To the blessed memory of A.L. Tchijevsky

5. TCHIJEVSKY'S DISCLOSURE: HOW THE SOLAR CYCLES MODULATE THE HISTORY

5.1. PHYSICAL FACTORS OF THE HISTORICAL PROCESS

The Author's Summary to the booklet:

A. Tchijevsky. Physical Factors of the Historical Process. A short sketch. Kaluga, 1924. – 72 p. (now included in a [2]), in Russian

SUMMARY

The principles of modern natural science have urged me to investigate whether or not there existed a correlation between the more important phenomena of nature and events in the social-historical life of mankind. In this direction, beginning in the year 1915, I have performed a number of researches, but at present I am submitting to the public only those which are directed towards determining the connection between the periodical sun-spot activity and (1) the behavior of organized human masses and (2) the universal historical process.

The following facts are based upon statistics gathered by me while submitting to a minute scrutiny the history of all the peoples and states known to science, beginning with the V century B. C. and ending with the present day.

1. As soon as the sun-spot activity approaches its maximum, the number of important mass historical events, taken as a whole, increases, approaching its maximum during the sun-spot maximum and decreasing to its minimum during the epochs of the sun-spot minimum.

2. In each century the rise of the synchronic universal military and political activity on the whole of the Earth's territory is observed exactly 9 times. This circumstance enables us to reckon that a cycle of universal human activity embraces 11 years (in the arithmetical mean). (See. Fig. 2, 3 & 4, also historiometrical table, p. p. 30—31).

3. Each cycle according to its historical psychological signs is divided into 4 parts (periods):

I. Minimum of excitability .....3 years;
II. growth „ „ .....2 „
III. maximum „ „ .....3 „
IV. decline „ „ .....3 „

The number of historical events in each cycle are distributed approximately according to the data for 500 years (XV—XX cent.) in the following manner (in the mean):

I period 5%;
II „ 20%;
III „ 60%;
IV „ ….....15%;
(See diagram on p. 29).

4. The course and development of each lengthy historical event is subject to fluctuations (periods of activity and inactivity) in direct dependence upon the periodical fluctuations occurring in the sun's activity.

Formula: the state of predisposition of collective bodies towards action is a function of the sun-spot periodical activity.

5. Episodic leaps or rises in the sun's activity, given the existence in human societies of politico-economical and other exciting factors, are capable of calling forth a synchronic rising in human collective bodies. Formula: the rising of the sun-spot activity transforms the people's potential energy into kinetic energy. (See Fig. 5).

My studies in the sphere of synthesizing historical material have enabled me to determine the following morphological law of the historical process:

6. The course of the universal historical process is composed of an uninterrupted row of cycles, occupying a period equaling in the arithmetical mean 11 years and synchronizing in the degree of its military-political activity with the sun-spot activity. Each cycle possesses the following historio-psychological peculiarities:

a. In the middle points of the cycle's course the mass activity of humanity all over the surface of the Earth, given the presence in human societies of economical, political or military exciting factors, reaches the maximum tension, manifesting itself in psycomotoric pandemics: revolutions, insurrections, expeditions, migrations etc., creating new formations in the existence of separate states and new historical epochs in the life of humanity. It is accompanied by an integration of the masses, a full expression of their activity and a form of government consisting of a majority.

b. In the extreme points of the cycle's course the tension of the all-human military-political activity falls to the minimum, ceding the way to creative activity and is accompanied by a general decrease of military or political enthusiasm, by peace and peaceful creative work in the sphere of state organizations, international relations, science and art, with a pronounced tendency towards absolutism in the governing powers and a disintegration of the masses. (See p. 51).

7. In correlation with the sun-spot maximum stand:

a. The dissemination of different doctrines political, religious etc., the spreading of heresies, religious riots, pilgrimages etc.

b. The appearance of social, military and religious leaders, reformists etc.

c. The formation of political, military, religious and commercial corporations, associations, unions, leagues, sects, companies etc.

8. It is impossible to overlook the fact, that pathological epidemics also coincide very frequently with the sun-spot maximum periods (see table on p. 47).

9. Thus the existence of a dependence between the sun-spot activity and the behavior of humanity should be considered established.

One cycle of all-human activity is taken by me for the first measuring unit of the historical process. The science concerned with investigating the historical phenomena from the above point of view I have named historiometria.

At present I am working on a plan of organizing scientific institutes for determining the influence of cosmic and geophysical factors upon the condition of the psychics of individuals and collective bodies, and devising a working method for them.

A. Tchijevsky.
November, 1922.
10, Ivanovskaia, Kaluga, Russia.

5.2. PHYSICAL FACTORS OF THE HISTORICAL PROCESS

ILLUSTRATIONS

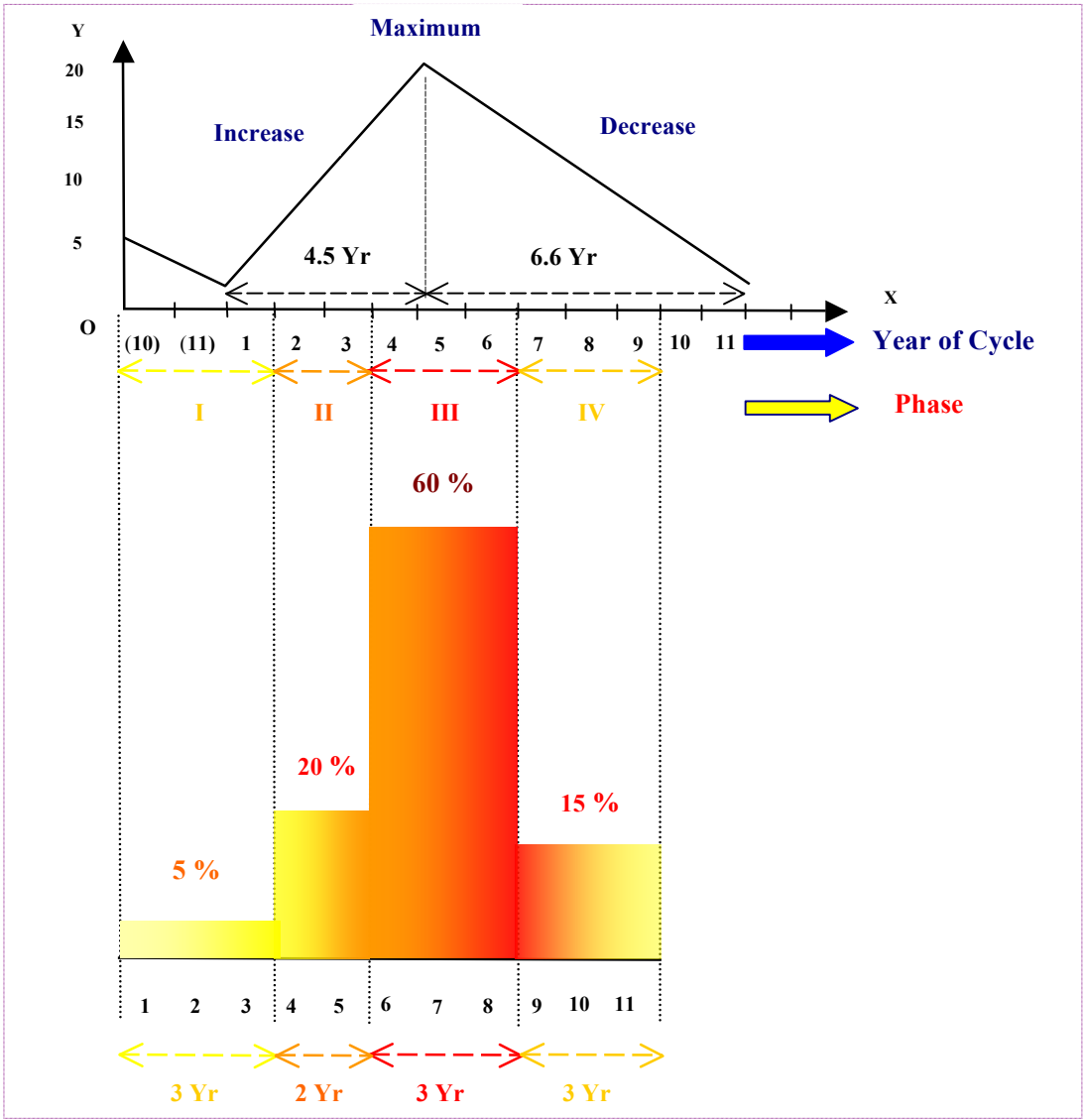

Fig.1. Percentage diagram for the number of originations of historical events, per Solar cycle years and phases, as an average for 500 years of observation (XV – XX centuries)

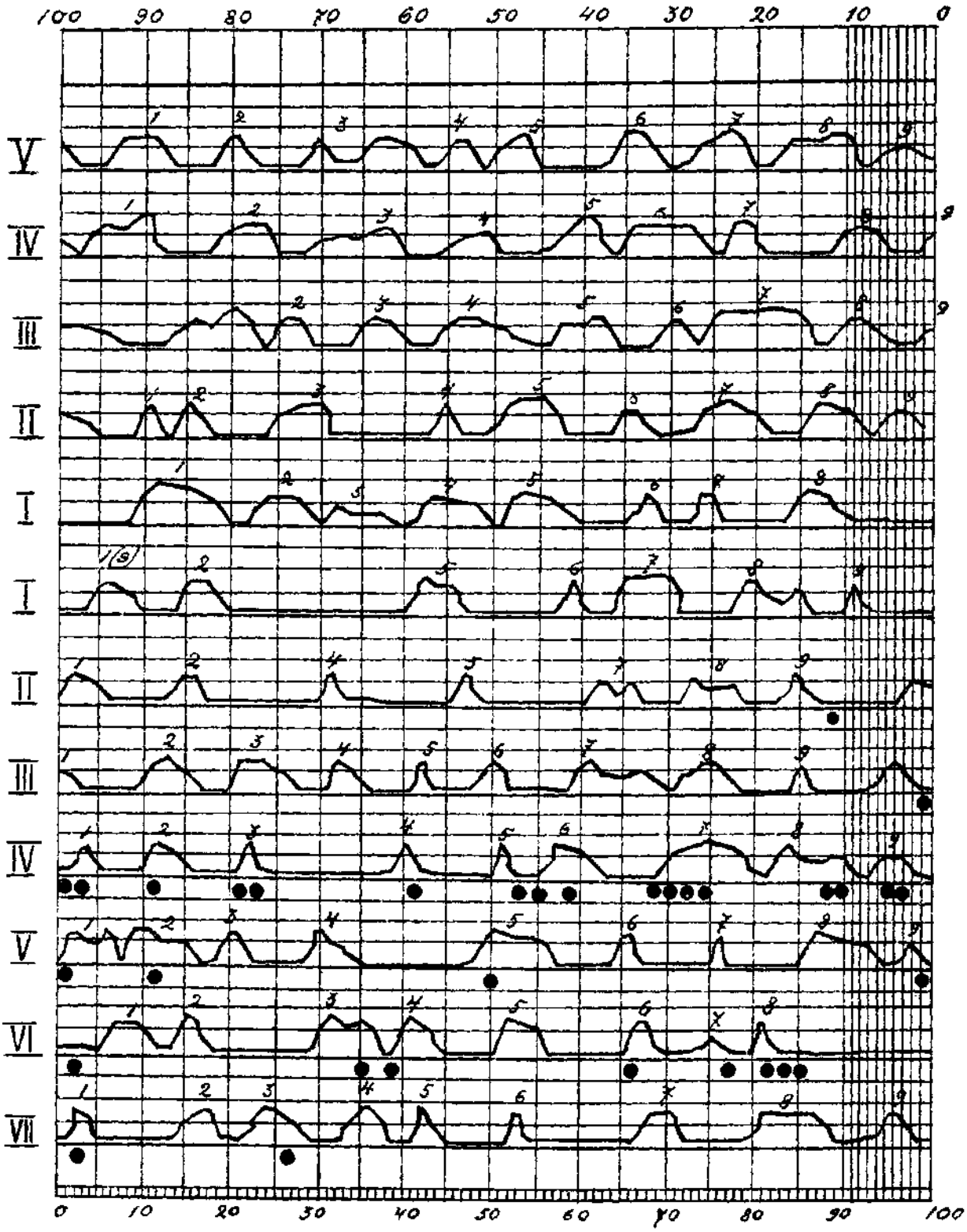

Fig. 2. The fluctuation's mean curves of the universal historical process on all the surface of the Earth during the period from V century B.C. till XX century A.D.

Along the abscissa axis are marked the years, along the ordinate axis – the quantity of important historical events. Dots mark the pretelescopic and later – astronomical data of the sun-spot maximum. Hyphens mark its minimum.

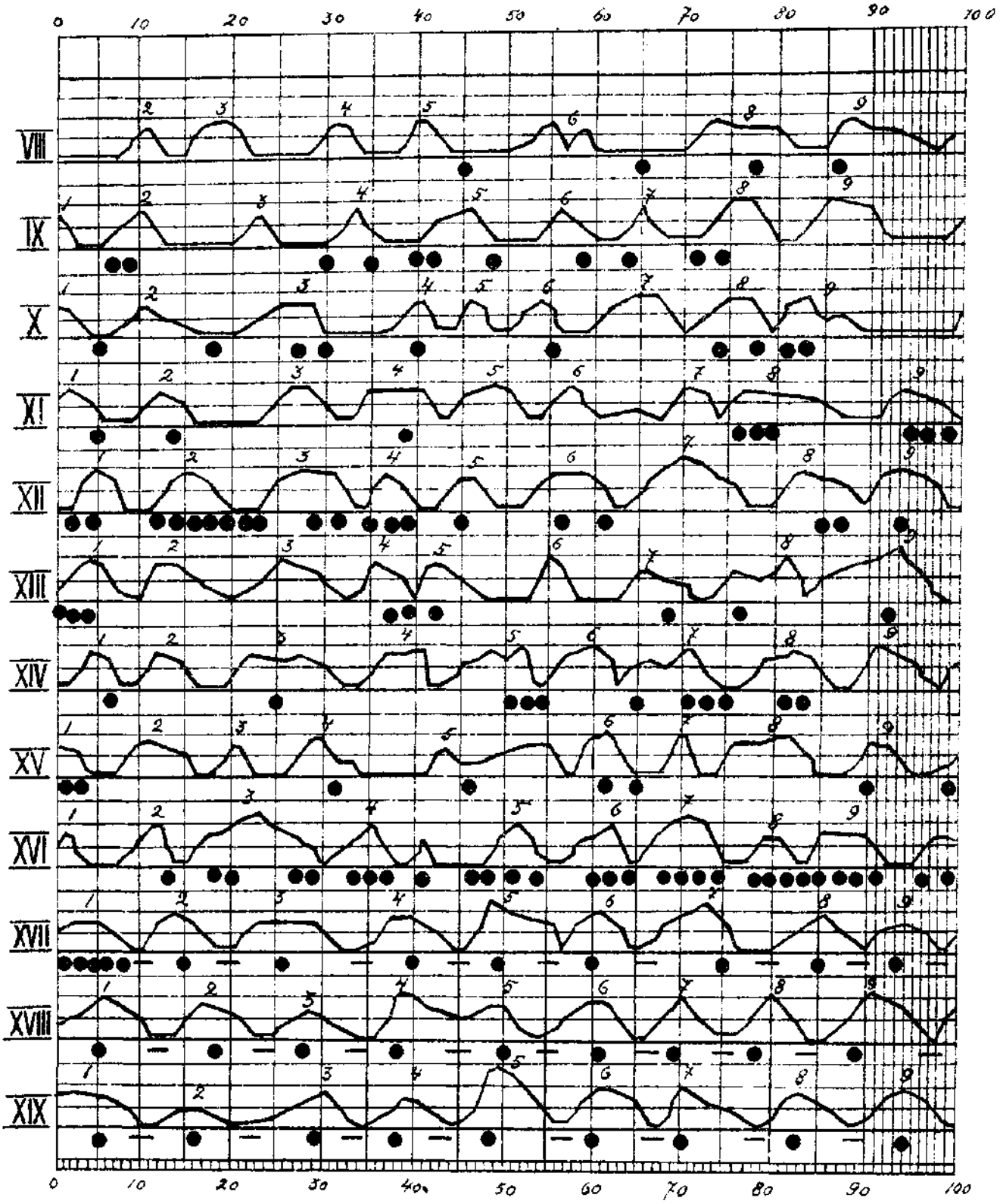

Fig. 3. The fluctuation's mean curves of the universal historical process on all the surface of the Earth during the period from V century B.C. till XX century A.D.

Along the abscissa axis are marked the years, along the ordinate axis – the quantity of important historical events. Dots mark the pretelescopic and later – astronomical data of the sun-spot maximum. Hyphens mark its minimum.

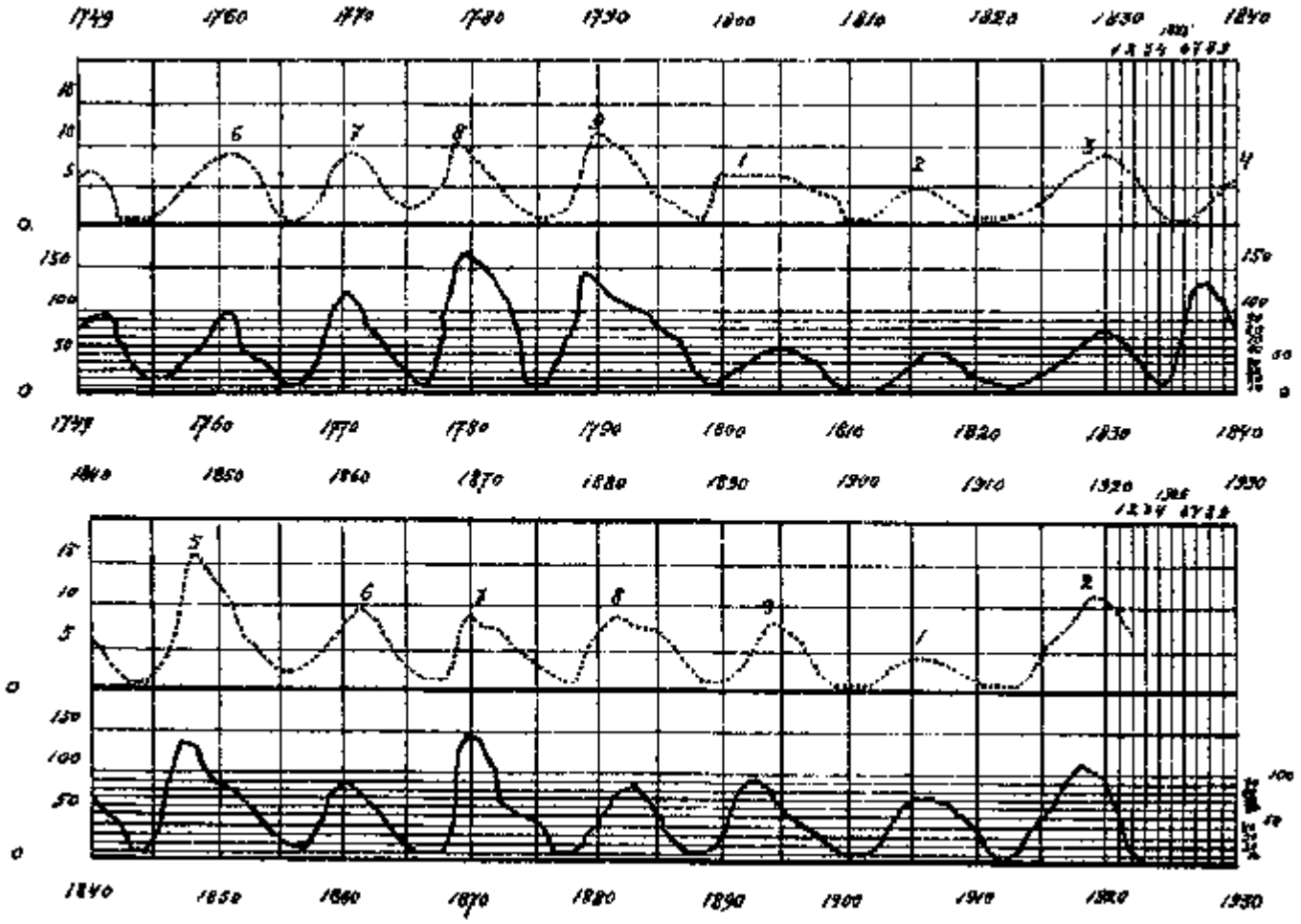

Fig 4. Parallelism of the curves of sun-spot activity (below) and the universal human military-political activity (above) from 1749 till 1922

SCHEMATIC SUMMARY OF PROPERTIES OF A COMPLETE HISTORIOMETRIC CYCLE

Sunspot activity	SA cycle Duration	11.124 Year, in the arithmetic mean			
	Duration of phases	5.16 Yr		5.96 Yr	
	Phase #	I	II	III	IV
	Sunspot number	**Minimum**	**Gradual increase in sunspots and their groups**	**Maximum**	**Gradual decrease in sunspots and their groups**
Social activity of human masses	Historiometric Cycle (HC) duration – 11 years (in the arithmetic mean)				
	Phase duration	**3** (in average)	**2** (in average)	**3** (in average)	**3** (in average)
	Phase name	**Minimal Excitability** (Epoch of relaxation)	**Growth of Excitability**	**Maximal Excitability (concentration)**	**Decline of Excitability**
	Rate of originations of historical events	**Minimal** number of originations of social movements of masses	**Gradual increase** in number of such movements	**Maximal** number of originations of social movements of masses	**Gradual decrease** in number of such movements
	Per Phase	**5 %**	**20 %**	**60 %**	**15 %**
	Per year	**1.7 %**	**10 %**	**20 %**	**5 %**
	Socio-psychological behaviour of masses per HC phases	Differentiation of masses, apathy to social matters, peaceable disposition of masses, tractability, tolerance, depression, static character of masses	1. Rise of social order ideas in masses and onset of collective concentration. 2. Grouping of ideas and masses. 3. Appearing of one prevailing idea and general consolidation of masses	I. a. Masses are influenced by Popular and military leaders, speakers, press; b. Effectuality of ideas being circulated in masses. II. a. Swiftness in development of popular movements; b) increase of territory sweep; c) integration of masses; d) individualization of collectives; e) high dynamics of masses	Progressive slowness of social reactions to irritations. Degradation of concentrated action, enthusiasm, inspiration, etc.
	Note		These phenomena are developed provided that political, military or other exciting factors are present in the society		
	Historical events per Cycle Phases	Making peace pacts, not large-scale aggressions, surrenders, occupations, maximal reduction of parliamentary rights, strengthening of autocracy	Hesitation in solving of military and political questions; preparations to war; worsening of international relations; initiating of conspiracies; exposure of military-political tendencies	Moving forward of popular and military leaders, statesmen; triumph of ideas that were supported by masses; maximal raise of parliamentary rights; democratic and social reforms; democracy, constraining of autocracy. Revolutions, rebellions, mutinies, wars, expeditions, campaigns, emigrations, campaigns, persecutions and other outbursts of large-scale people's activity	Disintegration of military and political organizations; separatism; rejection of claims of state or international level; dispersal or breakdown of popular assemblies; popular uprisings are quelled easily; completion of events that arose at the previous phase

5.3. A SKETCH ON SCIENTIFIC BIOGRAPHY OF ALEXANDER TCHIJEVSKY

(February 8, 1897 - December 20, 1964)

Eight years of WWI, Revolution (1917) and Civil War (1918-1921) have killed the Russian economy. This forced the bolsheviks to allow private property for a decade (this period was called NEP – New Economic Policy). Though they tried to introduce their bastard ideology in every sphere of life from the very incipient revolt, they had neither enough administrative forces, nor recruited scientists, nor time for achieving this goal in the twenties.

Just at that time, a graduate of Moscow Archeological Institute and Moscow Commercial College, Alexander Leonidovich Tchijevsky (or Chijevsky), had started to establish contacts between history, Mathematics and Biology: having been inspired by his ideas, he prepared his thesis on "Analysis of Periodicity of the World Wide Process" in search of a PhD in World History at the Scientific Council of the History and Philology Faculty of Moscow University in 1918.

His work received a positive approval from the official opponents, famous historians, who had carefully studied the thesis. Due to the extremely unusual subject of his thesis the members of the Council were in doubt, but they concluded that they were dealing either with a great delusion, or with an ingenious discovery and, in order that the progeny should not accuse them of a fateful error, they adjudged him a PhD since with respect to his professional maturity (according to the work done) A. Tchijevsky deserved this degree.

In 1922 he made a report on the discovery of the effect the periodicity of sunspot activity exerts on the rise and spreading of epidemics, which expands the concepts of his PhD thesis by taking into account the electromagnetic factors of influence.

These two discoveries were first published in 1600 copies, with sufficient details, in1924 [2].

Prof. Tchijevsky is not the first who noticed a correlation between the periodicity of sunspot activity (Solar activity, SA, in our days), food prices, etc. But he was the first who (1) discovered the synchronism between the SA cycles and social processes, (2) proposed a systematic forecasting approach that was based on this synchronism, and (3) assumed the electromagnetic and corpuscular origin of influence the Sun exerts on people, while considering the sunspot index as an admissible indicator of SA level. On these grounds he was the first in modern science, to put forward the concept that the fate of mankind depends on the fate of the Universe and calls upon the disclosure of the Solar effects on biological subjects and psychics from the viewpoint of physics and chemistry. Thus, he wrote: "Let us not restrict our thinking to the bounds of the Solar System but avow that other Space forces cannot be excluded from the forming of large-scale effects in society, in this or that way, even if they are unknown due to our ignorance."

He called this 72-page work a short sketch. But the results of his researches in full, relevant to Solar activity and history were not published any more in the USSR, even after his death. Only after the revolution of 1991, they came into life [3]. Publication of [2] made him a world famous scientist, but a pariah as well – mostly by soviet authorities. In this state of outcast and misery he lived until the end of his life.

Perhaps because it was hardly possible, if not hazardous to life, to continue to attract attention to his historical discoveries in the time of the Lenin/Stalin terror, that he concentrated his attention on the other, biological, side of his discovery by continuing his researches in the direction of heliobiology, viz. on physical and chemical effects the Solar radiation exerts on biological subjects.

However, in spite of the fact that after the publication of [2] he was officially engaged in air-ionization, not in historical studies, the resonance that was induced by this work had never stopped. He was commanded to officially repudiate the results of his long-term investigations, to repent and publicly to desecrate and abandon his work. In particular, this demand was recorded in the minutes of the Agriculture Academy of USSR. But he refused to do this.

In the twenties, Stalin's repressive power was not as almighty as at the end of thirties. Besides, to some extent NEP had weakened the ideological press in the twenties. Perhaps this was why a rare soviet leader was able to stand up for his own opinion not in corroboration with that of the party's. One of them was the first soviet minister of public health, N. Semashko, whose support of researches being conducted by Tchijevsky and editing of the latter's manuscripts had drawn Stalin's dissatisfaction. But in a private meeting with Stalin, Semashko had upheld the concepts of Tchijevsky and, for some time, the latter was left alone.

Since 1918 Tchijevsky studied the separate elements of a possible Sun-Earth interaction mechanisms. His primal attention was devoted to the problem of ionization of air. At his own miserable expense, he arranged a laboratory at home. At the end of 1919 he received the first results that were reported in Kaluga Society for the study of Nature which were then sent to a number of scientists in Russia and abroad. You can imagine his pleasure when he received a reply from Nobel Prize laureate S. Arrhenius who invited Tchijevsky to continue his studies at his laboratory. But he was not allowed to take this proposal; moreover, he became unemployed as he was required to give up all his jobs before going abroad.

In 1923 Tchijevsky managed to take a job at a zoological laboratory being headed by V. Durov, where he studied the influence air-ions exert on people and animals, until 1931. The results of his work on air-ionization and space biology were highly appreciated in Europe and USA. For his work in heliobiology and Solar activity cycles, he was elected to Toulon Academy of Sciences. He was invited to have a lecture course on biophysics at the Columbia University in NY. In appreciation of his work on air-ionization, the soviet government established the Central scientific-research laboratory on air-ionification, and he was appointed head of this lab. Professor Tchijevsky worked there for 11 years and published dozens of articles devoted to this subject. In particular, he paid much attention to the practical implication of air-ions in poultry farming, dyeing industry, and medicine. He invented a device for the ionization of air in premises that is now known as the Tchijevsky's chandelier.

Meanwhile, if in 1931 one of the basic soviet official newspapers, "Izvestia" qualifies his experimental results as "a brilliant achievement of soviet science that opens a new era in reconstruction of animal husbandry", in 1935 the sentinels of bolshevik ideology took over and the principal communist party newspaper "Pravda" dedicated an article to him: "An Enemy Under a Mask of Scientist" that was followed by a series of denunciations the profound sense of which is seen from their titles – e.g.: "infinite impudence of mock-professor Tchijevsky". However, though such a "disclosure" in those days was a sign of inevitable arrest and imprisonment, he was not repressed. Why? Why a scientist being dismissed from all his jobs and marked by this fiend label has lost his lab, but not freedom? Those, who knew him, attribute this phenomenon to his virtually world wide fame.

At the end of twenties, Stalin shut down NEP. Since then, the concentration camps established by Lenin began to swell with farmers, businessmen, and scientists who ventured to have their own point of view. However, though the Lab was closed, he continued to work at home (in those days any private establishment was absolutely prohibited). But from 1931 to 1959 his works were not published in the USSR (except for a scientific report on epidemics in 1934), though his articles were still published in Europe until 1936.

In 1939, the First International Congress on Biophysics and Space Biology was opened in New York where four honorary Presidents were elected, and Prof. Tchijevsky – among them. Already at that time it was acknowledged that he disclosed definite mechanisms of resonance between the live cells and Earth's biosphere with the mighty resonator – the Sun, through the electromagnetic and corpuscular Solar emission. No reason is seen except that this international support and acknowledgement of his scientific results, had postponed his inevitable fate of imprisonment until 1942.

It is really amazing that a scientist, who not only ventured to state but even to support a PhD thesis pertaining to Solar activity effects on the minds of people, had remained out of prison for such a long period of time. As in the state of triumph of terroristic ideology his work [2] not only shows that bolsheviks succeeded with the revolution of 1917 not due to the trustworthiness of the "Lenin-Stalin" ideology, but to a greater degree – due to a successful use of large-scale psychosis in the circumstances of war and economic dislocation around the Solar activity maximum in 1917. The more so as the large-scale sharpening of terror and imprisonment started around the Solar activity maxima in 1928 and 1937, in close correspondence with Tchijevsky's forecast.

In 1942, the so-called "Special Trio" – an extrajudicial organ of security services had sentenced him to imprisonment in a concentration camp and to subsequent exile. In essence, he was doomed. He refused to wear a large camp number over the back, objected to being treated with familiarity, and he stuck up for a sick man... . Hardly alive, he was removed from a punishment cell, only after the authorities were reminded that he was a biologist and could help with the typhoid epidemic that struck the camp. It was necessary to stop it by improvised means, such as bleaching powder etc. He succeeded in doing this.

As a reward, he was permitted to organize a kind of clinical laboratory (!) at the camp hospital, where he studied some aspects of moving blood being important for military medicine. Fifteen years later, by a directive of the President of Academy of Sciences of USSR, the Academy issued a Tchijevsky's monograph: "Structural analysis of moving blood", the experimental basis for which was obtained at "clinical laboratory of Saviour (by the name of nearby church) hospital". In this monograph Tchijevsky writes: "Complete verification of the theory requires special equipment. However, its basic principles were acknowledged in 1948-1949 by experiments that required almost no equipment except for microscope and glass capillaries. Subsequent mathematical analysis has allowed him to form the principles for the description of the observed phenomena". The witnesses add that that microscope was the only one, and the camp commander set a courier several times to Moscow for reagents and laboratory animals for the convict scientist.

On January 22, 1950, Tchijevsky was discharged, but he refused to leave the camp (!) as he had not completed an important experiment. In 33 days, the result was obtained, and with permission to take his scientific archive, he obtained his "freedom": to go into exile in the Ural mountains and Kazakhstan, where he lived until he was rehabilitated. Prof. Tchijevsky continued his researches there in hemodynamics and air-ionization, implemented the results of this work at several coal mines in Karaganda coal basin and, after that – in Moscow, he implemented an air-ion-therapy at several hospitals.

In 1958 he returned to Moscow, together with his wife, who also had come through the camp's wretchedness, in a tiny one-room flat. But the inter-shelf space in that room was filled with the bright sunny landscapes by the brush of Tchijevsky, who was also a poet and lover of theatre.

His monograph "Air ionization in national economy", in 1960, for a long time contained the most fundamental description of the subject. In meteorology and other Earth sciences as well, he overturned the "Geocentric" approach in the study of various Earth's phenomena by taking in account the Solar and other Space factors of influence.

He went to the better world on December 20, 1964. And three days later the governing communist party, by the hand of one A. Erochin, had summarised his life and scientific achievements in a party journal under the title of "Black Spots". This bouquet for the scientist's coffin states: "Tchijevsky explains all the paramount events in the history of mankind, including the Great Revolution of 1917 and the activity of Lenin, by a mass psychosis, as if it arises as a result of sunspot activity…", and resumes with "inconsistency and damage arising from this "scientific balderdash" …".

However, a series of progressively thinking scientists and journalists, L. Golovanov and A. Lebedinsky among them, had decided to defend the name of the late scientist. They strived for a creation of a Commission on the scientific heritage of professor Tchijevsky at the Institute of Technique and Natural History of Academy of Sciences of USSR. And already 3 months later, in March 1965, the same journal published the full text of the conclusion of this Commission (by the opinion of the author of [1], this is the first case in the soviet press, when the refutation of lies took more place than the lie itself.).

But 25 more years had passed before Tchijevsky's scientific works devoted to Solar activity were published in Russia in full. After the first publication of his small-circulation sketch [2] in 1924, it was reviewed in a popular journal "Chemistry and Life" in 1989-1990, and, after that - as a full copy of [2] with a circulation of 100 000. Only in 1995, his fundamental 768-page monograph [3], with all required statistics and references, was issued. Its first, basic part: "The Earth in the Embrace of Sun" (600 pages) was written in 1929 – 1930. Other works also either were not published, or disappeared, such as "Heliotaraksia", of which none of the 200 copies is accessible in Russia now.

Of course, most of the references to physical effects in [3] have become out of date, and new statistics and physical effects are found due to a fantastic growth of possibilities with which electronics and space flights now present us. But all these results either support, or develop the basic concepts that were put forward by Tchijevsky a century ago.

References (in Russian): **1**. V. Stantzo. "With Sun in blood we were born…" Chemistry & Life, 1989, N.12, p.27-31. **2**. A.L. Tchijevsky. Physical Factors of the Historical Process. Kaluga, 1924.-72p. **3**. A.L. Tchijevsky. The Cosmic Pulse of Life. Moscow, 1995. - 768p.

Compiled by S. Smelyakov

5.4. THE GOLDEN SECTION DISTRIBUTION OF SIGNIFICANT HISTORICAL EVENTS OVER THE SOLAR CYCLES

In compliance with Tchijevsky's data [2] covering the time interval from the 5th century BC to XIX century, we obtain that the quantity n_k presenting a number of years in a century k which are marked by significant historical events, takes the values being close to Fibonacci numbers and the terms of the series z (Table 5.1); at this, an absolute error of deviation of values n_k ($k = 1, 2, ..., 24$) from the nearest values u_i, v_j is quite small and equals to $\Delta = 1.7$ yr (with the exception of the XVIII century data, $n_{18} = 65$), while the respective relative error is about 3%.

It is interesting, that Tchijevsky put the question mark at number 23 (for the 2nd century BC), though in the context of the considered Model the more questions could call the number 65, the appearing of which might probably be explained by definite subjectivity in evaluating the XVIII century being stormy on events, other things being equal. Hence, high accuracy of n_k distribution over the terms of the series z is also can be taken as the argument for the ATS.

Table 5.1. Distribution of the value n_k (number of years within a century which manifest significant historical events) over the united Fibonacci series $z = u \cup v$

Terms of series u_i, v_j	n_k values (for the sample of 24 centuries)	Average, $\bar{n}_k$	Deviation of n_k from z_i, $\Delta_i = \lvert n_k - z \rvert$, $z = \{ u_i \text{ or } v_j \}$
$u_8 = 21$	23	23	2
$v_7 = 29$	27, 28, 28, 29	28	2, 1, 1, 0
$u_9 = 34$	32, 36, 37, 37	35.5	2, 2, 3, 3
$v_8 = 47$	44, 45, 47, 49	46.3	3, 2, 0, 2
$u_{10} = 55$	52, 53, 53, 54, 56, 56, 56, 57, 58	55	3, 2, 2, 1, 1, 1,1,2,3
$v_9 = 76$	76	76	0
$u_{11} = 89$	86	86	3
		Average = 1.7,	$\delta \approx 3\%$