

If I Forget Thee: The Sonorities of Jerusalem Soundscapes

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Abstract: This article focuses on an analysis of the peculiarities of the Jerusalem sonic panorama. The flavor of the urban sonorities of Jerusalem soundscapes is a unique one, and it is revealed and discussed here in detail. Jerusalem's historical heritage and the diversity of its soundmarked locations are of great significance and influence the city's sonic image. Significantly, the unique sonorities belonging to Jewish, Muslim, and Christian religious communities' lives, emanating from various sources in Jerusalem, have a great impact. Their quantity and physical proximity, in combination with the specificity of the landscape, create a unique interaction in the audible space, which includes various sonic phenomena that are unique to Jerusalem. The changes in the Jerusalem soundscape during the coronavirus pandemic are also discussed.

Keywords: Jerusalem soundscapes, Jewish synagogue, church bells, muezzin, urban sonic identity, sonor, soundmark, urban aleatorism, urban sonic polyphony, urban aleatorism, heterophony, siren sonority, coronavirus pandemic.

Introduction

Composer's view

As a composer who grew up in Jerusalem, I have been exposed to the city's unique cultural–historical and sonic realities for many years. I have lived in Jerusalem for more than forty years, and feel profoundly and spiritually attached to the city. Since childhood, I have listened to Jerusalem during the day, at night, and at dawn, absorbing the sonorities of Jerusalem *soundscapes*. My identity as a composer has been much influenced and shaped by the sonic identity of the city. For many years, I have borne the idea that I am firstly a Jerusalem composer, and only after that am I an Israeli composer.

My love and personal affection for Jerusalem is expressed in a series of pieces dedicated to the city, in which I relate to various events and venues in Jerusalem, and dedicate my music to it.¹ The series was named *Jerusalem Soundscapes* years before I understood the real meaning of this name.² Now, after many years of contemplation, searching, and thinking, I would like to share my ideas about the features of the Jerusalem soundscapes and about *urban soundscapes* in general.

¹ The CD of my chamber and symphonic pieces called *Jerusalem Soundscapes*, among which are pieces dedicated to Jerusalem, was produced in 2005 with the support of the Israeli Composers' League, the Ministry of Culture, and the Israel Broadcasting Authority.

² The name *Jerusalem Soundscapes* for my CD was kindly proposed by Dr. Assaf Shelleg, of the Musicology Department at the Hebrew University of Jerusalem. Accessed 15 April 2020. <https://en.musicology.huji.ac.il/people/assaf-shelleg>

On the terminology of sonic phenomena

Some special terms will be used to describe the various sonic phenomena of the city. Some of these are terms that already exist—familiar as concepts used to analyze various urban sonic phenomena, but which can still be understood in different ways; others I created specifically for the topic under discussion.³ I am aware that many of the terms and concepts I use may cause disagreement or argument. However, my goal was to create an analytical model, primarily from the point of view of the composer, and only then from a cultural, urbanistic, or any other point of view. This interdisciplinary theory addresses music theory, contemporary music composition, cultural anthropology, and urban studies. The terms used in the article, both existing and those introduced specifically for the studied sonic phenomena, are explained in Appendix I.

About Jerusalem

“If I Forget Thee, O Jerusalem, Let my right hand forget her cunning. Let my tongue cleave to the roof of my mouth, if I remember thee not; if I set not Jerusalem above my chiefest joy.”⁴ Indeed, if you visit Jerusalem, you will love it, and you will never forget it! One cannot forget the Jerusalem Mountains, its hills and valleys with wonderful views; visits to the Old City with its unique spiritual and historical atmosphere; the bright sun and the golden color of the buildings lined with Jerusalem stone; and of course one cannot forget its unique *sonoric panorama*. This is the Jerusalem of Gold, Holiness, and Ethereal Sonorities!

Even though Jerusalem is not a large city, neither in physical parameters nor in population, it is the place where major historical events took place and it has become of cardinal significance for humanity. According to history, the ancient Jewish prophets prophesied in this land, here Jesus Christ preached and was crucified, from here the prophet Muhammad ascended to heaven. Here stood the Ancient Jewish Temple, the Western Wall of which remains standing to this day, the Church of the Holy Sepulchre, the famous Al-Aqsa Mosque, other holy places, numerous churches, monasteries, synagogues, and mosques. Jerusalem is the world center of the three most significant religions that have influenced the formation and history of humankind. Here one can hear prayers in all languages of the world, and the ancient religious sonorities of sacred and ritual purpose.

In the Old City of Jerusalem and around it, within a relatively small space, there is an enormous concentration of venues with spiritual, cultural, and historical values and artifacts. Jerusalem is home to holy places for the three major religions and is a center of pilgrimage for people from all over the world. Jerusalem is not only the capital of the

³ I will explain my use and the meaning of each term or collocation in this article, which may have different interpretations, and those that I have introduced.

⁴ *Biblehub*: Psalms of David, 137:5–6. New English translation by Jewish Publication Society, 2017. Accessed 14 April 2020. <https://biblehub.com/jps/psalms/137.htm>

State of Israel, but in a certain sense it is the spiritual capital of the World. Numerous works of art, including musical ones, are connected with the city in one way or another, its old and new historical events, and its spiritual essence.

Jerusalem is an international, multiconfessional and *multi-sonoric*⁵ city. The cultural heritage brought to Israel by immigrant communities from all over the world creates a cultural mosaic with complex multicultural and cross-cultural interactions. Besides the division of the three different religions in the area, the cultural heritage embraces the Ashkenazi and Sephardic Jewish traditions;⁶ the Christian Orthodox, Catholic, Protestant, and other Christian Church traditions; and the Muslim tradition, each of which has its own sonic uniqueness and sounds differently.

Jerusalem is a place where Jewish, Christian, and Muslim residents live side by side. The intersection and collision of the three religions in Jerusalem create the highest spiritual tension and a colorful sonic saturation of the Jerusalem Soundscapes.

Jerusalem's Unique Sonors and Soundmarks

In Jerusalem, as in any city around the world today, one can hear many sounds and noises that are of universal origin. But the most prevailing in Jerusalem are the *culturally unique sonors* of religious significance (*religious sonors*), belonging to the three major religions. They are also most noticeable in the acoustic panorama of the city. Among them are: Jewish synagogue prayers, Shabbat siren, which is a *sonor-signal* informing the Jewish population of the time of the beginning of Shabbat;⁷ church prayers and the ringing of church bells, which are sonors of the Christian community announcing various church activities to its members; and Muslim prayers and the muezzin's call to prayer, which is a *sonor* calling the Muslims to prayer five times a day.

The culturally unique religious sonors are heard all over Jerusalem, and emanate from a large number of synagogues, churches, monasteries, and mosques in the city. But, perhaps the most essential location filled with religious sonors is the Old City of Jerusalem, where numerous *soundmarks* coexist within a small physical space. The Old

⁵ That is, of multiple sonorities—K.V.

⁶ Ancestry: "The historic dispersal of the Jewish population from its origin in the Levant on the east coast of the Mediterranean resulted in insular communities scattered throughout Europe, North Africa, Central Asia and the Middle East.... Jewish populations from northern and eastern Europe are often known as "Ashkenazi." "Sephardic" refers to Jews who were expelled from Spain during the Inquisition and who mostly settled in North Africa and southeastern Europe." Accessed 28 April 2020.

<https://www.ancestry.com/dna/ethnicity/european-jewish>

⁷ Since 2006, in some Jewish neighborhoods of Jerusalem, the Shabbat siren was replaced by a Hassidic song as a form of Shabbat announcement. This was because "the brief Friday evening siren, which marks the start of Shabbat each week, has been upsetting many *northerns* taking refuge in Jerusalem from Katyusha rockets as it reminds them of the sirens they heard before rockets fell" [*Jerusalem Post*, "Jerusalem's Shabbat siren goes musical to avoid unnerving northern refugees"]. Accessed 15 April 2020. <https://www.jpost.com/local-israel/in-jerusalem/jerusalems-shabbat-siren-goes-musical-to-avoid-unnerving-northern-refugees>

City is divided into four quarters—Jewish, Christian, Armenian and Muslim—and includes churches, mosques, and synagogues inside the city walls.

Inside the city, there are three main sites that are the main origins of sonors: the Western Wall, the Church of the Holy Sepulchre, and the Al-Aqsa Mosque. Around the Old City of Jerusalem and adjacent to it, there are more *soundmarked locations*. On the east side of the Mount of Olives, next to the Garden of Gethsemane, is the Church of All Nations and the Tomb of Mother Mary; at the foot of the Mount of Olives is the Gethsemane garden with the Russian Orthodox Church of Mary Magdalene. Thus, from all parts of Jerusalem and especially from the Old City, sonors of various soundmarks can often be heard simultaneously.

The Israeli ethnomusicologist Dr. Abigail Wood⁸ describes Jerusalem's Old City's urban soundscapes as a "temporal flow ... dominated by the sounds of religious institutions, which articulate parallel, repeating cycles of time."⁹ She details the soundscape of the Old City as follows:

The five daily Muslim calls to prayer, the siren announcing the Jewish Sabbath, and the cycles of Muslim and Jewish festivals—the *Hid takbir* (festival prayer) echoing through the streets on Muslim holidays, the cannon announcing the end of the Ramadan fast, the *shofar* (ram's horn) marking the approach to the Jewish high holidays—follow the rising and setting of the sun and the lunar calendar, contrasting with the secular 24-hour clock. Even the church bells, based on clock time, expose competing structures of time, articulating the different patterns of prayer observed by the dozens of Christian denominations based at the shrines in Jerusalem.¹⁰

Designer Roni Levit prepared an interesting visual mapping of Jerusalem soundmarks and the interaction of various sonors: the so-called "Jerusalem Sound Map; Capital City—Sound Segmentation," to the words of the author shows "religious and municipal sounds, a cacophony of co-existence."¹¹ It is a graphic and colorful presentation that illustrates the various soundmarks in the city and the mutual superimposition of the sonorities produced by them.

The soundmarks and sonors generated by natural phenomena (like rain, birdsong, etc.), and the ones that are the result of human activity (like singing, praying, etc.), can be sustainable or mobile depending on multiple factors and circumstances. However, a soundmark of cultural–historical, religious, and social significance is usually sustainable and permanently attached to a particular location after it has been established. The

⁸ Dr. Abigail Wood is a researcher and ethnomusicologist at the Department of Music, University of Haifa. Accessed 29 April 2020. <https://www.jewish-music.huji.ac.il/content/abigail-wood>

⁹ Abigail Wood, "Urban Soundscapes: Hearing and Seeing Jerusalem." In *The Routledge Companion to Music and Visual Culture*, ed. Tim Shephard & Anne Leonard (New York, UK: Routledge, 2014), p. 289.

¹⁰ Ibid.

¹¹ Roni Levit, *The Jerusalem Sound Map*. Accessed 30 April 2020.

<https://visual.ly/community/Infographics/politics/jerusalem-sound-map>

renowned Canadian composer, writer, and environmentalist R. Murray Schafer,¹² the founder of soundscape theory, has indicated that “The unique soundmark deserves to make history as surely as a Beethoven symphony. Its memory cannot be erased by months or years. Some soundmarks are monolithic, inscribing their signatures over the whole community. Such are famous church or clock bells, horns or whistles.”¹³

History shows that many important soundmarks of religious communities are firmly anchored in certain locations. Examples in the Old City of Jerusalem include the Western Wall, the Church of the Holy Sepulchre, Al-Aqsa Mosque, and many others. Outside the walls of the city, there are numerous churches, monasteries, synagogues, and mosques emanating their sonors that have been sustainable soundmarks for centuries. In Jewish Western Jerusalem is the Great Synagogue and others.

Jerusalem Landscape and Soundscape: The Audibility Level

In Jerusalem, the influence of the landscape on the soundscape is significant. The *audibility level* is very high due to the physical properties of the landscape, which consists mostly of mountains, hills, and valleys. Standing on a hill in one part of Jerusalem, one can easily hear sounds and noises coming from a few kilometers away, especially from another hill or mountain. It is difficult to find a quiet place in the city, as sounds and noises reach a variety of locations. The landscape is such that even a very distant sound or noise may echo. The ease with which one can hear various types of *sonic events* at relatively large distances affects the urban sonic panorama and its perception.

Due to the high audibility level in the Jerusalem landscape, the religious sonors that emanate from the soundmarked sources become a major *sonoric event* in some locations, and a distinct part of its soundscape.

The Gilo neighborhood,¹⁴ where I have lived for many years, is located on Mount Gilo. The Arab Muslim village of Beit Safafa is located in the valley below. Every morning at dawn and sometimes in the evening, I hear the prayers of the muezzin from Beit Safafa,¹⁵ the distant sound of church bells from the Russian Orthodox Church of the

¹² EMDoku. *Schafer Raymond Murray*. International Documentation of Electroacoustic Music. Accessed 8 May 2020. <https://emdoku.de/en/artist/schafer-r.-murray>
Stephen J. Adams, “Schafer, R(aymond) Murray.” *Grove Music Online*, 2001. Oxford University Press. Accessed 8 May 2020.

<https://www.oxfordmusiconline.com/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-0000024738>

¹³ R. Murray Schafer. *Our Sonic Environment and the Soundscape: The Tuning of the World* (Destiny Books, 1994), p. 239.

¹⁴ Eiferman Properties Ltd.: Gilo is a large neighborhood in southwestern Jerusalem with many sections, housing over 45,000 residents. Established in 1971, after the Six-Day War, it was first known for its population of young couples and new immigrants. Accessed 17 April 2020. <http://www.eifermanrealty.com/ShowNb.aspx?id=29>

¹⁵ Beit Safafa is an Arab town near Gilo in southwestern Jerusalem.

Ascension and the Church of Mary Magdalene on the Mount of Olives, which at times are mixed with the sound of praying from the synagogues in the neighborhood itself.

The muezzin's chanting from a mosque in Beit Safafa is the most acoustically and emphatically prominent sonic event in the area. Even now, at night, when I was writing this article, the muezzin suddenly began to sing, reminding me that I had been sitting until the morning.

The Flavor of Jerusalem Sonorities

Various soundmarked locations in Jerusalem often emanate their sonors simultaneously. The physical proximity of sound sources in the city and the unique landscape lead to acoustical superimposition and collision of the sonors. Their combinations often create a unique timbral mixture—a high-voltage, spontaneous sonoric polylogue between diverse and partially antagonistic representatives of the Jewish, Christian, and Muslim entities. Thus, in the Old City, one can hear simultaneously from its different quarters, a muezzin call, church bells, a pilgrim's singing, and Jewish prayer, at times including *shofar* blowing.¹⁶

Random urban sonoric polyphony in Jerusalem is one of the main features of its soundscape. The interweaving of various religious and municipal sonors, which are usually of a siren type, creates dense sonoric textures, characterized by constant random collisions and combinations of sounds. It can be said that “the mixing of sounds emanating from visually and topographically distinct sources textures the experience of time. Sometimes, sounds cohabit in frayed proximity. At other times, the temporality conveyed in sounds is shared.”¹⁷

The perception of sonoric lines can be distinct for each subject. However, it is clear that if the listener were to be exposed to the simultaneous sounding of such sonors as the *shofar* blowing, church bells, and the muezzin's call to prayer, it might be perceived as a structured event—a polylogue between different religious sonors. In such a case, this undeliberate counterpoint becomes random urban sonoric polyphony. Therefore, these sonors, perceived as being prevailing sonorities in the overall panorama, would probably become main sonoric events at the foreground of a soundscape.

Heterophony in Jerusalem becomes an integral part of the soundscape. This is manifested both in the general urban timbre palette and in the sonoric specificity of individual religious communities.

¹⁶ The *shofar* is an instrument made from the horn of a ram or other kosher animal. It was used in ancient Israel to announce the New Moon (Rosh Chodesh) and to call people together. It was also blown on Rosh Hashanah, marking the beginning of the New Year, signifying both the need to wake up to the call to repentance, and in connection with the portion read on the second day of Rosh Hashanah, the Binding of Isaac (Genesis 22), in which Abraham sacrifices a ram in place of his son, Isaac. Accessed 12 April 2020. <https://www.jewishvirtuallibrary.org/the-shofar>

¹⁷ Abigail Wood, “Urban Soundscapes: Hearing and Seeing Jerusalem,” 289.

The first most striking element of heterophony in Jerusalem is the muezzin's call to prayer. Every day at dawn, midday, afternoon, sunset, and night, the muezzin begins to broadcast from local mosques. Calls to prayer are heard in Jerusalem from Shuafat, Beit Hanina, Al-Ram,¹⁸ and other residential areas of Muslim Arabs.

One example is the chanting of a muezzin from the village of Beit Safafa, which I mentioned earlier. The *adhan* (call to prayer) is recited five times a day, but is best heard from the village located in the valley in the early hours of the morning, probably due to the reduction of noise pollution and other sonic activities in the city. I spoke with the residents of the Beit Safafa village, and they told me that *adhan*, heard from five village minarets, is chanted by live muezzins, and is not a recording. It is assumed that the *adhan* will begin simultaneously at a specific hour. However, from Beit Safafa one can hear a delay in the recitation of the muezzin. It begins in one mosque, and then is broadcast from the other mosques with a slight delay. The result is a natural desynchronization of the chanting, and one can hear the prayer as if splitting and echoing. Thus, the delay in transmitting a similar melody of the recited *adhan* from five nearby mosques in the village creates an interesting quasi-heterophonic effect.¹⁹ This amazing effect is even better heard in the main location of this sonor source—the Old City and its environs!

The second element of heterophony in Jerusalem is the Jewish prayer. During Jewish prayer, a *hazzan* (cantor) prays, and the parishioners affirm with the word "Amen," announce or sing the last words of the prayer sentence, confirming the text sang by the *hazzan*, and sometimes they all sing together. Since not everyone responds to the *hazzan* synchronously, but with different voices and different intonations, everything sounds as if belated, creating the effect of splitting the spoken words of the text and singing. Consequently, such participation of believers in prayer becomes a heterophonic phenomenon.

Even the siren announcing the commencement of Shabbat, which is broadcast from several loudspeakers in the city every Friday evening, is heard heterophonically, because its end is echoed from different parts of the city.

Siren sonority is generally an integral part of the local *sonic environment*, which is always timbrally intense, and its volume levels are generally high.²⁰ The Jerusalem landscape reinforces any sound or noise produced and multiplies its amplitude, bringing it from distant locations. Therefore sounds and noises are often perceived as sharp and loud, possibly due to the high audibility level in the city.

Siren-like sonorities are used on many occasions in Israeli life, and especially in Jerusalem. Sirens are broadcast by the municipal authorities simultaneously throughout the city through loudspeakers on various occasions. Such are the ceremonial siren-sonor

¹⁸ Beit Hanina, Shuafat, and Al-Ram which lie northeast of Jerusalem, are neighborhoods with Arab residents.

¹⁹ I was told that in places where recordings are used, there is no delay, since the beginning of the *adhan* recording happens at exactly the same time.

²⁰ I have to say that the assessments of sonorities heard in Jerusalem are the result of my very personal perception—and especially in this section—K.V.

announcing the beginning of Shabbat, the siren heard annually, once on Yom HaShoah (Israel's Holocaust Remembrance Day) and twice on Yom HaZikaron (the Memorial Day for the Fallen Soldiers of Israel and Victims of Terrorism). It should also be borne in mind that Jerusalem is the capital of Israel. Most government offices are located in the city, which multiplies municipal sounds of authority, including the horns and sirens of emergency and government vehicles.

Of course, the above discussed religious sonors have an important role. Being siren-like in their essence from the three religions, they add to the general sharpness of sound in the city.

The prayers and singing of the Jewish religious community is heard throughout the day in Jerusalem. Its heterophonic sonority has a siren-like flavor. The *shofar* bears an important role as a sonor-signal for the Jewish community. In modern times, it is mainly a symbol of the Rosh Hashanah holiday and its sounds bear special spiritual significance. It functions as a call to the Jewish people for *teshuva*—"returning to the path of ethics and spirituality outlined in the Torah."²¹ In biblical times, when the Temple still existed, the *shofar* had several other uses including the announcement of the commencement of Shabbat, holidays, and festivals, the beginning of the months and of the fiftieth-year jubilee (*yovel*).²² Also, "Kings were crowned to the sound of *shofars* and with *shofars* the people were summoned for wars, were warned from dangers and learnt about victories in battle. Moves undertaken by the people's army were accompanied with *shofar* blowing..."²³ In modern times of the history of Israel, the *shofar* is used on special occasions of major importance. Thus, it was used in the Six-Day War (1967) immediately after the Western Wall, a remnant of the Temple, was conquered, Israel's Chief Rabbi blew the *shofar* as a sign of victory. When the president of Israel is sworn in, a *shofar* is blown; when the hostages were released following the Entebbe Operation,²⁴ they were greeted on returning home with the sound of a *shofar*, and other special events.²⁵

The *shofar* has a specific and sharp sound when it is blown, created by the four different types of sound blast and their combinations.²⁶ The character of these sonor-

²¹ Aish.com. Accessed 19 May 2020. <https://www.aish.com/h/hh/rh/shofar/48962026.html?s=rab>

²² Shofarot-Israel. Accessed 14 May 2020.

<http://www.shofarot-israel.com/index.php/the-shofar/israeliculture/>

²³ Ibid.

²⁴ Operation Entebbe was a rescue mission carried out by several IDF units in Uganda—4,000 kilometers from Israel—on 4 July 1976, to liberate 98 Jewish and Israeli hostages.

https://www.knesset.gov.il/lexicon/eng/entebbi_eng.htm

²⁵ Shofarot-Israel. Accessed 14 May 2020.

<http://www.shofarot-israel.com/index.php/the-shofar/israeliculture/>

²⁶ Bar-Sheshet—Ribak. Shofarot Israel: *tekiah*—a long sound ending with an additional sound, sliding to a higher tone; *shevarim*—groaning and moaning sounds. The *shevarim* sound like a howl and are composed of three short and sharp blows sounding like a moan; *teruah* (according to Rabbi Yitzhak Arama) is the sign of anxiety and sorrow. The Ashkenazi Jews produce staccato-like, rhythmical units, while the Sephardic Jews produce a kind of wavy tremolo, composed on a long sound (like a chain). Normally, in order to produce the long tone's vibrations, the *shofar* blower uses his tongue; *tekiah gedolah* (grand blowing): a very lengthy sound, depending on the blower's blowing capability. As a rule, the *tekiah gedolah* is three times longer than the *tekiah*. Accessed 14 May 2020.

<http://www.shofarot-israel.com/index.php/the-shofar/shofarsounds/>

signals is described as a “long sound with an additional sound, sliding to a higher tone (*tekiah*); groaning and moaning sounds—like a howl (*shevarim*); of anxiety and sorrow (*teruah*).²⁷ Consequently, the general spirit of *shofar* blowing sonority is intense and loud. The *shofar* sound blasts and their combinations function as various types of signals: calls to, warnings, and announcements. Together with the heterophonic synagogue prayers, they contribute to the overall siren-sonority in the area.

The muezzin’s call to prayer also has a siren-like sound quality, which is enhanced by the guttural nature of the sound of the Arabic language. Sounding in Jerusalem constantly, several times a day, and even at night, it becomes a significant sonic event “permeating” the acoustic space of the city.

The siren howl from ambulances has been heard constantly in Jerusalem during Israel’s multiple wars and numerous terrorist attacks. Israel has gone through several wars with the Arab countries surrounding it, and internal clashes with the Palestinian Arabs inside the country. During the more than forty years of my life in Jerusalem, I have been present during several periods when terror attacks in Jerusalem were especially frequent and bloody. During these periods, the blaring of ambulance sirens in enormous quantity and volume was a constant—heard like a mass yell. Immediately after an explosion, in particular, the simultaneous howling of a huge number of ambulance sirens conveyed a sense of global human tragedy, and brought tears to our eyes.

During the Gulf War,²⁸ when Israel was one of the countries attacked by Iraq, a siren missile warning sounded for a considerable period, becoming the main sonor audible in Jerusalem. At the beginning of the presumably chemical missile attacks, when we heard a warning siren, we ran and hid in a sealed room. Since it was so frequent, however, after a while we simply started to ignore it, walking along the streets to the sounds of sirens, as if it was a normal daily sonic event. Sometimes, it was mixed with the local sirens and the sad yelling sonorities of muezzin calls to prayer. So, we learned to live with it for a while.

Church bells sonority is frequently heard in Jerusalem, emanating from the Church of the Holy Sepulchre in the Old City, from churches around it, and other numerous churches and monasteries in the city. Primarily, the sound of church bells is heard everywhere around during the great Christian religious holidays.

Jerusalem Sirens and Echoes, Op. 31

In 2004, I was commissioned by the Israel Contemporary Music Players ensemble to compose a piece for a large chamber ensemble. I chose to compose a piece dedicated to

²⁷ Ibid.

²⁸ The Persian Gulf War between Iraq under Saddam Hussein and a large military alliance led by the United States lasted from 2 August 1990 to 28 February 1991.

Jerusalem. Being under the deep impression of Jerusalem Soundscapes and its specific sounding, I decided to name it “Jerusalem Sirens and Echoes.”²⁹

At that time, I was already very well aware of the influence of Jerusalem sonorities on my compositional thinking and spirit in general. The music describes my various sonic impressions of the city, which found its musical expression in this piece. It reproduces the sonorities of Jerusalem audible at day, night, and at dawn, in different places and at different times, and demonstrates the siren-like and capricious character of its soundscapes.

The sound material that underlies the pitch organization of the piece includes some Middle Eastern modal elements inherent in Jewish and Arab folklore, as well as various abstract sounds, which, as I felt, would best reflect the spirit of Jerusalem’s audible panorama. At that time, I turned to the wonderful composer, oud and violin player, specialist in Arabic folk music, Professor Elias Taiseer,³⁰ who helped me understand the nature of my Middle Eastern sound ideas, and supported my desire to compose a piece with such a strong local flavor and sonic identity.

This piece is also intended to be on the “universal axis,” addressing the sonorities of the three major religions. Therefore, instrumental quotes from the muezzin’s “Call to Prayer,” “Rosh Hashanah” (Jewish New Year), as well as the Orthodox Christian prayer “Our Father” (Pater Noster) appear in the final part of the piece.

Here is a part of the annotation I wrote to accompany the piece:

This piece was inspired by the sonorities audible throughout Jerusalem. The city is replete with spectacular views. From the hills and mountains of Jerusalem and in many other parts of the city, various sounds and sonorities are heard. They consist of sirens, speeches, cries of people, Church bells, Arab Muslim and Jewish prayers, various noises and much more. The echoes and the sonic background to all of this do not always sound in reality but they constitute the personal perception of the subject, as if in the subconscious. As I reflected on this acoustic material, I realized that these sounds were of significance for expressing the diversity and complexity of the city of Jerusalem. That’s how the piece became about Jerusalem Sirens and Echoes. From here, my *sonorities* were expanded to those that did not sound physically, and I came to the global concept of

²⁹ Karel Volniansky, *Jerusalem Sirens and Echoes, Op.31* (2004) for a large chamber ensemble. The piece was performed by the ensemble at the concert of the 13th Discovery series under the baton of Nicholas Carthy (England), and recorded at the Mishkenot She’ananim Music Center in Jerusalem, 21 March 2004. It belongs to my series *Jerusalem Soundscapes*. It appears on the CD of my chamber and symphonic pieces called *Jerusalem Soundscapes*, among other pieces dedicated to Jerusalem. The CD was issued with the support of the Israeli Composer’s League, the Ministry of Culture and the Israel Broadcasting Authority in 2005. The recording of the piece is available on *Soundcloud* at <https://soundcloud.com/karel-volniansky/jerusalem-sirens-and-echoes-op31-2004> (accessed 10 May 2020). The score is available on *Issue* publishing platform at https://issuu.com/karelvolniansky/docs/k.volniansky_-_jerusalem_sirens_and (accessed 10 May 2020).

³⁰ Prof. Elias Taiseer is a faculty member and Chair of the Music Department at the University of Haifa. Accessed 11 April 2020. <http://music.haifa.ac.il/index.php?lang=en>. Prof. Taiseer has collaborated with many Israeli artists, including composer Prof. Menachem Wiesenber and others.

Jerusalem Soundscapes. In this work, textural ideas are united by one vision. This creates the acoustic picture of Jerusalem, for my taste.³¹

This work has become one of many in my ongoing series entitled *Jerusalem Soundscapes*. The title of the series was taken from my CD title, which was kindly proposed by Dr. Assaf Shelleg, who specializes in twentieth-century Jewish and Israeli art music, and who also wrote annotations for the pieces on the CD.³² Based on what he heard in the piece and our conversations, he described the music as follows:

Jerusalem Sirens and Echoes offers Volniansky's translation to his surroundings—both his Jerusalemite landscapes and soundscapes. The piece encapsulates lamenting motives, in which augmented seconds acquire a sense of orientalism, yet they are too blurry to carry any coherent pertinence to either Jewish or Muslim origins. This musical–universal standpoint is enveloped by sounds of birds, urban noises and the sounds of Jerusalemite dawn, as mosques, synagogues and churches awake. Some learned quotations of the *Muezzin*, Christian orthodox *Pater Noster* and different *shofar* calls spread out across the ensemble in diverse variations ranging from lamentations to tongue-lashing, or better said, prayers which grow into yelling, and ending with a sense of consolation.³³

Jerusalem Sonic and Sonoric Intensity Levels

In Jerusalem, the *sonic* and *sonoric intensity levels* are not the same. Because Jerusalem is not an industrial city, there are almost no heavy industry factories in the area. Consequently, noise pollution is minimal, and life in the city is defined as rural in essence. Also, there are no rivers or other natural sources of noise of geophonic or biophonic origin (such as, for example, volcanic activity, artificial waterfalls, or herds of animals), which would produce additional sound intensity.

Yet, on the contrary, in terms of sonoric saturation, the city's sonoric intensity level is exceptionally high due to the large number of unique sonors emanated from numerous soundmarked locations. For example, the loudness of the muezzins' "Calls to Prayer," which sound several times a day from the Old City, the Muslim neighborhoods of Beit Safafa, Beit Hanina, Shuafat, and other locations, is claimed to be too loud and disturbing people's sleep. Jewish residents of East Jerusalem and other areas of Israel have long complained about what they say is the excessive noise coming from mosque loudspeakers, as it wakes them up in the middle of the night. There have been multiple

³¹ Karel Volniansky, from the annotation to *Jerusalem Sirens and Echoes, op.31* (2004). Copyright IMC, Israel, 2004.

³² My initial idea was to name it "Jerusalem Sonorities," but later I changed it to its current name. Dr. Assaf Schelleg, who wrote the annotations for the pieces on the CD, suggested this idea, for which I am very grateful.

³³ Dr. Assaf Schelleg: Annotation to the piece in the CD booklet.

complaints about the noise during the years, and the question of dampening the sound is constantly being discussed.³⁴

The Israeli designer Roni Levit, in the transcript to her “Jerusalem Sound Map; Capital City—Sound Segmentation,” describes the tension and intensity produced by various soundmarks as follows:

...situated at the epicenter of the Israeli-Palestinian conflict, Jerusalem is a place of extreme tension. Sirens are often heard blaring from police cars and ambulances. The diverse communities live in proximity to each other, and the sounds they produce are constantly intertwined. Although they are produced at different times, one can often hear a cacophony of coexistence.³⁵

Also, the sonic and sonoric intensity of the city increases markedly on special occasions, including positive and negative events. Israel has gone through several wars and numerous terror attacks, during which the intensity was very high from all points of view. The positive events, during which the sonic and sonoric intensity is enhanced, are during Israeli and Jewish national, Arab Muslim, and Christian holidays, when various celebrations are held and a large number of pilgrims visit the city.

Sonoric Picture of Jerusalem during the Coronavirus Pandemic

Recently, we have been observing the impact on the sonic and sonoric intensity of cities around the world due to the general quarantine resulting from the global outbreak of the Coronavirus pandemic (COVID-19).³⁶ It has changed dramatically and was remarkably decreased. This is expressed especially in everything related to anthropogenic activities. Since people could not go out to work and engage in normal daily activities, the technological, industrial, social, and cultural aspects of urban life have been significantly reduced. Around the world and also in Jerusalem, the sound of city life became as if muffled.

And even at this time, new sonoric phenomena appear in the cities. An example of this is the collective singing from the apartment windows of the inhabitants of Rome,

³⁴ Over the years, there have been many references to this in the Israeli press. For instance: *Times of Israel*, “New Jerusalem mayor said pushing plan to quieten mosque loudspeakers.” Accessed 14 April 2020. <https://www.timesofisrael.com/new-jerusalem-mayor-said-pushing-plan-to-quieten-mosque-loudspeakers/>

³⁵ Roni Levit, “The transcript to the *Jerusalem Sound Map*.” Accessed 30 April 2020. <https://visual.ly/community/Infographics/politics/jerusalem-sound-map>

³⁶ Mayo Clinic: “Coronaviruses are a family of viruses that can cause illnesses such as the common cold, severe acute respiratory syndrome (SARS), and Middle East respiratory syndrome (MERS). In 2019, a new coronavirus was identified as the cause of a disease outbreak that originated in China. The virus is now known as the severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2). The disease it causes is called coronavirus disease 2019 (COVID-19). In March 2020, the World Health Organization (WHO) declared the COVID-19 outbreak a pandemic.” Accessed 14 May 2020.

<https://www.mayoclinic.org/diseases-conditions/coronavirus/symptoms-causes/syc-20479963>

Naples, and Turin in Italy,³⁷ as an expression of solidarity and mutual support among quarantined people. Such a bizarre form of spontaneous sonic flash mob has become a new phenomenon of street music³⁸ that has changed the urban soundscape.

Another phenomenon born at this time was applause outside the hospitals in Israel,³⁹ Barcelona,⁴⁰ New York,⁴¹ and around the world,⁴² to thank the doctors for fighting the Coronavirus pandemic.

Are these new types of *urban sonor*? Perhaps, yes. In any case, these are new sonic realities in the urban soundscape; and if at the beginning it was a local unique sonor that was “born” in a particular location (no one is sure where it first started), due to its strong emotional existential context, it was picked up by communities around the world and quickly became the *universal sonor* heard all over the world.

Meanwhile in Jerusalem, in February 2020, when the coronavirus was just beginning to spread around the world, Jewish rabbis called on Jews to pray en masse at the Western Wall against the coronavirus outbreak and for patients around the world.⁴³ The mass prayer, in which hundreds of Jews participated, took place on 17 February at the Western Wall,⁴⁴ becoming a major sonic event outside the Jewish holidays.

Later, against the background of the lull in Israel, a new sonic phenomenon was born. When it became forbidden to pray in synagogues because of the danger of infection and the further spread of the virus, but gathering in small groups was still permitted, religious Jews went out praying into the streets.⁴⁵ I observed this phenomenon in Gilo, where I live. Standing at a distance of several meters from one another, they prayed to welcome the beginning of the Shabbat. Visually, it looked like a small crowd of people praying together, separated by short gaps between them. The *hazzan*'s voice soloed, and the worshipers responded, as if echoing, at the end of each part of the prayer, saying

³⁷ *Time Magazine*, “People quarantined in Italy join together in song from balconies during Coronavirus lockdown.” Accessed 15 April 2020. <https://time.com/5802700/lockdown-song/>

³⁸ Street music in Jerusalem is analyzed in detail in the article “Street Music in Jerusalem: Global Trends and Local Flavor,” by Natalie Rotenberg in this volume of *Min-Ad*, pp. 157-70.

³⁹ “Heartwarming applause for Israeli doctors during Coronavirus.” Accessed 17 April 2020.

<https://www.youtube.com/watch?v=TQLWbxv6EBg>

⁴⁰ *Euronews*, “Health workers are being celebrated all over the world for fighting on the frontline of the battle against coronavirus.” Accessed 17 April 2020. <https://www.euronews.com/2020/03/24/coronavirus-health-workers-clapped-across-the-world-for-battling-on-the-covid-19-frontline>

⁴¹ *The New York Times*, “In Praise of Quarantine Clapping.” Accessed 17 April 2020.

<https://www.nytimes.com/2020/04/09/arts/virus-quarantine-clapping.html>

⁴² *Al Jazeera*, “Coronavirus: Worldwide applause for front-line medical staff.” Accessed 17 April 2020. <https://www.aljazeera.com/programmes/newsfeed/2020/03/coronavirus-worldwide-applause-frontline-medical-staff-20033011116862.html>

⁴³ *The Times of Israel*, “Rabbis call for mass Western Wall prayer for coronavirus patients.” Accessed 14 May 2020.

<https://www.timesofisrael.com/rabbis-call-for-mass-western-wall-prayer-for-coronavirus-patients/>

⁴⁴ *Israel Hayom*, “Mass prayer held in Jerusalem to keep coronavirus at bay.” Accessed 20 May 2020. <https://www.israelhayom.com/2020/02/17/mass-prayer-held-in-jerusalem-to-keep-coronavirus-at-bay/>

⁴⁵ During the gradual increase in quarantine restrictions, such a meeting of people was also prohibited by the authorities.

amen and the last words of the prayer, affirming what had been said. This created the acoustic effect of a heterophonic stereo open-air sonic show.

Gilo is not an ultra-religious area, and the number of religious Jews and synagogues has increased only in recent years. Therefore, mass street prayer was heard only in some locations. However, according to eyewitnesses, in areas of Jerusalem where the ultra-religious population predominates (and there are already many of these in Jerusalem), street prayer was heard everywhere, becoming the main sonic phenomenon.

In the Christian worship tradition, there have always been moments when the church sonor becomes mobile. This happens, for example, during the church processions. However, besides constant mass prayer at the Western Wall, as far as is known, Jewish open-air mass prayers have not taken place in Jerusalem. Thus, if earlier the sounds of prayer emanating from the synagogues were sonors related to sustainable soundmarks, now they became mobile, and mass street prayer became an open-air sonic event.

Israel seems to have defended itself against infection relatively effectively, and one of the steps that was taken to continue the quarantine policy was to strengthen the ban on meetings, which were limited to two people. The praying Jews then found another way. The *hazzan* went outside, stood in the middle of a public place, and began the service. All the rest were either outside at the most acceptable acoustic distance from him, or participated in prayer standing on balconies and looking out of the windows of their homes; the effect of such prayer became even more stereophonic and heterophonic.

Jewish Passover eve is one of the central holidays in the Jewish tradition that documents the Exodus. It is a time when families and relatives meet to celebrate the exodus of the Jewish people from Egypt, to read the Passover Haggadah, to have a celebratory Passover meal, and to pray together. In the morning, a nation-wide curfew was issued. To prevent the spread of the virus, the authorities announced a general curfew prohibiting gatherings of any kind, including large family gatherings and meetings with friends. For this purpose, intercity travel was prohibited, as well as moving between neighborhoods within the city, and even within the neighborhoods themselves— and, of course, praying in synagogues.

Around noon, as the holiday was approaching, the neighbors began to pray everywhere around. The sound of the prayers, due to the way they occurred—from the balconies, windows, outside in the public place, in local gardens, intermingled with Muslim prayers heard from the Arab village of Beit Safafa, became a major sonic event during the celebration.

Accordingly, the sonors of the Jewish synagogue, which usually determined the local soundmark of the Jewish areas, were removed from their natural surroundings and became a mobile sonority. In turn, public places, which were usually reserved for various types of social activities, instead functioned unexpectedly as a temporary local soundmark.

One evening a few days ago, in our Gilo neighborhood, suddenly numerous sirens and vehicle horns were heard. When I ran outside, I saw a procession of several ambulances and motorbikes. As I later found out, it was a procession of the United Hatzalah of Israel's volunteer Emergency Medical Service organization.⁴⁶ Without rushing, they solemnly drove through the streets of the area, their very appearance demonstrating their strength and willingness to provide medical care during the outbreak of the coronavirus. The sounds of sirens and beeps were very loud, accompanied by the bright colors of flashing ambulances. It was a strong and vibrant sonoric event in our area and an additional manifestation of the siren sonority typical of Jerusalem.

Jerusalem Sonoric Identity: Conclusion

Jerusalem is a multinational, multiconfessional, and multi-sonoric city, and its audible panorama is extremely heterogeneous, kaleidoscopic, and dense. As we have seen, Jerusalem has a large concentration of unique sonors bearing major significance for Jewish, Christian, and Muslim communities in Israel and around the world. Consequently, the culturally unique religious sonors in Jerusalem are of paramount importance. Being the prevailing *sustainable sonors* that emanate from permanent sound sources in the soundmarked locations, they are the main factor determining Jerusalem's *urban sonoric identity*.

The specifics of the Jerusalem landscape, and the density of sound sources located within it, is an additional factor contributing to the creation of the city's characteristic sonoric panorama. The coexistence in the physical proximity of diverse religious communities creates the uniqueness of the Jerusalem soundscapes. Its sonoric intensity is established due to the undeliberate acoustic interaction between different communities. From this point of view, Jerusalem, not being a megalopolis, due to the richness of its audio panorama, actually functions as such, but in a concentrated form. The timbres of Jerusalem sonors are intense, at times harsh and siren-like. The sound of church bells is the city's relatively serene sonoric phenomenon. The heterophony and the siren sonority are embedded in local sonorities: in the Jewish synagogue prayer, the Muslim muezzin calls to prayer, and the overall spirit of the area.

The soundmarked locations of the three major religions, which have such a significant presence in Jerusalem, simultaneously emanate their sonors, creating acoustic

⁴⁶ United Hatzalah of Israel is the largest independent, non-profit, fully volunteer Emergency Medical Service organization. It provides the fastest free emergency medical first response throughout Israel. United Hatzalah's service is available to all people regardless of race, religion, or national origin. United Hatzalah has more than 6,000 volunteers around the country, available around the clock—24 hours a day, 7 days a week, 365 days a year. With the help of unique GPS technology and iconic ambucycles, the average response time is less than 3 minutes across the country and 90 seconds in metropolitan areas. Accessed 15 May 2020. <https://israelrescue.org/blog/mission/>

effects of desynchronized juxtaposition, such as heterophony and random sonic polyphony, all these being a part of the urban aleatorism.

The random urban sonic polyphony is perhaps one of the main features of Jerusalem's soundscape. The interweaving of various religious and municipal sonors, which are usually of a siren type, creates dense sonic textures, characterized by constant random collisions and combinations of sounds.

Jerusalem is a city that has a centuries-old sonic aura. This aura is felt by the local residents and people around the world. I often say that the whole world is meditating, but the most powerful meditation is in Jerusalem. This, I believe, is stimulated by the city's highly spiritual appearance and energy, which is also due to its unique *urban sonorism*.

Appendix I. Terminology of sonic phenomena

The concept *sonic environment* is often used by researchers in the discussion of soundscapes as a synonym for *acoustic environment*, *sound environment*, *environment of sound*, *aural space* or, even, *an ambient sound of a place*.ⁱ Here, the concept *sonic environment* is used to denote an environment that includes all types of sounds, noises, and anything that is audible and has acoustic properties.

The term *sonic event* implies any acoustic phenomenon that occurs in a certain place over a certain period of time. It may include all types of sounds, noises, and anything that is audible and has acoustic properties.ⁱⁱ

Soundscape is a concept introduced by renowned Canadian composer, writer and environmentalist R. Murray Schafer,ⁱⁱⁱ the founder of soundscape theory. It has many different definitions from various points of view.^{iv} *Oxford Music Online* defines *soundscape* as: "A term generally referring to the entire mosaic of sounds heard in a specific area. A soundscape comprises the wide array of noises in which we live, from sounds of nature, to the clang of church bells, the pulse of a salsa band at a local dance club, or the hum of traffic on a city street."^v Payne et al. defined the soundscape as follows: "Soundscapes are the totality of all sounds within a

ⁱ *Soundscape and the Built Environment*, ed. Jian Kang & Brigitte Schulte-Fortkamp (Boca Raton: CRC Press, 2016), p. 2.

ⁱⁱ The definition is mine—K.V.

ⁱⁱⁱ EMDoku. *Schafer Raymond Murray*. International Documentation of electroacoustic Music. Accessed 8 May 2020. <https://emdoku.de/en/artist/schafer-r.-murray>
Stephen J. Adams, "Schafer, Raymond Murray." *Grove Music Online*, 2001 (Oxford University Press). Accessed 8 May 2020.

<https://www.oxfordmusiconline.com/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-0000024738>

^{iv} Almo Farina, *Soundscape Ecology Principles. Principles, Patterns, Methods and Applications*. (Dordrecht: Springer Science+Business Media, 2014), p. 3.

^v Megan E. Hill, "Soundscape." *Grove Music Online*, 31 Jan. 2014. Accessed 10 May 2020.

<https://www.oxfordmusiconline.com/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-1002258182>.

location with an emphasis in the relationship between individual's or society's perception of, understanding of and interaction with the sonic environment.”^{vi}

Urban soundscape may be understood as a totality of sonic phenomena in a certain urban location or a city.^{vii}

Soundmark (R. Murray Schafer) is a location in which unique sonorities can be heard and is “unique, or possesses qualities which make it specially regarded or noticed by the people in that community. Once a soundmark has been identified, it deserves to be protected, for soundmarks make the acoustic life of the community unique.”^{viii}

Heterophony (from Gk. *heteros*: “other,” “different,” and *phōnē*: “voice”). The term was coined by Plato, is of uncertain meaning; now used to describe the simultaneous variation of a single melody; ... In modern times the term is frequently used, particularly in ethnomusicology, to describe simultaneous variation, accidental or deliberate, of what is identified as the same melody”;^{ix} a “texture resulting from simultaneous performances of melodic variants of the same tune, typical of Middle Eastern practices as well as of a vast array of folk music.”^x

Newly Introduced Concepts

This paragraph presents the terms and concepts created specifically for this article.^{xi}

Sonor. The word *sonority* has multiple meanings. It is frequently understood and applied to the colorful qualities of a sounding; a specific sounding of a chord (for instance, a triad chord). Aaron Copland, in his book *Music and Imagination* (1952) names a whole chapter *The Sonorous Image*,^{xii} which he dedicates to the concept. He discusses *sonorous image*, *tone color*, *sound image*, and uses the word *sonority* multiple times throughout the book. For him, *sonority* refers to the color of various sound phenomena, like combination of sounds, sounding of a piece, orchestral sonority.

In the context of the topic discussed, in order to create a more abstract concept that would include all meaningful sonic phenomena, the term *sonor*^{xiii} is used instead of sonority. It is

^{vi} S.R. Payne, W.J. Davies, & M.D. Adams, “Research into the practical policy applications of soundscapes concepts and techniques in urban areas.” DEFRA report NANR200, June 2009, p. 7.

<http://randd.defra.gov.uk>

^{vii} The definition is mine—K.V.

^{viii} R. Murray Schafer. *Our Sonic Environment and the Soundscape: The Tuning of the World* (Destiny Books, 1994), p. 10.

^{ix} Peter Cooke, “Heterophony.” *Grove Music Online*, 2001. Accessed 12 April 2020.

<https://www.oxfordmusiconline.com/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-0000012945>

^x The editors of *Encyclopædia Britannica*, “Heterophony.” *Encyclopædia Britannica*, Inc., 28 April 2017. Accessed 12 April 2020. <https://www.britannica.com/art/heterophony>

^{xi} Hereinafter in this paragraph, all terms, collocations and their definitions are mine, except for those that are clearly named as belonging to others—K.V.

^{xii} Aaron Copland, “The Sonorous Image.” In *Music and Imagination* (Cambridge: Harvard University Press, 1952), pp. 21–39.

^{xiii} The term *sonor* was introduced by Russian music theorist Yuri Kholopov, who by it implied a sonoric complex in which the intervallic structure cannot be differentiated by human hearing and is perceived as a homogeneous sonoric entity (such as a *cluster* or sonoric structures in the music of Kz. Penderecki). The term *sonor* that I propose has nothing in common with the term *sonar* in acoustics, or any connection with the German musical instrument manufacturing company “Sonor,” headquartered in Berlin, Germany.

understood as a specific character of a sonic phenomenon—sound or noise, a combination of sounds or noises, or a mixture of sounds and noises formed into an integral, discernible acoustic phenomenon with unique qualities of sounding. In a way, it bears similarity to Schafer’s concept *unique tones*, defined by him as follows: “Every natural soundscape has its own unique tones and often these are so original as to constitute soundmarks.”^{xiv} However, *sonor* differs in that it is not necessarily associated with a soundmark, nor does it belong to a specific location, but it is a specific sonority in itself. It belongs to a particular sphere of sonorities that might belong to a community—urban, religious, national, or any other; express a certain idea or a sphere of ideas; or, for example, be a part of musical composition, compositional or composer’s style, and musical epoch.

Culturally unique sonor. The city is filled with various types of sonors. The type of sonors that are important to our discussion are the *culturally*^{xv} *unique sonors* that have cultural—historical, traditional, religious, social, and other additional meanings; belong to a certain community, society, and are immediately identified with it. In distinction to *soundmarks*, by definition they always bear a cultural meaning for a certain community and are not necessarily associated with a particular location. These sonors acoustically bring relevant information to a certain community and its members. In particular, the *religious sonor* is at the center of our discussion. The religious sonor allows us to acoustically determine the type, the condition, and the activity of a particular community, its soundmarked locations, and to indicate the features of a soundscape as a whole.

Sustainable sonors are the ones that are attached to a specific site for a considerable period of time and became associated with their location.

The words *sonic* and *sonoric* are different. The word *sonic* refers to anything audible in the sonic environment, including all sounds and noises, while *sonoric* is related to sonority, colorful qualities of the sounding, and here will be used to designate only unique sonorities.

In contradistinction to the known *sonic environment*, the concept **sonoric environment** is used to denote an environment of *sonors* that are definite and unique, can be distinguished from the sonic environment, identified, perceived, and interpreted by a human listener.

Sonoric panorama refers to a collection of various sonorities within a given audible space.

Soundmarked location—is a location marked with specific sounds. It could be understood as a particular soundscape or a part of it, and is seen as an area with a specific sonoric character that is unmasked for human perception, it can be recognized and identified by an individual, group of people, community, or a society.

Audibility level refers to the level of loudness and acoustic clarity with which sonic events can be heard at a distance. The *audibility*^{xvi} *level* of various *sonic* and *sonoric events* can probably be measured using the appropriate equipment. The landscape and soundscape are interconnected. The soundscape, being created at an intersection of sonic events and landscape, can be drastically affected by the landscape’s *audibility* features. Therefore, the specificity of a

^{xiv} R. Murray Schafer, *Our Sonic Environment and the Soundscape: The Tuning of the World* (Destiny Books, 1994), p. 26.

^{xv} The word *cultural* will be used as relating to various types of human spiritual and social existence, including habits, norms, traditions, religion, art, social activities, and so on.

^{xvi} *Audibility* is a term used in psycho-acoustics and audiology. The topic requires a separate study and is not included in this article.

landscape has a great impact on the features of the soundscape, and particularly on the *audibility level* of sonic events in it.

Sonic and sonoric intensity levels. Each city has its own *urban sonic* and *sonoric intensity levels* that are its statistical activity and the level of impact of sonic and sonoric events in the city. The *sonic* refers to all the sound and noise events in the city, while the *sonoric* refers to special sonoric events that have cultural meaning for the communities.

Urban aleatorism. Randomness of sonic events is evidently present in any city and is a natural chronotopic^{xvii} feature of its sonic continuum. Naturally, the sonic events are randomly synchronized and desynchronized in the acoustic space and a quasi *aleatoric*^{xviii} effect is created. Various combinations, juxtapositions, and heterophony of sonors establish the unique soundscapes of the city.

Random urban sonoric polyphony. In some cases, sonoric combinations may establish a type of acoustic space in which different sonorities are formed into structures that may be perceived as a logical and constructive whole. Moreover, these structures may resemble what is called a non-imitative type of polyphony, where there are “two or more independent melodic lines that do not share melodic material with one another.”^{xix} Such a type of spontaneous interaction between various sonoric lines becomes *random urban sonoric polyphony*.

Sonoric identity of the city. Briefly, this implies a totality of *unique sonors*, *soundmarks*, *soundmarked locations* and *soundscapes* audible in the city. Any city, being a complex, multilayered, and multistructural phenomenon, comprises various structures and strata intertwined into a single whole. They establish its human, architectural, technological, industrial, and also mental, spiritual, energetic, sonic, and *sonoric identities*. It can be said that each city has its *urban sonoric identity card* with a *sonoric code* and *signature*, which will definitely vary from city to city. Also, each city emanates not only its unique *sonic energy* at the level of physical vibrations but also a *sonoric energy* of a cultural, historical, and spiritual significance. Supposedly, similar to R. Murray Schafer’s *tuning of the world*,^{xx} each city has its individual *urban sonoric tuning*.

About the Author

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^{xvii} *Oxford Reference*, “A term employed by the Russian literary theorist Mikhail Bakhtin (1895–1975) to refer to the co-ordinates of time and space invoked by a given narrative; in other words to the ‘setting,’ considered as a spatio-temporal whole.” “Chronotope.” Accessed 28 April 2020.

^{xviii} *Aleatoric, Aleatory (adj.)*—from *Aleatorism / Aleatoricism* (Latin *alea*, “dice”). The term is related to elements of chance in music that may have various degrees of freedom—K.V. For more information please refer to Paul Griffiths, “Aleatory.” *Grove Music Online*, 2001. Oxford University Press. Accessed 5 May 2020. <https://www.oxfordmusiconline.com/grovemusic/view/10.1093/gmo/9781561592630.001.0001/omo-9781561592630-e-0000000509>

^{xix} “Artopium: Non-imitative polyphony. Definition and background.” Accessed 12 April 2020. <https://musicterms.artopium.com/n/Nonimitativepolyphony.htm>

^{xx} R. Murray Schafer, *Our Sonic Environment and the Soundscape*.