
MEASUREMENT AND DEVELOPMENT OF IRREGULAR PULSES IN THE MUSICAL CULTURE AND FOLKLORE REPERTOIRE OF SOME NATIONALITIES

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Abstract: The current paper leverages historical and theoretical research and systematisation of texts from a number of valuable research works and sources, the overall purpose of which is to review and analyse concepts regarding the theoretical aspects, spread, development and interpretation of irregular pulses in the Bulgarian musical culture, and of the music of some nationalities and foreign composers, as a result of which relevant conclusions and summaries will be drawn. The paper reports on historical and theoretical aspects of the specificity, spread and development of irregular pulses in Bulgarian and foreign music that characterise these metro-rhythmic forms as unique and phenomenal. Irregularity is a phenomenon that Bulgarian folklore studies (and probably also the musical folklore of other peoples) use in the area of metro-rhythm - the unity between rhythm and metre and its basic organising function in musical art. According to some researchers, the emergence of similar metro-rhythmic structures should be regarded as the result of the influences of Asian and European culture in the 7th c. A.D. Generally, such pulses are almost extraneous and quite scarce to world music. Folklorists, musicologists and composers who have dealt with irregular metro-rhythms share the opinion that in terms of their diversity, complexity and variations they are most widely prevalent in Bulgarian musical works. The Hungarian composer, pianist and ethnomusicologist Béla Bartók used to call the irregular metro-rhythms “Bulgarian rhythm” because in his opinion they had been initially singled out by Bulgarian musical scholars. The works of the Bulgarian composer and researcher Dobri Hristov are considered as the main prime sources for the professional interpretation of irregular metro-rhythms in Bulgaria. Through the examples pointed out in them, different assumptions are made as to their place of occurrence, who they were inherited from and how these musical metric forms originated. One of the specificities that single out Bulgarian irregular pulses from the metro-rhythm of melodies with complex compound time signatures of other nationalities and composers is the fast tempo of the metric beats (thus, counting them becomes inconvenient, even impossible), and the need to group them in short (duple beat) and long (triple beat) sections (time signatures). In such cases one has to count and beat time not of individual beats of the time signature, but of whole simple time signatures within a compound time signature. In Bulgarian music, however, irregular metro-rhythms are phenomenal on account of their huge spread, diversity, complexity and variations - there are patterns of larger number of metric elements (exceeding 15). In western music (and not only there), such types of time signatures are most often interpreted as complex and compound as the tempo of melodies allows for motional response to each of the metric beats. Nowhere else but in Bulgarian music, both of folk origin or composed pieces, have irregular metro-rhythms been represented in such a diversity of combinations and variants.

Keywords: irregularity, metro-rhythm, metric beats, time signatures

Irregularity is a phenomenon that Bulgarian folklore studies (and probably also the musical folklore of other peoples) use in the area of metro-rhythm - the unity between rhythm and metre and its basic organising function in musical art. The term “irregularity” is applied to those metro-rhythmic forms, where a song or an instrumental piece can be built by such temporal durations that relate to each other in “asymmetric” hemiolic⁸ pattern of 2:3 between the metric groups (sections) of the metric line in a measure.

In this paper, the expression “irregular pulses” is identical to “irregular metro-rhythms” and “irregular time signatures” (5/8, 5/16, 7/8, 7/16, 8/8, 8/16 ..., 15/8, 15/16 etc.) - “...compound time signatures, resulting from the combination of diverse simple time signatures (duple and triple ones)”. (Четриков, 1969, стр.210)

The ancient Greek scholar Aristoxenus (around 360 B.C.) established the division of a rhythmic group in two parts in several different ways – isorhythmical (1:1), diplasian (1:2 or 2:1), hemiolic (2:3 or 3:2). This applied to both rhythm as an individual expressive tool, and to metre as an organising factor. The essence of hemiola in irregularity of beat does not lie in the rhythmic relation between two note values within a simple duple or triple metre, but in the relation of the rhythm between the diverse duple (short) and triple (long) metric groupings (sections, simple time signatures) that are part of the composition of the compound irregular time signature.

In fact, what necessitates that such musical pulses be called irregular is the fast tempo in which metric beats run - exceeding 180 per minute. Thus, counting them "... becomes inconvenient, even impossible. In such cases one has to

⁸ Hemiola - the relation between two note values or metric groupings (sections), where one of them is one and a half times longer than the other one.

count and beat time not of individual beats of the time signature, but of whole simple time signatures within a compound time signature”. (Хаджиев, 1990, стр.69-70)

The current paper leverages historical and theoretical research and systematisation of texts from a number of valuable research works and sources, the overall purpose of which is to review and analyse concepts regarding the theoretical aspects, spread, development and interpretation of irregular pulses in the Bulgarian musical culture, and of the music of some nationalities and foreign composers, as a result of which relevant conclusions and summaries will be drawn.

In specialised literature worldwide, irregular time signatures (meters, pulses) occur under the synonyms: irregular meter time signatures, uneven beats, asymmetric measures, irregular times. In some musical encyclopaedias the term “additive rhythm” is used in place of “irregular measure”. In some cases they are also called: asymmetric, uneven, heterogeneous, or combined beats (Motsev), aksak, rhythmically irregular beat; complex composite meters and rhythms (Sposobin) without, however, taking into account the tempo; “divisive” rhythms; cumulative, additive meters or accumulative metro-rhythms; crooked, epileptic, complex, irregular, or compound meters.

As regards the origin of irregular pulses, the jury is still out and there is no clear position as “... there is no explicit material evidence except for certain assumptions based on inexplicit sources”. (Огненска, 2003, стр.54) Rather rarely and only in some nationalities there also occur irregular measures⁹, where one or several of the beats in a bar have a temporal duration greater than that of the rest, usually exceeding by 50%. (Иванов, 2018)

The majority of studies demonstrate the ancient origins of the irregular metro-rhythm, which most probably formed due to the mixing of various cultures, in the course of migration of nations and formation of states on the Balkan Peninsula. According to some researchers, the emergence of similar metro-rhythmic structures should be regarded as the result of the influences of Asian and European culture in the 7th c. A.D. Conjectures exist that the great variety of these pulses originated from the proto-Bulgarians that inhabited the lands of Central Asia, and later settled on the territory of Eastern Europe and the Balkan Peninsula.

The main credit for the initial study of uneven metro-rhythmic forms in Bulgaria goes to folklorists, musicologists and composers that worked in the years after the Liberation (1877 - 1878) and especially in the early 20th century. The folklore melodies collected up to 1928 in Bulgaria and recorded in notes and with a microphone provide proofs of the existence of completely original, Bulgarian folk music works. Atanas Badev, Anastas Stoyanov, Ivan Shishmanov, Dobri Hristov, Vasil Stoin, etc. are credited with clarifying the metro-rhythmic structure and exploration of irregular pulses. Atanas Badev recorded the first folk songs in irregular metres.

The Hungarian composer, pianist and ethnomusicologist Béla Bartók used to call the irregular metro-rhythms “Bulgarian rhythm” because in his opinion they had been initially singled out by Bulgarian musical scholars: “Bulgarian rhythm is that type of rhythm in which the value in the denominator of the fraction indicating the time signature is extremely short, namely 300–400 M.M.¹⁰, and also in which within one measure these very short basic values are grouped in uneven bigger values, i.e. asymmetrical groupings occur”. (Барток, 2012a) He applied the term “hyper-Bulgarian rhythm” to that type of pulsation, in which the basic note value has a tempo of about 500 – 600 M.M. Compared with music worldwide, a tempo of such values is almost impossible to identify.

Béla Bartók made popular the uniqueness of Bulgarian irregular metre musical forms both through his publications (a report of 1938 in the Budapest Conservatory), and via his works where he used Bulgarian irregular time signatures: three separate pieces in Bulgarian rhythm; a cycle of six pieces from the *Microcosmos* sixth notebook for piano; String Quartet No. 5 (1934) in A-flat - part three beginning in tempo “*Alla bulgarese*”, then proceeding with a subject in 9/8 with a long fourth unit and a subject in time signature of 10/8; Concerto for orchestra - part IV.

As regards the irregular time signature of 7/8 (7/16) that is typical of the Bulgarian folk dance of rachenitsa, Béla Bartók made the following comment: “We only know of two Hungarian melodies where this rhythm runs consistently from beginning to end: one of them is from Moldova, in the collected works of Pal Peter Domokosh, while the other comes from the Bihar region, in the collections of Vikar ... Hungarian Folk Song from Moldovan changovans from Trunk, the region of Bako”. (Барток, 2012b) This shows that irregular metro-rhythmic forms most probably occur in both the people of Hungary and of Moldova.

The author broadens the view as regards the existence of these pulses in other nationalities by saying that: “In one of their publications, Uspenski (and Belyaev) published the Turkestan Turkmen folk music. It contains quite a number of melodies noted down in the time signature of 5/8, where the value of quaver notes is around 300 M.M”. (Барток, 2012c) On analysing the salience of the tempo and of the metro-rhythm, to some extent, in Turkmen folk melodies in the 5/8 time signature, it may be concluded that in some aspects their interpreting comes close to the Bulgarian

⁹ The first musical theorists used the term “measure” in place of “time signature”.

¹⁰ M.M. – Maelzel metronome.

Paydoushko horo. In the view of the ethnomusicologist, Romanian Christmas songs (about 5% of them) also feature irregular pulses (“Bulgarian rhythm”). Their presence is explained with Bulgarian influence.

The works of the Bulgarian composer and researcher Dobri Hristov are considered as the main prime sources for the professional interpretation of irregular metro-rhythms in Bulgaria. Through the examples pointed out in them, different assumptions are made as to their place of occurrence, who they were inherited from and how these musical metric forms originated.

In his paper of 1913 the author compared compared the similarity of movements of hands, legs and crouching in rachenitsa with some foreign dances such as the Slovenian “hoshie”, the Czech folk dance of “polka”, and the Magyar “chardash”. A proof of the fact that rachenitsa is an original Bulgarian dance is also the discussion of Dobri Hristov with Turkish musicians according to whom: “The usul (technique) of this dance they call “mandra usul” (i.e. usul seen at mountain dairies) and it is implemented at mountain dairies in “Bulgaristan” ... A proof of the above is also the circumstance that nearly the same melody is sung in our neighbour Serbia, in the 2/4 meter, while our rachenitsa has the 7/16 meter signature”. (Христов, 1913, стр.16) This is what Timothy Rice calls “metric transposition” – shifting the tone accent by changing the meter while keeping the same melody. (Rice, 2004)

Traces of irregularity of metre with transformed form and pulses of rachenitsa were noticed by Dobri Hristov in “Till Eulenspiegel” and “The Legend of Joseph” by the German composer Richard Strauss who “... used our same measure as the basis of a Negro dance, but already marked in a jocular fashion for easier performance by Germans in the following way: Vivo $\text{♩} \text{♪} \text{♩} | \text{♩} \text{♪} \text{♩} | \text{♩} \text{♪} \text{♩}$ ”. (Христов, 1928а, стр.31) However, on account of the slower tempo of the metric beats, the irregular pulse typical for the Bulgarian music is hard to distinguish. As regards the irregular time signature of 5/16 and the varieties of its rhythmic forms ($\text{♩} \text{♩} \text{♩} \text{♩} \text{♩}$ etc.) it is pointed out that “... this is the basis of the Bulgarian lively dance of “Paydoushka” (from the Slav word „пайдъм = кулхам = къцам - to hobble)”. (Христов, 1928b, стр.29)

Another distinguished Bulgarian musicologist and folklorist, Alexander Motsev, is of the opinion that folk songs in the time signature of 7/8 occur with the Albanians and Romanians, most frequently with a three-beat grouping in the first section. As regards the metric units with a long second section, he shares the following: “The Romanians themselves notate their songs with alternation of beat between 2/4 and 3/4 measure in combinations of all kinds of correct and irregular measures”. (Моцев, 1949а, стр.358) As regards the song and the horo dance called “Eleno mome”, with a time signature of 13/16, the author comments that apart from Bulgarian music similar metro rhythmic intonations occur also in an Ukrainian and two Romanian songs with a time signature of 7/8. Alexander Motsev mentions in his paper a collection of Al. Zataevich, “1000 Kyrgisian Songs” (1925), which includes 200 songs in irregular time signatures. According to this folklorist, the folk songs based on the principle of chronos protos¹¹, are the live link of the Bulgarian musical culture with ancient musical cultures on the Balkan Peninsula.

Regarding the subject in Prelude № 14”, opus 11, time signature 15/8, of the composer and pianist Alexander Scriabin, this type of pulse “... leaves no doubt about its triple nature, i.e. that in this case we have peonic tripod (3 x 5/8)”. (Моцев, 1949b, стр.285) However, such metro-rhythmic structures are not always identical to the Bulgarian ones, as they most often lack the “cohesion” between the short (duple) and the long (triple) section.

Theorising of irregular metro-rhythms “...however, is restricted in most cases only to irregular metres of the ancient Greeks ... Whenever they are used by famous composers (Chopin, Tchaikovsky, Wagner), they are treated as “oddities” by theoreticians. (Моцев, 1949с, стр.47)

In a study conducted by the prominent Bulgarian musicologist, folklorist and composer Nikolay Kaufman on some specificities in the folk songs of the Bulgarians and the eastern Slavs (such as Ukrainians, Russians, etc.) it has been stated that in eastern Slavs there also occur irregular pulses, but they sound a littler different from those of the Bulgarians. (Кауфман, 1968)

Irregular time signatures alternating within short intervals can also be noted in the music to the ballets “Petruushka” and “The Rite of Spring”, by the Russian composer Igor Stravinsky. Both in “Petruushka” and even more frequently in “The Rite of Spring”, Stravinsky makes use of asymmetric measures of rather short units of eighth (quaver) notes; often, while alternating between types of measures he mixed symmetric with asymmetric measures”. (Бярок, 2012d) This makes it evident and confirms the fact that there is irregularity in this eastern Slavic nation, but featuring its own typical musical and cultural peculiarities.

One of the modern researchers of Bulgarian folklore and irregularity of beat, Lozanka Peycheva, notes that later in time the discovery of irregular time signatures was recognised by world science and proven by identifying of similar patterns in the musical folklore of other nations of Balkan, Asian and African origin. As regards Bulgarian musical

¹¹ Chronos protos: metric beat; a temporal unit of duration that carries the basic pulse in irregular metro-rhythmic forms.

culture, "... In Burtons's view those rhythms so very foreign to the western ear, are impregnated in the Bulgarian spirit and can be felt not only in concert halls, but also in the legs tapping and finger snapping of the Bulgarians". (Велчева и Пейчева, 2005, стр.13)

A prestigious musical encyclopaedia (*The New Grove Dictionary of Music and Musicians*, 2004) mentions that western music is almost fully made of divisible (regular) measures, while the music of India and some other countries may be regarded mainly as of the irregular or additive type. The fact that "...the traditional music in the region of India is predominantly based on irregular measures" (Иванов, 2018), is of particular importance of this analysis.

Generally, such pulses are almost extraneous and quite scarce to world music. Among the more modern works of similar time signatures is the song "Money" (7/4) of Pink Floyd, Gustav Holst's composition "Mars, the Bringer of War" of the orchestral suite *The Planets*, also some jazz pieces in 11/4, 7/4 and 9/8 of the Dave Brubeck Quartet, and the works of Philip Glass. Kate Bush and George Harrison also used composite ("irregular") time signatures in their compositions.

The references reviewed in this report are only a small part of the existing studies on this subject. Nevertheless, on the grounds of the demonstrated aspects of the specifics of irregular pulses, their spread, development and interpreting it may be concluded, that in Bulgaria they are characterised by their uniqueness. Although represented to a lesser degree, irregular pulses are also present in other Slavic and non Slavic, neighbouring and non neighbouring, closer and distant ethnic musical cultures. In Bulgarian music, however, irregular metro-rhythms are phenomenal on account of their huge spread, diversity, complexity and variations - there are patterns of larger number of metric elements (exceeding 15). In western music (and not only there), such types of time signatures are most often interpreted as complex and compound as the tempo of melodies allows for motional response to each of the metric beats. In Bulgaria and some other nationalities, irregular pulses are also structurally recorded with complex compound time signatures, but the fast tempo in which the metric beats flow prevents their individual counting. This provides grounds for such metro-rhythmic structures to be regarded as irregular. Nowhere else but in Bulgarian music of both folk origin and composed pieces, have irregular metro-rhythms been represented in such a diversity of combinations and variants.

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