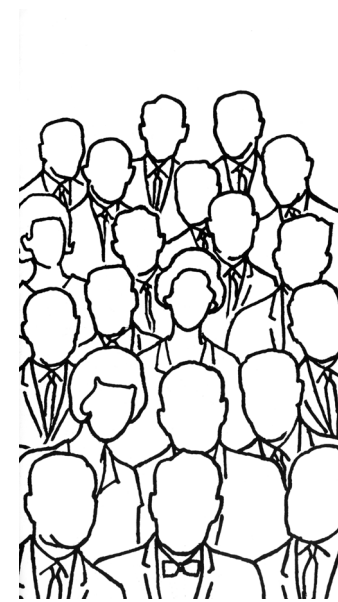
The conception of ‘social place’ thus needs to be rethought, and indeed has been in recent times: social networking sites, mobile phone networks and minibus taxis are all examples of how other systems and networks are replacing the social role of architecture. They are a collection of *fast-architectures* that provide the platform for micro-architectural scenarios; they are able to respond to the desires and needs of the user almost instantaneously and on an individual scale.

Architecture, in its traditional sense of enclosing and demarcating a certain programme, finds itself in a difficult and

▲ Fig. 4 (previous page)
Shouting child

Definition: Fast-Architecture

Fast-Architectures are any of a number of systems that play a significant role in the way in which people assert their positions within society and interface with each other. Usually device and technology driven. Examples include: twitter, facebook, internet, mobile phone networks, public transport infrastructure. These systems now provide the frame for society that up until recently has been provided by architecture.



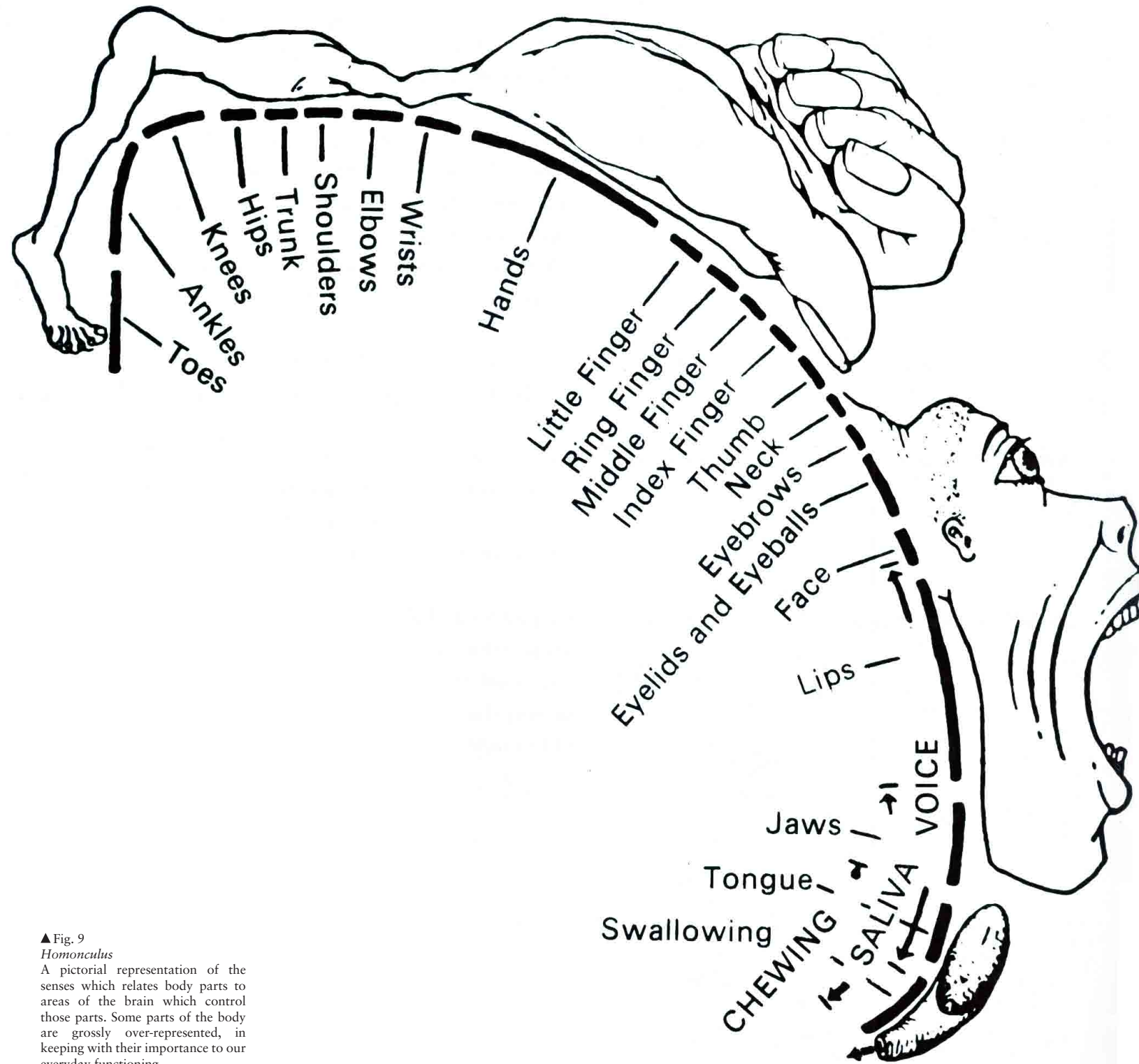
▲ Fig. 8
*Blasé individuals
 The Blasé Individual*

In 1903 the German sociologist Georg Simmel developed the notion of the blasé individual, whose nerve endings, bombarded by the continual simulation of modern metropolitan existence, had become so frayed that they had learned to renounce all forms of response (Neil Leach in *This is not Architecture* 2002:231). To become blasé was a product of – and a defence against – the pace of the modern city, its intoxicating impulses and kaleidoscopic sensations. In today’s narcissistic, aestheticised, and anaestheticised world, Simmel’s concepts persist; we have become both introverted and self-absorbed, locked in the interior world of our computer screens, divorced from our immediate surroundings, a group of lonely individuals – both distracted and immersed.

unfamiliar position. Having traditionally held the esteemed position of providing the theatre for human interaction and being the physical manifestation of a prevalent paradigm, it has now become awkward and, in a sense, a hindrance to connectivity. It has been left behind by a new world view constructed from concepts such as relativity and quantum mechanics. It no longer holds the memories of a people within its walls; it no longer communicates the embodied knowledge of a time. In an era of immediacy and connectivity, of instant dialogue and communication, architecture has even become a hindrance (Bouman, O. 2005:15).

Connectivity and Communication

The idea that one is continuously ‘in touch’, that connectivity is now instantaneous, has changed the way that one not only relates to space, but also to time; as Bouman (2005:14) states: “whereas time was once considered to be the fourth dimension, it is now the first. In understanding our place in the world, it has been increasingly important to answer the question of ‘when’ rather than the question of ‘where’”. Through connectivity people assert their social relations (Bouman, O. 2005:15). Although these moments of connectivity still require a space in which to occur, the nature of this space is no longer conceived as a physical one. In fact, machines and devices have all but replaced physical, social space as this means of synchronisation. These machines though have enabled people, through their ability to interface in a variety of ways, to connect to each other in an asynchronous way, no longer being compelled to the adjacency and synchronicity imperative of human interaction, connecting just as they decide, using asynchronous interfaces (Bouman, O. 2005:16). If human behaviour and interaction is no longer framed by place, but is a matter of making strategic decisions and experiencing moments at remote and asynchronously related sites, then architecture loses its character as a consistent and integrated form of cultural communication (Bouman, O. 2005:21). At this point, it is not just the meaning of architecture that becomes arbitrary, but its function of shelter, occupation, enclosure and material consistency (Bouman, O. 2005:16). The increasing arbitrariness of architecture, the very fabric of the city, has seen it removed from society’s consciousness. This has resulted in a society of ‘blasé individuals’ that are unaffected by, and detached from, their surroundings.



▲ Fig. 9
 Homunculus

A pictorial representation of the senses which relates body parts to areas of the brain which control those parts. Some parts of the body are grossly over-represented, in keeping with their importance to our everyday functioning.

Interactive Spaces

One response to the erosion of architectural effect has been the production of interactive spaces. These are spaces that embody the idea of 'reaching people directly', spaces in which wireless, embedded technologies lie latent. These technologies can no longer be seen or felt, and can also no longer be switched off (Bouman, O. 2005:15). Providing a frame for connectivity between individuals has always been the essence of the social significance of architecture, but this act of connecting no longer requires the interface of bricks and mortar. Yet it is precisely bricks and mortar that forms the fabric of the city and the spaces that we work and play in.

The possibilities of interactivity in architecture should not however be limited to a technological premise, but can be seen as a form of actively engaging the user in the production and understanding of the complex organism that is the city. While technology can form an enabling structure that merges into the fabric of space (as prevails in Europe and North America), it is important to recognise how an interactive architecture, based upon the experience of form and space, can fulfil a socially enabling role within the city. In order for architecture to regain its social significance, it must produce "new forms of poetic experience... that will inspire complicated and unusual pleasures" (Garcia, M. 2007:53).

Sensory Sampling

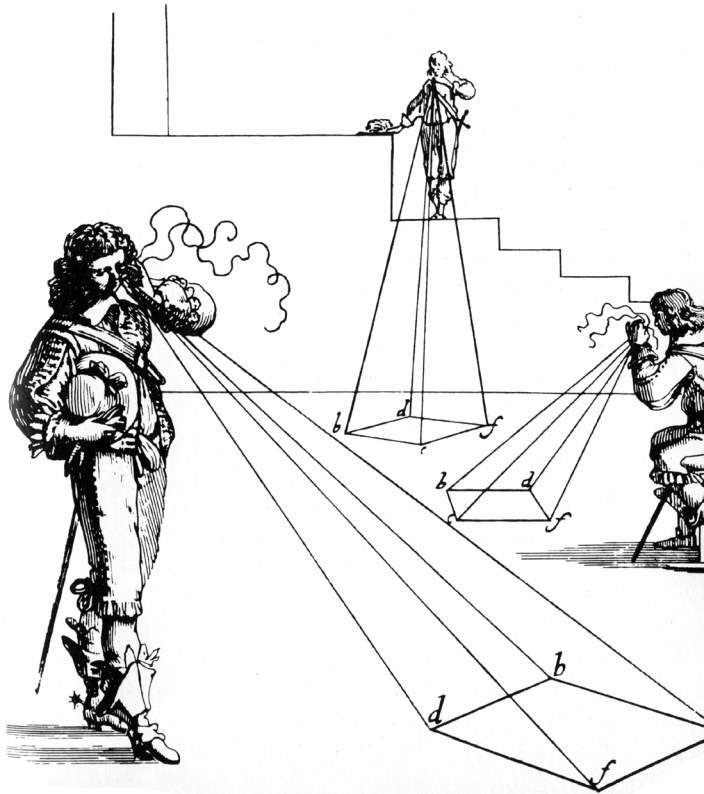
Humans perceive the world while being within the world; it is 'known' through a complex interaction of senses and cognitive perception. Maurice Merleau-Ponty (in Pallasmaa 2000:78) states: "my perception is [therefore] not a sum of visual, tactile, and audible givens: I perceive in a total way with my whole being; I grasp a unique structure of a thing; a unique way of being, which speaks to all my senses at once." Although there are limitations to this perceptive mechanism, they are broken by moving through space and thus engaging in a process of *revealing* the world.

This process of revealing immerses the user in sensory-experiential space, and exposes the world as an open field of spatial opportunity and interpretation that awaits discovery. Objects do not extend themselves *to* the individual; rather, the individual finds them. Understanding the world as *field* differs from understanding it as a simple dialectic relationship between solid and void, a world of binary extremes. In a world of fields, *difference* is a measure of *degree*, rather than *is* or

is-not, and thus opens the world to individual interpretation – and it is this aspect of individuality that is key.

Novak (1996) argues that the ‘real’ world cannot be in its entirety as the senses act “as much [as] shields as bridges” (Novak 1996), isolating the surrounding world from inner cognitive mechanisms that translate raw inputs into meaningful patterns. Whatever continuity perceived in the world is an illusion, constructed through the act of sensory ‘sampling’ (Novak 1996). If meaning and feeling are found during encounters with the world, it is because the “individual finds a piece of himself or herself. The person precedes the perception” (Kahn 2001:27)

Maurice Merleau-Ponty (in Pallasmaa 2000:78) argues that the task of architecture is to make visible ‘how the world touches us’, but in order to do this to its full potential it should make use of the full scope of experience that sensory-experiential space has to offer. Modern consciousness however, has evolved towards the dominance of vision as the critical sense (Pallasmaa 2000:78), something which has affected the everyday understanding of the world by creating ‘visionary beings’ (Levin in Pallasmaa 2000:78).

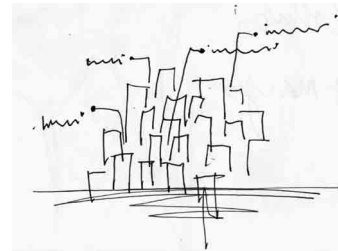


A World of Stories

Stories explain our worlds to us and to others; they give form and understanding to the transience of experience. Without these stories, ‘reality’ would be largely unintelligible. Roland Barthes (1977:79) points out that:

“...[t]he narratives of the world are numberless... [a]ble to be carried by articulated language, spoken or written, fixed or moving images, gestures, and the ordered mixture of all of these substances.”

Using architectural narratives to form the basis of intervention allows people to relate to the intervention more personally and dissolves the barrier between the profession of architecture and the actual experience of the city.



▲ Fig. 10
A World of Stories

◀ Fig. 11
Renaissance perspective tools



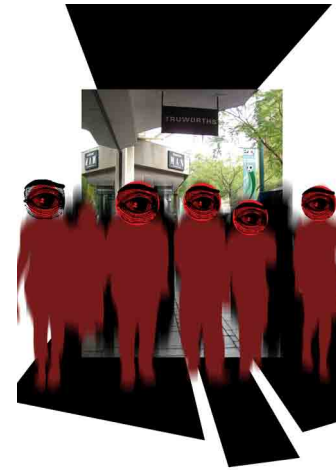
Visual Hierarchy

The dominance of the visual may be attributed to the physiology of the eye as a sensory device. The eye creates space where there can only be one thing at a time. Light focused on the back of the eye ensures that two objects will not, and cannot, occupy the same place at the same time. This has contributed to the linear, sequential, and logical Western scientific models that dominated thinking in the past (McLuhan and Powers 1989:38). These linear models also created the phonetic alphabet and writing, the sequential ‘sentence’ as the critical conceptual device. The mind, conditioned from an early age, teaches the eye to see an object ‘right side up’, on a plane and in perspective space.

Responding to the world through sight differs markedly from the other senses; seeing is objective, it places the viewer outside the world, looking in. According to Yi Fu Tuan (in Mavash 2007:58) “...seeing does not involve the emotions deeply... the world perceived through the eyes is more abstract than that known to the senses”. The dominance of the visual over the other sensory realms has turned architecture into an art form of “instant visual image... project[ing] retinal images for the purpose of immediate persuasion” (Pallasmaa 2000:78); a shallow architecture that does not engage the user in the scene.

The electric revolution of the 20th Century however moved man into an era of simultaneous information, an era in which reason is no longer uniform, connected and stable – the *field* condition spoken of previously. The new structures of reality are simultaneous, discontinuous, and dynamic, existing in a world that is essentially a unified field of instant relationships (McLuhan, M. 1964:275). Today action and reaction occur almost at the same time. From an era of ‘either-or’; of setting priorities; of making past and future distinctions, to an era of ‘both-and’; of events having the quality of equal time – a mentality of ‘multitude’, of simultaneity, of constant flux. In the arts, the response was the advent of Cubism: presenting the inside, outside, top, bottom, back, front etc in two dimensions; the illusion of perspective is removed in favour of instant sensory awareness of the whole (McLuhan 1964:13). To get a ‘truer’ sense of the world, one must be within it, immersed in it and cognisant of its effects.

McLuhan terms this new type of space ‘acoustic space’: “In the same way that the sense of hearing apprehends details from all directions at once, within a 360-degree sphere, as



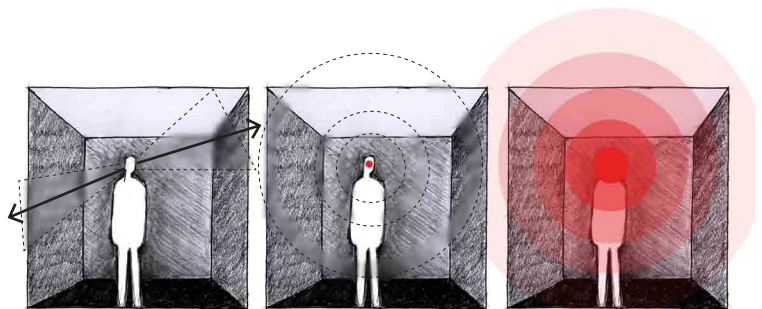
▲ Fig. 12
A Crowd of Individual(s)



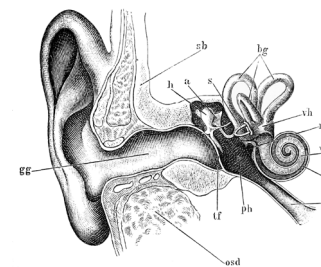
Open Fields of Spatial Opportunity
According to Henri Lefebvre space making can be understood as an expression of society's collective mind and the social interaction of the everyday. Thus space is a realm of possibility in which spatial ability is defined as the capacity to present knowledge about space and to organise spatial information. This open field mentality closely corresponds to an African conception of space in which the whole is favoured over the piece. This open field raises questions of how to intervene in such a condition - requiring dispersed nodes of experience and interaction placed freely within it.

it were, in a manner similar to a magnetic or electrical field; so knowing itself is being recast and retrieved in acoustic form” (McLuhan, M. & Powers, B.R. 1989:13). His analogy harks back to our initial forms of oral communication, but can be expanded to form a three-fold analogy between electromagnetic field, data or information fields, and acoustic fields to create the space that is experienced in the everyday of ‘now’.

Thus the sense of hearing can be defined as the first ‘open’ field, and the sense that best responds to the contemporary condition, and an African understanding of space. It is through probing sound that the architectural spaces of the city can be reactivated in the imaginations of the user.



► Fig. 13
Sense of sight vs. sense of hearing
Whilst sight relies on our looking and directly perceiving an object, sounds surround us entirely and can be detected from any direction.



▲ Fig. 14
Anatomy of the Ear
The sense of hearing relies on the ability to perceive sound by detecting minute vibrations in the air. These vibrations are the result of pressure changes caused by soundwaves and their size depends on the frequency of the sound. In humans these vibrations are detected by the ear and translated into neural impulses that are perceived by the brain.

Sound: A New Primacy

There is little certainty as to when man first became consciously aware of the significance of sound and the possibilities for its manipulation other than for purely practical purposes. The cupping of the hand behind the ear is a gesture old enough to have become instinctive (Gibbs, 2007:20). It is the first attempt, along with the placing of the hands in front of the mouth to aid projection, to deliberately influence the sounds that are made and heard (*ibid*). The first musical instruments begin to appear around the time of the last ice age, and it becomes clear that people made use of the acoustic properties of particular spaces and places. Cave paintings, for example, are often found in locations with distinctive acoustic qualities (Devereaux in Gibbs 2007:21), suggesting an early for of multimedia event.

Stronger evidence of deliberate acoustic design occurs in Ancient Greece: control of acoustics in open air theatres through use of stage doors as sonic reflectors was augmented through the use of masks which contained horn-like structures

◀ Fig. 15
2nd Century AD Roman Theatre, Bosra, Syria

or resonating cavities to reinforce and project the voice (Gibbs 2007:20). By the time of the theatres designed by Marcus Vitruvius Pollo in the first century BCE the “...theatre could be played by the actors as if it were a musical instrument” (Smith in Gibbs 2007:21).

Sound became then a property of architecture that was to be manipulated according to the functional parameters of the building. Architectural space modifies sound through reflection, absorption, refraction and diffraction; it plays with sound in the same way it plays with light: “Listen! Interiors are like large instruments, collecting sound, amplifying it, transmitting it elsewhere” (Zumthor in Mueke and Zach, 2007:260).

Sound thus forms a critical aspect in our relationship with, and experience of, architectural space. As Jacques Lusseyran (in McLuhan, M. & Powers, B.R. 1989:36), who was accidentally blinded, points out:

“Sounds had the same individuality as light. They were neither inside nor outside, but were passing through me. They gave me my bearings in space and put me in touch with things. It was not like signals that they functioned but like replies...but most surprising of all was the discovery that sounds never came from one point in space and never retreated into themselves. There was the sound, its echo, and another sound into which the first sound melted and to which it had given birth, altogether an endless procession of sounds...”

It is the overlapping qualities of sound and architecture that merit investigation: they are immersive – their power, as Paul Valéry states (in Sterken 2007:22), comes from their capacity to surround man entirely, to deal with space in a way visual arts cannot. Walter Ong (in Mueke and Zach 2007:252) asserts that, whereas sight isolates and dissects, sound incorporates and unifies:

“[S]ight situates the observer outside what he views, at a distance sound pours into the hearer. Vision dissects... When I hear, however, I gather sound simultaneously from every direction at once: I am the centre of my auditory world, which envelopes me, establishing me at a kind of core sensation and existence” (*ibid*).

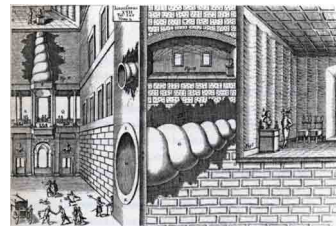
R. Murray Schafer, a prominent sound artist of the 20th Century, made a number of critical observations about the sonic



▲ Fig. 16-17
Ancient Greek Theatre Masks

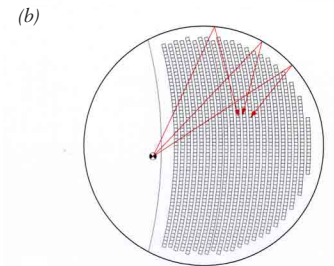
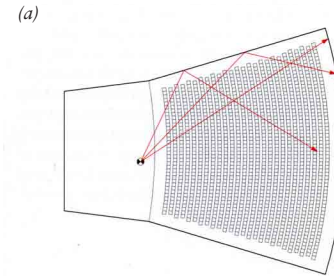
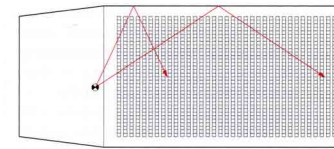


▲ Fig. 18
Technique with which to make a statue appear to speak (Rome, 1650)



▲ Fig. 19
An installation of listening horns used to overhear servants and guests (Rome, 1673)

The above images illustrate the interest people have had with manipulating their sonic environment since a very early time



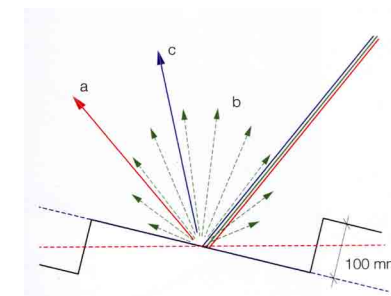
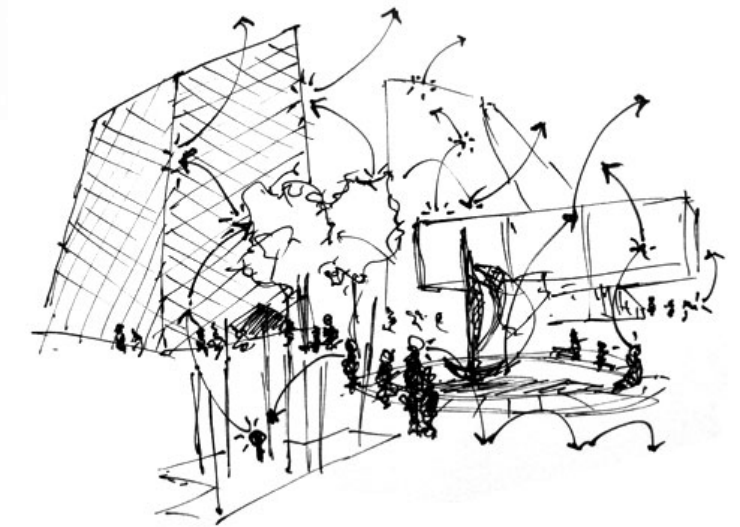
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▲ Fig. 20
How the plan shape of a room affects the early reflections from the side walls; (a) Narrow, rectangular rooms send reflections from the side walls to the seats, (b) If the room widens toward the rear, the sound is reflected to the rear of the room, (c) Concave plan shapes focus the soundwaves which usually leads to disturbing concentrations of sound.

► Fig. 21
Indiscreet Music
Architecture directly influences the sonic environment through its forms and materials

► Fig. 22
Reflection of soundwaves on a surface
Soundwaves are reflected in various directions from structured surfaces; (a) Low frequencies ignore the structure if the wavelength is large compared to the dimensions of the structure; the sound energy is reflected geometrically with respect to the dotted red line, (b) Medium frequencies are scattered more or less evenly in different directions, (c) High frequencies are reflected geometrically from the individual surfaces (dotted blue line) because in this example the dimensions of the structure are large compared to the wavelengths.

environment. He argues for a primacy of sound over light, as sound touches us more than sight and is able to excite us more than visual imagery (Yi-Fu Tuan in Mavash 2007:59). He also points out that “[b]iologically we are not capable of closing our ears” (in Mavash 2007:59), we have no ‘earlids’, and are thus constantly exposed to a tumultuous multitude of sound and voice – silence does not exist, “even in absolute silence, as we think, we speak voicelessly to ourselves” (Murray Schafer in Mavash 2007:59). It is only through a complex process of psychological filtering of the desirable and the undesirable, the inside and outside, that the ear has any protection at all (Schaefer 1995), and it is precisely this process that has desensitised the sense of hearing. The experience of space is greatly extended by hearing, soaking up information from all angles beyond the visual field. As auditory space extends beyond walls and around corners, it becomes necessary to increase the awareness of the surrounding sonic environment, the soundscape of the city.





Soundscape and Place

The soundscape of a given place is a unique and rich data bank of history, culture, and nature. It informs the referential and imaginary – a taxonomy of sounds used to inform a taxonomy of new types of spaces. It can be considered as a composition in which the user is the audience, composer and performer (Murray Schafer in Mavash 2007:65). It is important to note then that it is a constantly evolving piece that responds to the context of time and of place. It has varied, and will continue to vary, according to any number of contributing factors, but perhaps the most important of which were the two revolutions: the Industrial and the Electric.

The Industrial Revolution injected an entirely different soundscape into the ears of the city's inhabitants: machines of all scales and varieties that had a particular acoustic quality. Around this time, the Futurists, headed by Filippo Marinetti and Luigi Russolo, began taking note of the sounds that their new environments were creating. Russolo, in his *Art of Noises Manifesto* of 1913, describes the importance and frequency that noise has come to have in the city.

Today there exists an almost entirely different set of sounds from the time of Russolo. While the sounds of heavy industry have slowly migrated out of the city centres, the loss has been more than compensated for by the eternal grumble of the internal combustion engine, the general cacophony of the office environment in the digital age, and the persistence of monetary exchange. One of the biggest changes to the soundscape of the contemporary city however has been the advent of digital devices. These devices, whilst streamlining the user interface of connectivity, use sound to presence themselves in the environment. Mobile phones, PDAs, printers and fax machines all emit sound as a way of registering and informing the user of their inputs.

Mini-Precedent: I am Sitting in a Room – Alvin Lucier

I am Sitting in a Room (1969) features Lucier recording himself whilst narrating a text, then playing the recording back into the room and re-recording it. The new recording is then played back and re-recorded. This process is repeated, until the resonant frequencies and harmonies of the room itself replace the words of the text. The process highlights the individual sonic qualities of the space it is performed in and thus results in a different work each time.

Definition: Soundscape

A soundscape is the audible characteristics of a place or environment. The term is attributed to R. Murray Schafer, a Canadian born artist who in the 1960s documented the soundscape of his native Vancouver (Gibbs, 2007:28).

World Soundscape Project

The World Soundscape Project was established in the 1960s by R. Murray Schafer. The project grew from Schafer's attempts to draw attention to the sonic environment and the way in which it was being degraded through various methods of noise pollution. The groups' first project documented the soundscape of Vancouver, before moving in to complete many other recordings in North America and Europe.



► Fig. 23
Oral Communication in African cultures
The power of story telling to relate events is a tradition that continues today and is arguably more powerful than the written word in conveying meaning

Personal Soundscapes

The effect of mobile phones on the soundscape of the city is not just additive as described above, but in their use have changed the very nature of the way in which sound is experienced. The mobile-phone-person is one of the most common sights and sounds of the contemporary city, flouting public space and stepping over the threshold of exhibition (Baudrillard, 2003:81). Mobile phones and MP3 players change ones focus from the external to the internal. Through these devices one is able to customize one's own personal soundscape, creating a soundtrack to life that is alien to its surroundings. The ghetto blaster in the 80s produced a similar effect – changing the immediate soundscape according to the desires of its users. All of these technologies owe their existence to the invention of phonography in the late 19th Century – an act that begun the separation of sound from space.



The Art of Noises

“Every manifestation of our life is accompanied by noise. The noise, therefore, is familiar to our ear, and has the power to conjure up life itself. Sound, alien to our life, always musical and a thing unto itself, an occasional but unnecessary element, has become to our ears what an overfamiliar face is to our eyes.

Noise, however, reaching us in a confused and irregular way from the irregular confusion of our life, never entirely reveals itself to us, and keeps innumerable surprises in reserve. We are therefore certain that by selecting, coordinating and dominating all noises will enrich men with a new and unexpected sensual pleasure.”

Luigi Russolo, The Art of Noises Manifesto, 1913 (in Gibbs, 2007:22)



▲ Fig. 24
Headwork in the Garden
An early wireless device for receiving radio transmissions

◀ Fig. 25
Beethoven's Trumpet



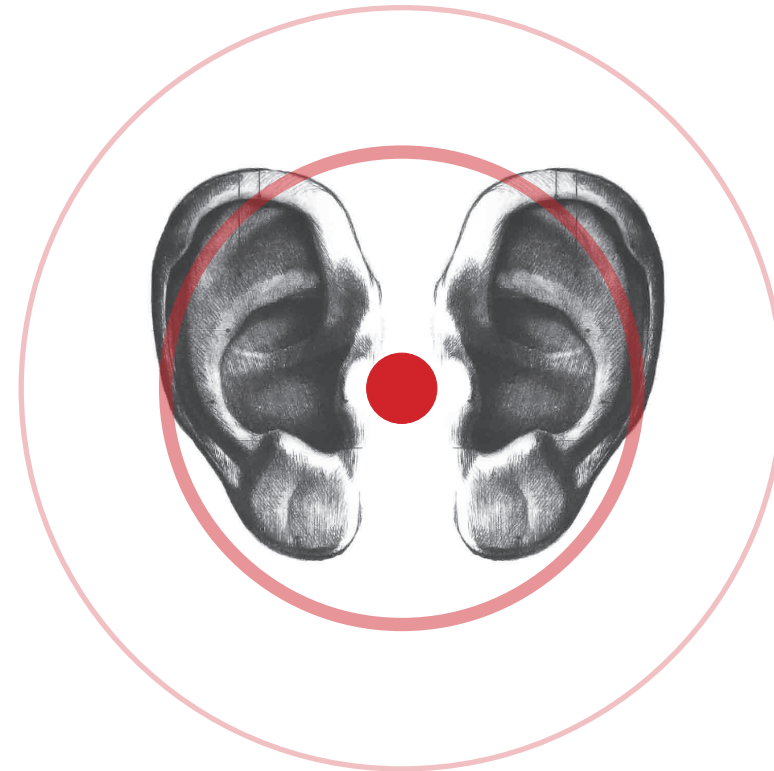
Conclusion: The Listening System

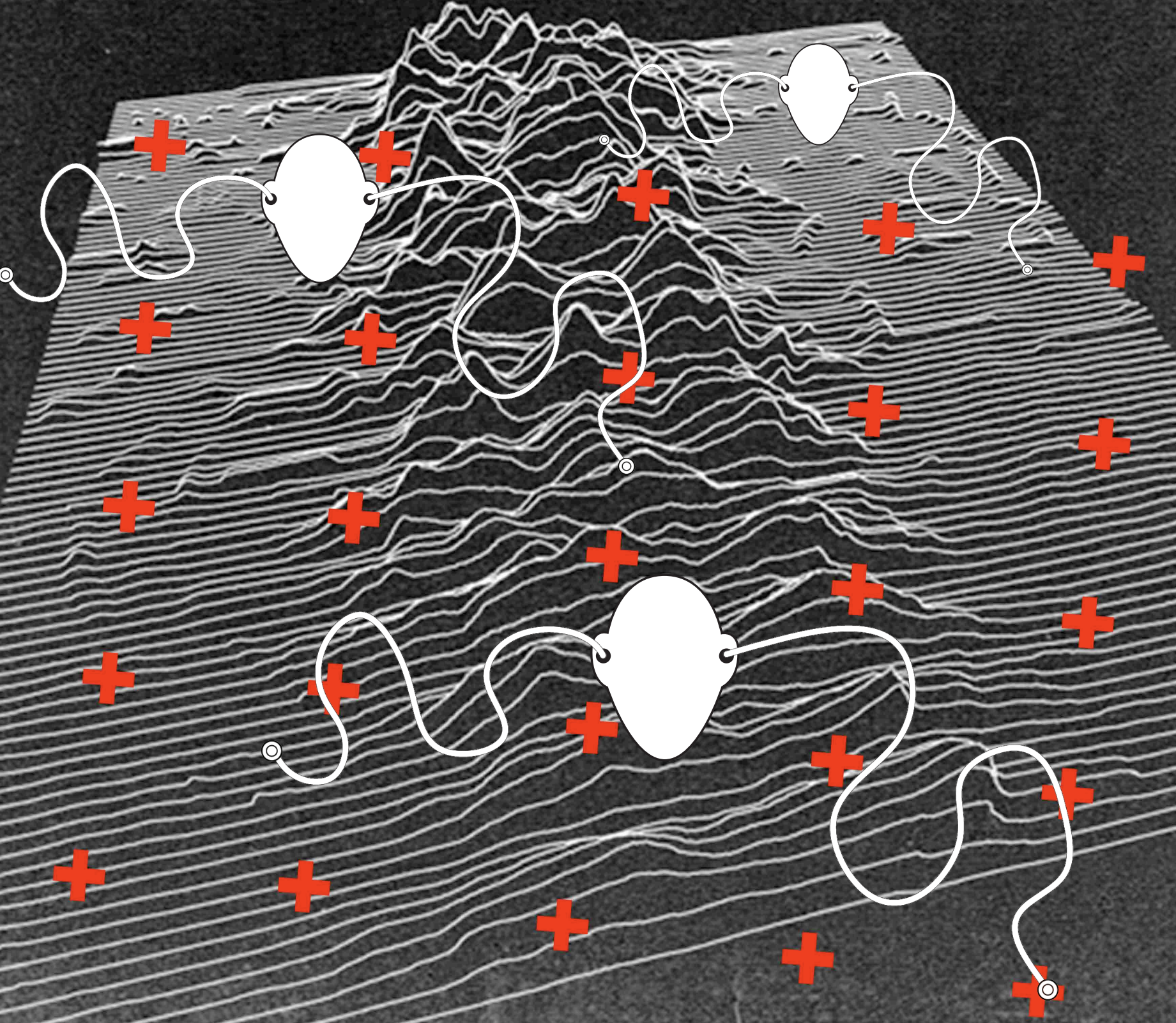
Despite the changes in sonic content of the city and despite the advent of devices that allow the direct manipulation of the city's sonic content on a personal level, the role of the listening system as remained much the same. The act of hearing, orientation and identification using a complex system of muscles and cognitive processes places oneself in *a* context – be it artificial or real. The role of architecture though must be to spatialize this placing, to encourage real and lived experience.

Three critical terms have been drawn from the theoretical argument outlined above. These terms have played a significant role in generating the solutions proposed in this thesis. They are:

- Resonance
- Spatilization
- Multiplicity

The three terms combine to inform the urban framework, context analysis, and design proposal.

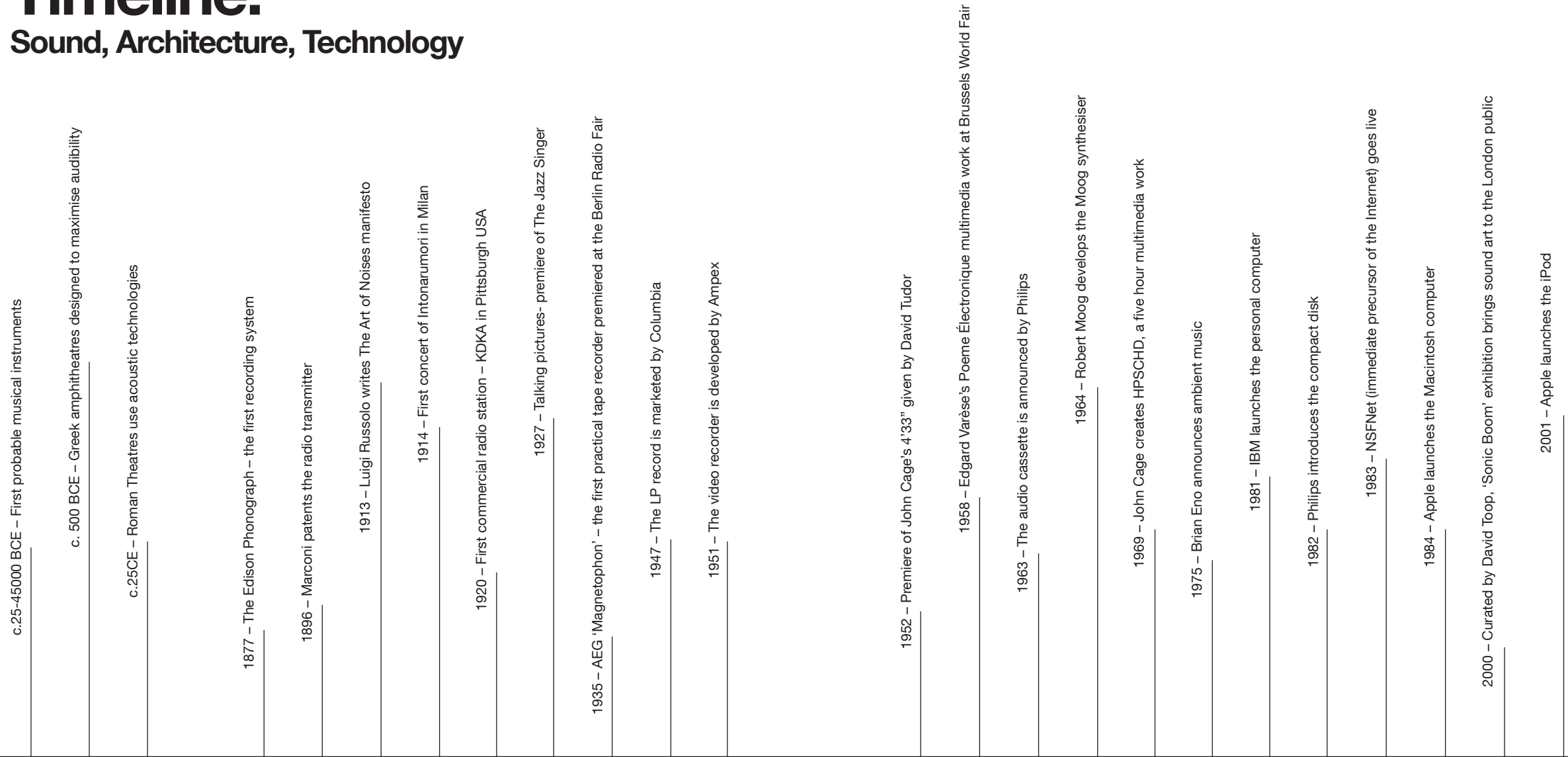




◀ Fig. 27
CitySoundScape
Each user of the city will experience the
soundscape differently depending on
their own background



Timeline: Sound, Architecture, Technology



▲ Fig. 29-39
Images of various developments in the relationship between sound, architecture, and technology

