Digital Extension of Music Memory
Music as a Collective Cultural Memory
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Abstract: Artistic works represent a very important part of collective cultural memory. Every artistic work, by definition, can confirm its existence only through the presence in collective cultural memory. The migration from author’s individual memory to common collective cultural memory forms the cultural heritage. This equally applies to tangible and intangible cultural artifacts. Being part of collective cultural memory, music reflects the spatial (geographic) and temporal (historic) dimensions of this memory.

Until the appearance of written signs (scores) music was preserved only through collective cultural memory. Scores have facilitated further distribution of music artifacts. The appearance of different means for audio, and later audio/video recordings have greatly improved the distribution of music. The transition from analog to digital recording and carriers has been a revolutionary step which substantially extended the chances for the survival of music artifacts in collective memory.

Keywords: digitization, music, collective cultural memory, music scores, music recordings

Arts, i.e. artistic works represent reflections of human civilizations from the earliest societies until now. One can easily read and map social changes through artistic works. The reading of the features of a certain society through arts may be done in different ways. Representative arts (literature, painting, sculpture, visual arts) can describe or visualize social events, while architecture and music reflect social dynamics through selection of construction materials and use of different forms. Artistic works also reflect different societies through their relations to political, social and economic environment. We can draw conclusions regarding culture of a certain society by following the relations between arts and a given economic environment. Creative individuals have always been rewarded, i.e. paid for their cultural products and services in different ways, from gifts and privileges, to direct payment. This has been the foundation upon which arts have become an important agent in the overall economic structure of different societies. The newly (in the last two decades) coined
terms *creative industries* and *creative economies* demonstrate the important role of arts in the economies of post-industrial societies (13 disparate sectors in accordance with the opinion of the UK Labour Secretary of State for Culture, Chris Smith in 1998, in alphabetical order: advertising, architecture, art and antiques, computer games, crafts, design, designer fashion, film, music, performing arts, publishing, software and television and radio; or the definition of the creative industries of the UK Department of Culture, Media and Sport as “those industries which have their origin in individual creativity, skill and talent and which have a potential for wealth and job creation through the generation and exploitation of intellectual property”, Bakhshi, 2013: 7, 8). The 2007 OECD (Organisation for Economic Co-operation and Development) report on the economic importance of culture estimates the contribution of culture industries to national GDP/GVA as the highest in United Kingdom with 5.8% of the total economy, followed by Canada with 3.5% and USA with 3.3% (Gordon and Beilby-Orrin, 2007: 6).

The above statement is equally applicable to music as an important part of culture from the earliest hunting and gathering societies to post-industrial societies. For instance, the contribution of music and visual and performing arts in the 2003 UK Gross Value Added was .5% (ibid. 42). Therefore, the “dynamic mapping” of cultural and music industries is becoming a very important concept.

In view of the fact that every cultural product becomes part of cultural heritage, the concept of cultural heritage can be interchangeably used for culture. Usually cultural heritage is divided into two categories: tangible and intangible. Until the appearance of scores and later, recordings, music was and still is considered part of the intangible cultural heritage. Yet, despite the intangibility of music phenomenon, the analysis of the results related to the market of music products and services may give a clear perspective of the cultural dynamics in a certain period or society.

From a philosophical point of view, arts, i.e. artistic products, regardless of their tangibility or intangibility, have multifold modal appearance, i.e. existence. There are different classifications of the modes of appearance in accordance with author’s philosophical background. For instance, Ivan Focht defines ten music modes in Ferruccio Busoni’s *Entwurf einer neuen Ästhetik der Tonkunst* (Focht, 1980: 79) (Busoni does not explicitly quote them, they are constructed by Focht).

From our point of view, the realization of a musical piece develops in a process consisting of seven modes: (1) author’s mode, (2) score, (3) performer’s mode, (4) performance, (5) producer’s mode, (6) recording, and (7) audience mode.

This scheme does not mean that every musical piece should pass through all of these stages. There are a lot of musical works that do not have scores, and there is a lot of music that is not recorded. Because modal analysis is beyond the scope of this paper, we used the seven-modes model to show that the existence of a musical piece starts as a purely mental activity in author’s mind, and this process is accomplished only when the audience hears it out, i.e. when someone who listens to it (or in some cases watches the score or the performance) creates a perception about that particular piece. Once the musical piece reaches the minds of the audience, auditory memories are established. It is obvious that we deliberately ignore
the emotional contents of the process, and limit our interest only to perceptual, cognitive and memory segments.

Thus memory, which accompanies the realization process from the very beginning to its end, is a direct result of the modal development of music, i.e. music works. In fact, memory only refers to the four creative subject modes (author, performer, producer and audience), which are intangible psychological processes. The other three modes (score, performance and recording) are “material” and they have distinct temporal and spatial characteristics. Despite our general approach to musical piece as an object, i.e. material unit, final definition of a musical piece is impossible without the subject’s perceptual, emotional and cognitive experience. Consequently, an artistic work, by definition, can fulfill its function and exist only through its realization, i.e. presence in the audience mode. Once this realization takes place, the musical piece becomes part of the collective cultural memory.

Having in mind the importance of the memory modes, the modal analysis can be transformed into memory analysis, as a confirmation that the process was accomplished. This means that we can observe the existence of a particular musical piece through its migration from author’s individual memory to collective cultural memory. To sum up, we claim that the existence of a music piece can not be attested unless it is realized in the collective cultural memory.

In fact, talking about collective cultural memory in the intangible cultural area, we are coming back to the term cultural heritage, which could be used as an alternative term for the collective cultural memory. We find support for this claim in 1992 UNESCO Programme “Memory of the World”. Its objective was “to protect and promote the world’s documentary heritage through preservation and access”. The predecessor of this program was the audio CD “Memory of the peoples” published by UNESCO International Music council in 1990, with a collection of world traditional music. The music on this CD is a typical example of aural tradition that was preserved only in the memory of the peoples, the collective cultural memory. (We prefer the term aural, over oral as it reflects the transmission processes better: the process is accomplished only when someone hears and memorizes the orally transmitted information). Despite limited distribution of this CD (that had a much smaller audience compared to the audience that had participated in the original oral transmission of the songs), we assume that at least a part of the cultural heritage will be preserved for future transitions to the collective cultural memory.

Music collective cultural memory spreads in spatial (geographic) and temporal (historic) dimension. The distribution of different genres and styles can be observed in both of these dimensions. History of music, which reflects the temporal dimension, was established at the end of the XVII century and beginning of the XVIII (Printz, 1690, Bontempi, 1695, Bourdelot/Bonnet, 1715, see Allen, 1939: 23), and has developed ever since as one of the major theoretical disciplines of musicology. Musicology had mainly dealt with the Western classical music until the end of the XIX century when comparative musicology initiated research of music folklore. The acceptance of jazz on classical concert podiums facilitated the expansion of musicology interests into other popular genres (pop, rock etc.), particularly under the umbrella of cultural studies. However, despite the popularity of the
theories of geographic determinants and origin of music in XVII century (particularly in France – Père Mersenne, André Maugars etc., see Бужаровски, 1989: 179, 180), geography of music has not developed as a separate discipline and its subject has been incorporated in history of music and other musicological disciplines.

The general problem of intangible cultural heritage is the "non-material" storage of cultural artifacts in collective cultural memory. Thus, since the earliest civilizations until now, continuous attempts have been made to convert it into a material form, i.e. to fixate it. This was particularly relevant for music which was “the art of the moment”. The search for fixation of music, i.e. placing it on material carriers, started with the invention of score almost three millennia ago and has continued with the invention of analog and digital recording. But, despite the efforts to create different techniques for material preservation, a great deal of past and contemporary music remains in the realm of intangible cultural heritage. In this sense, particularly vulnerable is the music without scores, such as most of the traditional and popular music, or other genres based on improvisation.

The first attempts to materialize music through written signs parallel similar activities to materialize intangible cultural forms, i.e. the forms which have been transferred through aural tradition. As in the case of aural tradition, the disadvantage of music aural tradition lies in its subjective reception and perception, followed by its individual reproduction through singing and playing. As a result, there are permanent changes of the original which accumulate over time. However, these channels of transmission have also their advantages: embellishment and further development of the songs created by talented individuals who are the main carriers of collective cultural memory.

The traces of the first notations can be found in almost all ancient cultures (Sumerian, Chinese and Indian). Western culture roots stem from the Pythagorean school (VI B.C.) which dominates ancient and medieval music theory. Until the appearance of the notation with integrated signs for pitch and duration (described in De Mensurabili Musica – Concerning measured music by Johannes de Garlandia in the first half of the XIII century) the approximativity of the earlier signs (neumatic notations, for instance) was an obstacle for the stable preservation of music, other than in individuals’ memory.

Nevertheless, it is important to point out that this notation reflects only human perception of sound and music, which is different from physical features of real sound waves. Further development of this notation (until XIX century) resulted in addition of signs for the rest of the perceptual layers, again reflecting the subjective human perception of sound waves. The seven layer structure (interval/melodic, rhythmic/metric, harmonic, instrumental, dynamic, tempo and agogic, and articulation) of our understanding of music sounds is very different from the characteristics of the initial energy created by vibrating objects (frequency, amplitude, time and partials, such as in the spectral analysis of the sound). Due to individual perception and experience of music, the notation is impaired and limited in its presentation of real music artifacts. In particular, dynamics and articulation are characterized by a high level of ambiguity. The chromatic notation system and the equally distributed note durations are inadequate for graphic presentation of microtones and
deviations in rhythmic patterns. In addition, the knowledge and the ability for reading and performing scores can be obtained only through a long and elaborate music education. The difference between the score and the musical piece is especially evident in music folklore or other traditional and popular genre transcriptions. Lack of knowledge and experience regarding the rules and patterns of the particular genre may result in a hybrid product that is very different from the original musical piece. The computer performances of these transcriptions clearly illustrate the discrepancy between the original and its transcription.

Despite these disadvantages, the appearance of scores have improved and facilitated further distribution of music artifacts. The music of Western Europe has developed and spread much faster than music in the rest of the world. On the other hand, the possibility of different readings of the same score has given the performance the power of (re)creation of the author's initial ideas, giving creative individuality to each performance, even by the same performer. This is particularly evident in popular genres and jazz which tolerate substantial deviations from the score. Popular genre and jazz scores often give only a reference to the author's ideas, allowing a high level of freedom in their interpretation.

The next step of the materialization of music occurred with Edison's invention of the phonograph in 1877. The possibility of audio and later audio/video recording marked a radical change that had an enormous impact on music culture in every segment – from the creation of musical piece to its performance and distribution. The audio recording permanently fixates a musical piece and its recorded performance. Despite of the poor quality of first recordings at the beginning of the XX century, millions of records were sold and distributed over the world, contributing to a vast democratization of music products of the "highbrow culture". Singers like Caruso (usually called the tenors of the shellac era, alluding to the 78 rpm records) attracted a much wider audience (and financial revenue) than any other performer in the previous periods of music culture.

Very soon the distribution of recorded music made the world a global village. This had its own pros and cons: the democratization of the access to the cultural products and the homogenization of culture by technologically superior societies, respectively. In general, the new recording technology enabled the constant rise of music available for listening and storing in collective cultural memory.

The fixation of music on sound carriers has not stopped the changes and further development of the recorded music. An interesting example of the transformation of the same song is noted in Sonia Seeman's paper on Macedonian čalga tradition (Seeman, 2012). In this paper she points out the problem of standardization through notation because "the musicians were trained to play in a heterophonic style, in which each member executed the melody with subtle variations" (ibid. 306). She analyses the recordings of four versions of the song "The song of Gorgi Sugare(v)/ Mariovo began to weep" (in Macedonian "Pesna za Gjorgji Sugare/ Zaplakalo e Mariovo") over a 51-year period from 1928 to 1979 (which) show dramatic musical changes that included shifts in the structure of the melodic intervals, movement from heterophony to unison and then to
harmonic chordal accompaniment, and a regularised rhythmic treatment” (ibid. 312).

A glimpse at any song title at YouTube search engine lists a lot of versions of the same song performed by different artists. This confirms that even in the time of fixation of a musical piece on a solid carrier, music continues to experience the creative power of the performance. There are three major reasons for the ever-changing process of the performance of the same musical piece: (1) changes in the music culture, (2) changes of the taste and the sensibility of the audience, and (3) the challenge to create a unique interpretation of each piece, thus differentiating every performance by the same or other musicians.

Particularly the second reason, the constant change of audience sensibility, influences the endless evolution of music artifacts in collective memory. Every new generation listens to the same piece with different “ears”. Thus the fixation on different carriers is only a tool for the distribution and storage of music in collective cultural memory.

The transition from analog to digital recording and carriers was a revolutionary step which substantially increased the chances of survival of music artifacts in collective memory. The preservation of recorded materials on analog carriers was limited due to their vulnerability either by the deterioration of the materials or by the obsolescence of playback hardware. The degradation of the original analog recording with every new copy (in practice resulting in more noise), was a serious obstacle for the migration of audio data from one to another carrier (magnetic tapes). The possibility of digital conversion has opened an opportunity for an indefinite data migration without degradation. In addition, digital archive software includes an automatic carrier error check, alerting to an immediate migration of the remaining “originals” to an extra copy. The “data migration” concept has indefinitely prolonged the survival of the digitally stored music.

However, this is not the only benefit of the digital music era. Due to the immense decrease of the prices of hardware and software for the creation, performance, recording and storage of music, professional equipment has also become accessible to amateurs. This resulted in a booming number of home studios and an increased quantity of recorded music. It is extremely difficult to assess the quantity of created or digitised music at the moment. An estimation at the beginning of XXI century (Schüller, 2001: 618) rounds all recorded sound material to 30 PB with the annual growth of 5–10%. We can only assume that this amount has been doubled, if not tripled in the last ten years. Despite the global efforts for preservation of the cultural heritage through digitization of the music recorded on analog carriers, due to the lack of human and financial resources, there is still a lot of recorded music left on volatile carriers. Having in mind that a lot of the recordings, particularly during field work, were done with amateur equipment (resulting in poor sound level, a lot of noise, limited frequency range, distortion etc.), any accessible hardware and software may be used as an alternative if standard digitization procedures can not be applied.

Another important factor influencing the extension of XXI collective cultural memory are social networks. The use of social networks and user-created content services, such as YouTube, has reshaped the model of XXI century music culture. The possibility of posting
user-generated content through new channels of distribution has enlarged the music audience and enabled unseen versatility of offered music repertoire. The music distributed through broadcasting media and www services create a new music world of unthinkable proportions. As a consequence, there is a permanent rise of music presence in collective cultural memory.

Among other important players of the XXI century music culture is an amateur video. The falling prices of digital video equipment have enabled a much wider video recording of any music event. For instance, there is almost no wedding which has not been video recorded. This is particularly important for the appeal to the memory of a given event, preserving it much longer. The fast development of mobile devices technology has enlarged their role in video recording. This new use of communication devices has resulted in the development of applications for creation and performance of music. A good example is the Atomic Tom iPhone NY Subway concert on October 8, 2010 with the song "Take Me Out" (Bilton, 2010).

We can conclude that the digital era has influenced music in all of its aspects: creative, reproductive and listening. Although we do not have precise data regarding the average consumption of music per person/per day, we can assume that music will top the pyramid of the consumption of artistic products and services. Therefore, music is one of the strongest symbols of post-industrial societies culture in the XXI century. Consequently, we can expect that collective cultural memory contains a large portion of music data reflecting the rich cultural heritage of all music civilizations.

References