Polity and Population Quality Dynamics

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ABSTRACT

The paper puts forward the idea of polity dynamics relationship with ethnogenetic dynamics that suggests the existence of ethno and policy genesis as a single process. The ethnogenetic dynamics is expressed by the fact that ethnicity throughout its life undergoes a series of age phases - stable periods and phase transitions separating these periods - unstable crisis periods, for which large-scale domestic conflicts and major military defeats of the state established by it are natural. The ethnogenetic dynamics is determined by the population qualitative composition dynamics, i.e. the dynamics of individual shares for different energy types as the part of an ethnic group. Universal and invariant regularity is developed for polity types, ethnicities and historic epochs linking the polity dynamics in its conflict aspect with the dynamics of population qualitative composition - a numerical algorithm of ethno and policy genesis. The following hypothesis is stated that the algorithm existence is based on the synchronization dynamics quality by climatic cycles associated with solar activity cycles.

INTRODUCTION

The history of many polities was developed by cycles, from prosperity and stability to crisis and decline, and then to the next stage of prosperity. Why do relatively stable periods of polity development are changed with vague and crisis ones? The answers to this question vary from individual explanations that take into account the specific characteristics of a particular polity to the attempts of generalized theories development for social (historical) dynamics, focusing the attention on certain integrity changes over a long period of time. The latter include works linking historical dynamics with socio-demographic cycles (see, see for example, [1], [2], [3]). The main reasons for the start of domestic political crisis are explained by the authors as the impact of quantitative factors: overproduction of elites, i.e. its quantitative increase and also by overpopulation, i.e. the number of peasants increase, leading to their dispossession and hunger.

However, by the beginning of crisis and the disintegration of state may cause degradation as elite so as peasantry without its significant numerical increase. Crisis may start if the share of destructive elements among elite increases and reaches a certain critical level. Corrupt officials, amateurs, etc. who perform their responsibilities badly are referred to such destructive elements. And the share of poor workers or just lazy bums is increased to a critical level among peasantry. Thus, the political dynamics in its conflict aspect may be synchronized with the population qualitative composition dynamics, making it necessary to take this dynamics into account during socio-demographic cycles analysis.

The need to take into account the population quality dynamics stems from the fact that "the most important condition of population regulation is the heterogeneity of its constituent individuals" [4]. The quality dynamics is one of the most effective mechanisms for population homeostasis by the increase of certain types of individuals proportion at high population density [5]. The same is true in respect to human populations.

L.N. Gumilev is one among few historians who tried to investigate the influence of population quality on historical dynamics. According to K.G. Frumkin "L.N. Gumilev states the question of population quality participating in historical events, the dependence of historical events outcome on this quality, and most importantly - the dependence of this quality from a human type fraction in the total mass of humanity. The posing of such issues is referred to L.N. Gumilev's merits" [6]. K.G. Frumkin means here L.N. Gumilev's mover and shaker types (individuals with energy excess) submovers and subshakers (energy-deficient individuals) and harmonic people (balanced energy individuals); the latter constitute the bulk of ethnic group members.

Let's list the main features that according to L.N. Gumilev characterize these three types. The mover and shaker hallmark is "activity, which manifests itself in an individual strive for purpose (often illusory one) and the ability for overstress and sacrifices to achieve this purpose. Harmonic people may exhibit significant
activity, but not on their own initiative, but under the influence of movers and shakers. Subpassionarity manifests itself in the inability to restrain instinctive desires, antisocial behavior, parasitism, lack of care for offspring. The focusing of subpassionarity city members leads to a tremendous increase of alcoholism, situational crime, drug addiction, natural disturbances” [7]. "Subpassionarity members often play an important role in ethnic group fate, performing conquests and coups with passionarity members. They are capable of robbery, the victims of which are harmonious people. The modification of energy type ratio, both numerical and vector ones defines the process of ethnogenesis within the ethnic group” [8], which is defined as "the process of all development stages in the area of interest for policy genesis” [3]. Using this concept we should state that the dynamics of energy type share ratio defines the process of ethno and policy genesis and related political dynamics.

Each phase has its own distinctive features [7], and an approximate age range [8]. One phase turns into another through the phase transitions i.e. critical periods in ethnic group life, which are characterized by internal conflicts, leading to a weakening, decay, and sometimes to the destruction of the state established by this group [8]. The age range of phase transitions is not mentioned by L.N. Gumilev.

An estimated dating performed by L.N. Gumilev for the so-called "passionate impulses" that led to new ethnic group formation, enabled him to perform an empirical test of his concept by analyzing the ethnogenesis of this ethnic group part [8]. However, its results may not be considered as reliable ones. Different ethnic groups differ significantly by their age range. The same phases are not identified as phase transitions. We have to admit that L.N. Gumilev was unable to prove the existence of universal laws describing the dynamics of energy type shares as the part of an ethnic group.

Let’s try to solve this problem on the basis of L.N. Gumilev’s concept, which considers an ethnic phenomenon within a primordialist biosocial approach.

There is an opinion that "macrohistory is a dialectic interaction of ethnogenesis and sociogenesis, which act as two evolution spirals, ensuring the development and preservation of Homo sapiens species” [9]. It is stated that “the history of tribal ethnic groups covering about 100 thousand years is disproportionately longer than the history of any socio-political institution” [10]. Such significant ethnic phenomenon timeframe existence comparable to the lifetime of Homo sapiens species existence ethnic phenomenon make to consider it from the perspective of primordialist biosocial approach: "Ethnic groups are biosocial communities of people, a kind of biological subtypes of a single type, through which its adaptation to specific environmental conditions is provided” [10].

The idea of ethnic group as the main subject of history and biosocial phenomenon is supported by L.N. Gumilev. According to him, "ethnic groups that exist in space and time are the actors of a history theater” [11]; "Ethnic groups are biophysical realities, always clothed in a particular social wrapper” [8]; "It is possible to talk about ethnogenesis as a process, which are the driving forces of the natural, biosphere factors indirectly determining social forms of life” [7].

Sociogenesis driving force is "ethnos biosocial energy converted into social potency of society” [12]. However the cited authors do not specify the nature of this energy.

The asabiya concept (group solidarity manifested in the ability of a group to protect itself, to resist and to pursue its claims) is close to this meaning and was used by a medieval Arab philosopher Ibn Khaldun, one of the first developers of political cycle theory [13]. Ibn Khaldun relates political dynamics with the asabiya dynamics. A number of modern scholars use this concept to develop their theories (see, for example, [3]).

L.N. Gumilev attempts to reveal the genesis of ethnic group biosocial energy i.e. passionarity, which, in his opinion, is not only population-based, but also an individual feature [8], which is natural as for ethnic groups, so as for the carriers of this trait, i.e. movers and shakers. Passionarity is manifested in individuals and ethnic groups activity, their ability to alter the natural and social environment. [7].

The passionate sign is determined by L.N. Gumilev as a recessive genetic trait resulting from micromutations (passionate impulse) having a cosmic origin (space radiation) [7]. Passionate impulse leads to the appearance of movers and shakers in the populations affected by this radiation. These movers and shakers create a new ethnic system. Researchers do not accept this hypothesis. Thus, P.V. Turchin states that "the details of L.N. Gumilev’s mechanism are based on unknown phenomena or the phenomena which are in absolute contradiction with modern science". [3] You should try to link the passionarity phenomenon to the phenomenon well known by biological science.

The basis of passionarity phenomenon makes, in our opinion, the heterosis phenomenon. On the basis the passionarity genesis hypothesis the following statement was formulated: new ethnic group is formed over a period of time as a result of parent substrates mixing which differ by racial and anthropological aspects. The mixing populations increase the number of born movers and shakers due to heterosis phenomenon. These
movers and shakers form subethnic groups forming the nucleus of a new ethnic group [14]. Thus, the passionarity source is the anthropological and racial heterogeneity of ethnic populations. It is maximal at the start of ethnic group development (during this period the number of produced movers and shakers is maximum one) and it is minimal - at the end of ethnic group development (during this period the number of produced movers and shakers is minimum one).

By taking L.N. Gumilev position concerning the existence of optimal values for each energy type share as the basis [8], the definitions for ethnic and policy genesis (stable period within a phase) and phase transition (crisis period within a phase) were given. The ethnic and policy genesis phase is the stage which has the age limits of ethnic system existence by which it retains its steady state characterized by the absence of large-scale conflicts due to the fact that the proportion of movers and shakers and submovers and subshakers is changed within the range of values which is optimal for this definition phase.

Phase transition is the existence stage of an ethnic system with an age range in which it exists in an unstable state, arising from the fact that the submovers and subshakers and/or movers and shakers share go beyond the range of values optimal for the completed (current) phase; It is an unstable state which is characterized by ethnic field split and persists as long as the share of movers and submovers is not beyond the optimal range of values for the next (current) phase. An institution of two or more military-political groups which have absolutely opposed ideological attitudes is perceived as a split ethnic field [7]; the conflicts between these groups are usually of an armed character.

According to L.N. Gumilev passionarity is a vector value. An ethnic field split may be described mathematically as the sum of values for ethnic group passionarity the vectors of which are oppositely directed from political-military groups. It is obvious that the resulting passionarity of an ethnic group will be close to zero. Due to this reason “the ethnic group which is in unstable states of phase transitions is very vulnerable and may easily become a victim of a more passionate neighbor” [8].

There are three ways to bring the movers and submovers share to the spectrum of optimal values for the next (current) phase (or the share of movers and submovers optimization): their death in internal conflicts, the retreat from their territory as the result of an aggressive policy or colonization and the destruction by mass repression usually conducted by punitive authorities.

The ways of energy type optimization have its analogues in biological populations. Y.M. Plyusnin identifies the following mechanisms of homeostasis population regulation: 1) by the migration of individuals with a certain type of behavior (for example, with a high level of research motivation); 2) through the provision of new groups within the community: like young animal “gangs” that have fallen to independent living; 3) by the physical destruction of certain individuals, which are “spare” from the community standpoint; 4) by parent group division and the isolation of its subsidiary groups, which begins its life as a self-sufficient community. The cases of antagonistic relations between such groups are described, even when kinship and friendship links do not prevent a feud between divided communities. The following case is described: the bigger part of a divided community of chimpanzees organized a “gang” (the group consisting of multiple males) and killed all chimpanzees from another community, including not only the males and children, but also females whose value is very high for chimpanzee [15].

Optimization method by conquering own territory has the first and the second mechanisms regulating population homeostasis as its biological basis. The third mechanism is represented by mass repression and the fourth mechanism is represented by death during unrest. Let’s remind that a civil war is always preceded by an ethnic field split ethnic: the separation of most part of movers and submovers of an ethnic group, and harmonic field split and persists as long as the share of movers and submovers is not beyond the optimal range of values for the next (current) phase. An institution of two or more military-political groups which have absolutely opposed ideological attitudes is perceived as a split ethnic field [7]; the conflicts between these groups are usually of an armed character.

The ethnic policy genesis for a number of ethnic groups and the states created by them were analyzed. The political history of such states and groups has more or less complete and reliable evidence. This analysis revealed that all phases and phase transitions begin and end at a certain age of an ethnic group with some tolerance. This invariant regularity in respect to ethnic groups, historical eras and polity types was named as “ethnic and policy genesis numerical algorithm”. This algorithm determines the beginning and end, i.e. the age range of phases and phase transitions of ethnic genesis and also the crisis periods within elevation, akmathic and inertia phases similar to phase transitions by its features (see below).

1. Elevation phase: 0 - 340-360 years. Consists of incubation (0 - 100-155 years) and explicit (100-155 - 340-360 years) periods. Explicit period begins with the state creation by an ethnic group. Within the explicit period a vague period is identified (185 - 235 years).
3. Akmathic phase: 450-470 - 630-655 years. A troubled period of passionarity overheat is identified within this phase (540-560 - 570-585 years).

There are three crisis periods within this phase: the first (880-920 - 935-970 years), second (1025-1070 - 1100-1145) and third (1175-1215, 1260-1285) separated by four stable periods.
8. Inertia-obscuration transition phase: 1302-1334 - about 1,500 years.

The numerical algorithm describes qualitative change of energy type shares as part of an ethnic group, depending on its age. If take into account an ethnic system as a self-organizing one, then these shares are the control parameters, the dynamics of which determines whether an ethnicity is in a steady state phase or unstable state phase or in a crisis period within this phase.

The algorithm is completely valid, of course, for some ideal ethnic group (the ethnic ideal conditions are presented by [14]). However, some ethnic groups (Egyptians, Assyrians, Chinese, Romans, Persians, Byzantines, British, Russian and others) are close to the ideal as their ethnic policy genesis was developed almost in exact accordance with the algorithm.

The numerical algorithm as a universal law expresses, apparently, the dependence of the passionarity dynamics on climate cycles synchronized by solar activity cycles. In this regard let's remind L.N. Gumilev's statement about the ethnicity as a biophysical reality. This situation may be understood in the following way: the passionarity vibrations which are biological parameter per se are synchronized with the vibrations of physical nature, the solar activity cycles.

G. Goldstone's point of view is known, which in contrast to Neo-Malthusianism, stands that population dynamics (and hence the population quality dynamics) depends mainly on the climate and epidemiological situation changes [1]. J. Goldstone's opinion is confirmed by the environmental data. The statistical data analysis of Hudson Bay Company fur production showed that the number of major commercial species - American white hare and Canadian lynx hunting this hare had cyclical fluctuations for a period of about 10 years. These fluctuations are apparently synchronized with climatic variations acting on white hare food supply, which in its turn are synchronized by a well-known 11-year solar cycle.

According to V.G. Krivenko the synchronization mechanism of climate variability by solar cycles is as follows: "By changing the amount of heat that is sent to the Earth, and affecting the types of atmospheric circulation, the solar activity cycles cause simultaneous changes in temperature and humidity, determining the cyclical nature of climatic conditions fluctuations" [16].

The impact of climate on the historical dynamics change is unquestionable. The study of lake sediments made it possible to obtain the evidence of climate change role in the collapse of classic Maya civilization [17]. The reconstruction of the climate history in the central part of Mexico according to lake sediment cores for the last 2600 years was continued by the paper [18]. The authors found that the precipitation pattern reveals clearly repeated drought picture with a period of 208 years and made the conclusion of their solar nature. The paper [19] proved that the pattern of climate change with a cycle of about 200 years also took place in the equatorial regions of East Africa.

V.A. Dergachyov on the basis of radiocarbon data analysis and beryllium-10 isotope data identified a 205-year cycle of solar origin. Along with this solar cycle a 200-year climate cycle, identified in various parts of the globe has a high correlation coefficient. This is an indication that a 200-year climate variability should be a global phenomenon [20].

According to the numerical algorithm, the age of a vague period middle for an elevation phase makes 210 years (185 + 235 = 420/2 = 210), the age of the phase transition elevation-akmathic makes 405 years, the age of the middle phase transition inertia-breakage makes 815 years, the age of the third crisis inertial phase makes 1230 years. You can see that these ages are multiples of the number 205, which allows talk about passionarity synchronization dynamics of 205-year solar cycle with some confidence. The thing that the ages of other crisis period middles are not multiples of the number 205 is explained probably due by the fact that the a 205-year solar cycle, as well as all the other solar cycles, is quasi-periodic. Also, apparently, the passionarity dynamics is synchronized by Glaysberg cycle (more specifically it is synchronized with the associated climatic cycle). According to E.I. and V.V. Davydov, the analysis shows that the long-life temperature variation (in Central England and in the American state of New Jersey) is associated with the periods of about 42 and 80-82 years. The authors conclude that the temperature data show Glaysberg cycle which represents approximately the period of 81 years, as well as cycle corresponding to the half of Glaysberg cycle [21]. The fact that climatic cycle is correlated with the Glaysberg cycle is determined in different continents. This fact also testifies to its global nature.

The synchronization of passionarity dynamics for one of the Glaysberg cycle harmonics, the average duration of which makes 82 years makes it possible to talk about the existence of so-called "reproductive" ages of maternal ethnic group (902 years, 1066 and 1230 years, 1394 and 1558 years) which considerably increases the number of movers born within separate populations. When these movers or their children come of age and
enter into social life the proportion of ethnic group movers begins to exceed the values optimal for the inertia phase, which leads to the beginning of inertial phase crisis [14].

You can see that the values of all reproductive ages are the multiples of the number 82 (902 = 82x11, 1066 = 82x13, etc.) that allows us to talk about the passionarity dynamics synchronization with a 82-year harmonic of Glaysberg cycle.

A lot of movers is born during one of reproductive ages especially many and they and their descendants form subethnic groups making the nucleus of a new ethnic group, which is a "child" in relation to a "parent". The process is repeated at the end of the child ethnicity. This leads to the fact that there are usually several successive ethnic groups in a certain area linked by anthropological and racial type and language succession, and often by the succession of culture. This collection of related ethnic groups was called by hyperethnic group [14].

The reproductive age values and the approximate dates of passionate impulses indicated by L.N. Gumilev [8] identified the dates of all ethnic groups, the main events of political history of which are known more or less reliably. These are the ethnic groups of Egyptian, Sumerian, Assyrian-Babylonian, Hebrew, Arabic, Chinese, Japanese, Mongolian, Mongolian-Turkic, Greek, Indo-Iranian, Roman, German and Eastern Slavic hyperethnics. In order to verify the numerical algorithm the ethnic policy genesis for some of these ethnic groups was considered [22]. The review indicated that their ethnic policy genesis was developed in general according to the numerical algorithm. This to some extent confirms the universal invariant with respect to historical eras and types of polities the nature of algorithm which allows predict on its basis the development of existing states.

The ability to predict based on the fact that, provided that the date of an ethnic group appearance is known, it is possible to determine which phase or phase transition (at unstable state within a phase) it experiences. If you find that ethnicity is near the middle of any phase (in the mid of a sustainable period within a phase), then the possibility of unrest happening in the coming years is small. If an ethnicity is before a phase transition (an unstable period within a phase), especially within these periods, the probability of unrest beginning in the near future increases substantially.

The prediction was given that the leading Western ethnic groups are on the verge of an inertia-obscurations phase transition which is the period of an ethnicity senile agony characterized by large-scale internal political conflicts [22].

The result of the study was the formulation of a universal, invariant ethnologies with respect to types of polities and historical era patterns linking the dynamics of polity in its conflict aspect with the dynamics of the population qualitative composition (passionarity dynamics) i.e. the numerical algorithm of ethnic policy genesis. The basis of algorithm existence is apparently the dynamics synchronization of passionarity climatic cycles associated with solar activity cycles. The numerical algorithm may predict the development of existing states.

REFERENCES