Measure and Portrait of National Mentality

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Abstract.

In this paper we describe some new methods and results of the mathematical inductive theory of national mentality. Videlicet, we:
(1) *define the notion of difference between mentalities (DBM), formulate a preimage of the measure of DBM;*
(2) *define and examine national electoral matrices, construct their plane visualization, find some approach of the measure of DBM;*
(3) *demonstrate that there exist some invariants of visualizations of various matrices, so called national mentality portrait;*
(4) *observe that Ukrainian national mentality portrait has high degree of similarity with 2-dimensional distribution of Ukrainian, Russian and rest languages;*
(5) *discover that distortion of national mentality portrait is predeccesor of political conflict or crise;*
(6) *discover that index of divergence / convergence of national mentality portrait may regarded as major among National Unity indeces;*
(7) *concisely mention about one of another (more complicated) methods, namely boundary modeling; using it, we find important facts of mentality dynamics:*
(8) *as a rule, significant DBM has the centuries-old historical roots, and in common circumstances it is irremovable;*
(9) *DBM may be latent over thousand years, and suddenly break out as national or religious movement, rebellion, holy war etc.*

Keywords

ICIM 2013, difference between mentalities, national mentality, inductive theory of mentality, visualization, electoral matrix, mentality portrait, image distorting, image divergence / convergence, boundary modeling

Preface

Philosophia e scritta in lingua matematica / Philosophy is written in language of mathematics

Galileo Galilei, "Saggiatore" / "Assayer"; via Oswald Spengler [1, P. 6 (134)].

Let us begin from poetic and inspirational foreword.

The individual mentalities (the patterns of thought) is the basis characteristic of every nation. As history shows, very often the economics and wealth, the language, the state, the territory et alii are to a wonderful degree derivative. There are many examples, first occuring of them: Switzerland (1291), USA (1776), Italy (1870), Ukraine (1917/18), Poland (1918), India (1947), Israel (1948). Note, that Switzerland, USA and India are multinational or multiethnical federal states.

History give many examples of incompatible mentalities. Toynbee mention [2, vol. 1, p. 178] "the law of three generations" by Ibn-Khaldūn (1332-1406) for disruption time of forcibly founded Great Empires. Brzezinski also give a diagram of World Empires life time [3, p. 27].

Far long ago Confucius taught: the harmony of rulers and nationals is the basis of any state. So, the state be ineffective or impossible while its significant mentalities are unconsonant.

Mentality problem has extreme international significance [4]. Indeed, every country must draw an own path of economic and social development which be consistent with national mentality.

This paper state some simple basic notions, methods and results, which it seems may be useful for the mathematical inductive theory of national mentality. These instruments are also applicable to more general theory of group mentality.

Introduction

There are philosophical theories of mentality [5, 6, 7]. Our task is to give a measure for inductive mathematical theory. Similar results are unknown yet.

Note. In this paper, if we say "let X be something" we always mean that X is represented by any description. Thus we always identify "something X" with corresponding set D_X = { numbers / words / image(s) / articles / figures / data base(s) / model(s) / and so on }, and consider X as D_X.

Definition. We say that two persons (or, in general, rational creatures) have different mentalities if they make essentially different decisions in the identical conditions.

Related notions are: pattern of thought, behavioural pattern, mental inclination, one's principles etc.

Our first purpose is to find some approaches of the measure of difference between various mentalities. For this aim, we define and examine the electoral matrix. Indeed, voters under nearly the same conditions make different decisions. What is important for our aim, electoral decisions are very dependable, strictly documentary and easily measurable.

The second purpose is the visualization of inner differences of national (or, in general, group) mentality.

These two topics are quite simple, meanwhile fundamental.

At third, we discover that there exist some invariants of the visual configuration of national (group) mentality, so called mentality portrait.

Next purposes are far more complicated. We begin research dynamics of mentalities and possibilities of mentality cybernetics, i.e. optimal control to avoid conflicts induced by inner contradictions in the national (group) mentality.

In the fourth place, we find that the rough distortion (“grimace”) of mentality portrait is predeccesor of political conflict, and that divergence / convergence of national mentality portrait may regarded as one of national unity indeces.

In the fifth place, we find that mentality may be shifted (e.g. see Sec. 5 about Counter Reformation), but, as a rule, difference between mentalities is unremovable by neither conviction and persuasion, nor compulsion and violence. In common circumstances certain difference may be latent over thousand years, and suddenly break out as religious or national movement, rebellion, revolution, civil or holy war etc.

Some of results were formerly published and presented [8, 9, 10, 11]

1 Theory

Let us remind that we identify "something X" with its description, $X = D_X$.

Notion of the mentality *in this paper*. Let S be some social entity (e.g. individual, group, organization, party, nation and so on), $E(S)$ is the environment of S, $A(S)$ is the conscious behaviour (i.e. decisions, conscious actions) of S. We say that S_1 and S_2 have different mentalities, if they demonstrate substantially different behaviour (actions) in the similar conditions (environments).

Let $T(S)$ be the lifetime of S. Mentality forms the unique path (way, track, trajectory) of S in $E(S) \times A(S)$:

$$P(S) = \{e_S(t), a_S(t)\} \subset E(S) \times A(S), \;\; t \in T(S). \tag{1}$$

This path is the most exact manifestation of mentality, thus, $M(S)$ may be identified with $P(S)$.

Sometimes (but not always; e.g., if S is a "person of constant principles") we can consider mentality $M(S)$ simply as the function $F(S)$ from $E(S)$ to $A(S)$. Then $P(S)$ is the graphic of function $F(S)$.

Symbolically, measure of difference between mentalities:

$$\|M_1 - M_2\| = \sup_{e \in E} \frac{\|M_1(e) - M_2(e)\|}{\|e\|}, \tag{2}$$

It is well-known definition of the norm of linear operator [12]. Constructing the general notion (or image) of distance between mentalities, we consider (2) as preimage (prototype, pattern) for generalizations and/or approximations.

2 Electoral Matrix

Let us research a matrix [12] $\mathbf{V} = \|v_{ij}\|, i = 1..k, j = 1..n$ of national elections (e.g., see Tab. 1), where:
• rows $i \in \{1, 2, \ldots, k\}$ correspond to election (or administrative) districts;

Tab. 1. Presidential elections, June 26, 1994; electoral matrix $\mathbf{V}$

N	oblasti	B	Kr	Ku	L	M	P	T	rest	N	oblasti	B	Kr	Ku	L	M	P	T	rest
1	AR Crimea	1,93	7,43	82,68	3,36	1,26	0,30	0,22	2,82	15	Odeska	0,27	23,02	41,82	11,43	13,97	0,95	0,70	7,84
2	Vinnytska	2,24	44,42	19,62	9,65	15,21	1,93	0,89	6,04	16	Poltavska	2,51	29,53	28,40	14,18	18,29	2,21	0,55	4,33
3	Volynska	1,83	70,65	5,63	10,94	7,72	1,33	0,60	1,30	17	Rivnenska	0,99	75,75	5,90	6,95	6,09	0,89	0,40	3,03
4	Dnipropetrovska	4,02	26,58	43,51	11,92	8,76	0,79	0,42	4,00	18	Sumska	2,51	23,04	30,29	11,50	24,95	1,73	0,67	5,31
5	Donetska	2,13	16,08	53,59	5,19	15,45	1,53	0,47	5,56	19	Ternopilska	0,44	91,04	2,51	1,89	1,05	0,73	0,24	2,10
6	Zhytomyrska	2,40	46,36	19,59	10,74	13,99	1,33	0,62	4,97	20	Kharkivska	3,14	24,44	34,18	9,55	22,17	1,00	0,57	4,95
7	Zakarpatska	6,04	49,72	16,84	10,27	4,24	2,41	1,52	8,96	21	Khersonska	2,22	25,71	34,01	9,86	19,48	1,14	0,61	6,97
8	Zaporizka	2,20	23,76	48,46	7,73	12,44	0,95	0,53	3,93	22	Khmelnytska	1,80	40,00	15,60	11,50	23,50	1,90	0,17	5,53
9	Ivano-Frankivska	0,43	87,78	3,07	2,99	1,40	0,80	0,30	3,23	23	Cherkaska	2,42	39,09	18,00	12,66	20,88	1,67	0,55	4,73
10	Kyivska	3,31	41,06	18,43	16,55	13,63	1,74	0,75	4,53	24	Chernivetska	2,92	53,45	20,50	7,31	6,42	1,38	0,94	7,08
11	Kirovogradska	2,51	30,02	20,95	18,90	21,04	1,70	0,61	4,27	25	Chernigivska	1,86	20,91	45,53	7,56	15,08	3,20	0,49	5,37
12	Luganska	1,82	9,70	53,61	4,53	25,43	0,74	0,41	3,76	26	m. Kyiv	4,70	38,80	18,20	25,15	8,40	1,20	0,50	3,05
13	Lvivska	0,41	87,81	3,49	1,60	1,20	0,48	0,20	4,81	27	m. Sevastopol	1,50	5,55	82,11	3,97	2,42	0,44	0,30	3,71
14	Mykolaivska	2,72	37,14	33,37	8,84	12,60	1,08	0,60	3,65										

• columns $j \in \{1, 2, \ldots, n\}$ correspond to competitors; more exactly, each column corresponds to some check box in the voting ballot; sometimes column n is computed (3);
• v_{ij} denote a percent of votes in i-th district for j-th competitor; but if $j = n$, sometimes we compute

$$v_{in} = 100\% - \sum_{j=1}^{n-1} v_{ij} \ (i = 1..k). \tag{3}$$

As example, on tab. 1, each row corresponds to one of 27 high level administrative regions of Ukraine: 1 autonomy republic (AR Crimea), 24 oblasti and 2 cities of special status (misto Kyiv and misto Sevastopol);

Each of columns B, Kr, Ku, L, M, P, T corresponds to one of 7 candidates in the ballot: Valeriy Babych, Leonid Kravchuk, Leonid Kuchma, Volodymyr Lanovyi, Olexandr Moroz, Ivan Pliusch, Petro Talanchuk. Column "rest" is obtained by (3).

We shall consider k rows of $\mathbf{V}$ as vectors $\mathbf{v}_1,\ \mathbf{v}_2, \ldots, \mathbf{v}_k$ of a real n-dimensional space $\mathbb{R}^n$.

We want to see on a plane $\mathbb{R}^2$ such configuration of the set of electoral vectors $\{\mathbf{v}_1, \mathbf{v}_2, \ldots, \mathbf{v}_k\}$, that be maximally similar to their initial configuration in a real n-dimensional space $\mathbb{R}^n$. Thus we could involve for data perception the most powerful tools, namely visual analyzers. "*We discover unimagined effects, and we challenge imagined ones*" [14].

3 Visualization of Electoral Matrix, or Mapping of Electoral Mentality

We can use manifold techniques for data analysis [14] − [18], in particular variety ways of visualization [14, 17]. In a first approximation, it is sufficient to use the factor analysis [16, 17]. In section **5** we concisely mention about one of more complicated methods.

Let's define for every pair $\mathbf{v}_i, \mathbf{v}_j,\ (1 \le i < j \le k)$ distance $\mathrm{dist}\,(\mathbf{a}, \mathbf{b})$. Ad initium, in this paper we assume that all coordinates are linear and independent, i.e. metric is Euclidean, metric tensor is the identity matrix, $\mathrm{dist}\,(\mathbf{a}, \mathbf{b}) = |\mathbf{a} - \mathbf{b}|$.

Note, that representation [12] of mentality by electoral matrix in general is not exact. So, this distance is barely an approximation of the measure of difference between mentalities (2).

Thus we can consider the problem more precisely. In a certain class of functions $\mathcal{C}$ to find such function $f_{\mathbf{V}}(\cdot) : \mathbb{R}^n \to \mathbb{R}^2$ to obtain a configuration which is maximal similar to n-dimensional. We solve this problem under criterion:

$$\sum_{i=1}^{n}\sum_{j=1}^{i-1}\left|\,[\mathbf{v}_i - f_{\mathbf{V}}(\mathbf{v}_i)] - [\mathbf{v}_j - f_{\mathbf{V}}(\mathbf{v}_j)]\right|^2 = \min_{f\in\mathcal{C}} \iff \sum_{i=1}^{n}\sum_{j=1}^{i-1}\left|f_{\mathbf{V}}(\mathbf{v}_i) - f_{\mathbf{V}}(\mathbf{v}_j)\right|^2 = \max_{f\in\mathcal{C}}. \tag{4}$$

Assuming criterion (4), there is valid a statement, that required optimal function $f_{\mathbf{V}}$ is a linear orthogonal projection to the space of two main components, which are received by factor analysis of vectors $\{\mathbf{v}_i\}$. Denote

$$\mathbf{w} = \frac{1}{k}\sum_{i=1}^{k}\mathbf{v}_i,\ \forall i:\ \mathbf{x}_i = \mathbf{v}_i - \mathbf{w};\ \text{so},\ \forall i:\ \sum_{j=1}^{n} x_{ij} = \sum_{j=1}^{n} v_{ij}\left(1 - \frac{1}{k}\sum_{i=1}^{k} 1\right) = 0. \tag{5}$$

Obviously, $\forall i, j : \mathbf{x}_i - \mathbf{x}_j = \mathbf{v}_i - \mathbf{v}_j$.

Let's reduce the Gramian matrix $\mathbf{X}\mathbf{X}^T$ by orthogonal transformation $\mathbf{S} = \mathbf{S}(\mathbf{V})$ to such diagonal form $\mathbf{S}\mathbf{X}\mathbf{X}^T\mathbf{S}^T = \mathbf{D}$, that $d_{11} \geq d_{22} \geq \cdots \geq d_{kk}$. Then mutual orthogonal vectors (rows) of the matrix $\mathbf{S}\mathbf{X} = \mathbf{Z} = \{\mathbf{z}_1,\ \mathbf{z}_2,\ \ldots,\ \mathbf{z}_k\}$ are named as *factors* of $\mathbf{V}$.

Theorem. Let q be an integer, $1 \leq q < k$. Denote by $\mathbf{I}_q$ an orthogonal projection operator of space $\{\mathbf{z}_1, \ldots, \mathbf{z}_k\}$ onto subspace of q first factors $\{\mathbf{z}_1,\ \ldots,\ \mathbf{z}_q\}$. Then $\mathbf{P}_{\mathbf{V},q} = \mathbf{I}_q\mathbf{S}(\mathbf{V})$ is optimal in the sense

$$\sum_{i=1}^{k}\sum_{j=1}^{i-1}\left|\mathbf{P}_{\mathbf{V},q}\left(\mathbf{x}_i - \mathbf{x}_j\right)\right|^2 = \max_{L\in G(\mathbb{R};k,q)}\sum_{i=1}^{k}\sum_{j=1}^{i-1}\left|\mathbf{P}_L\left(\mathbf{x}_i - \mathbf{x}_j\right)\right|^2, \tag{6}$$

where $G(\mathbb{R}; k, q)$ is the Grassmanian manifold of all q-dimensional subspaces of a real Euclidean k-dimensional space, $\mathbf{P}_L-$ orthogonal projection operator onto subspace L.

Note. Remind that trace is invariant, i.e. $\forall\, \mathbf{B},\ \det\mathbf{B} \neq 0:\ \mathrm{Tr}\left(\mathbf{B}\mathbf{A}\mathbf{B}^{-1}\right) = \mathrm{Tr}\left(\mathbf{A}\right)$. The value

$$\frac{d_{ii}}{\mathrm{Tr}\left(\mathbf{X}\mathbf{X}^T\right)}, \text{where } d_{ii} = |\mathbf{z}_i|^2 = \sum_{j=1}^{n} z_{ij}^2,\ \mathrm{Tr}\left(\mathbf{X}\mathbf{X}^T\right) = \sum_{i=1}^{k}|\mathbf{x}_i|^2 = \mathrm{Tr}\left(\mathbf{D}\right) = \sum_{i=1}^{k}|\mathbf{z}_i|^2 \tag{7}$$

is interpreting as part of information about distances between vectors $\{\mathbf{x}_i\}$ carried by the factor $\mathbf{z}_i$.

4 Mentality Portrait

We have analized all presidential and parliamentary elections in Ukraine from 1991 to 2007 year. Note, that corresponding electoral matrices, as a rule, have no common columns. But their plane images are very similar, as different portraits of the same latent invisible reality.

Fig. 1. Presidential elections 26.VI.1994. Vizualization of matrix $\mathbf{V}$ on **Tab.** 1.

As examples, let us compare three plane portraits:
Fig. 1. Presidential elections 26.VI.1994: 7 candidates, 27 administrative regions (see **Tab.** 1),
Fig. 2. Parliamentary elections 31.III.2002: more than 30 parties and blocks (see **Tab.** 2), 225 electoral districts,
Fig. 3. Parliamentary elections 31.III.2002: the same parties and blocks, 27 administrative regions.

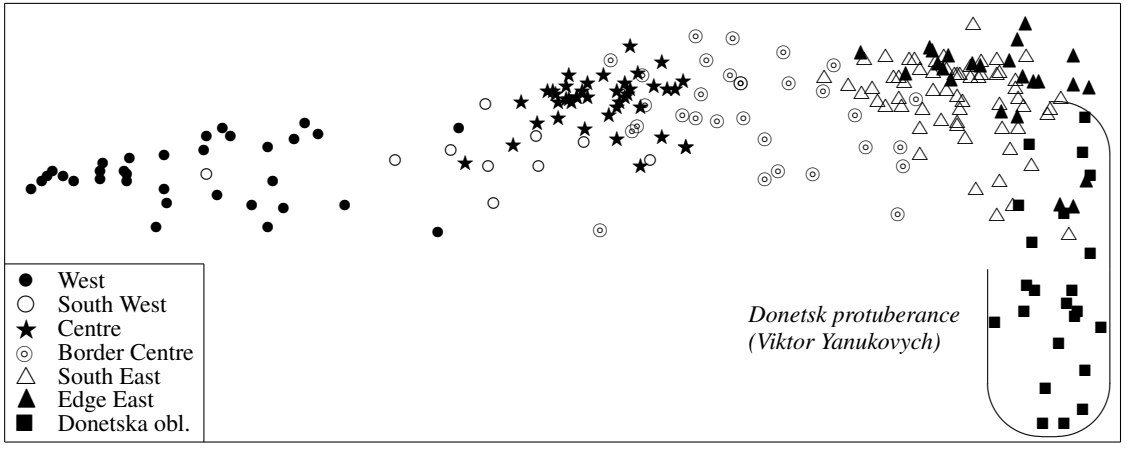

Fig. 2. Parliamentary elections 31.III.2002. More than 30 parties and blocks, see Tab. 2. Each point corresponds to one of 225 election districts

Tab. 2. Parliamentary elections 31.III.2002. A list of 15 of more than 30 parties and blocks

N	party or block	N	party or block	N	party or block
1	CPU [Communist]	10	BYuT [Tymoshenko]	23	SDPU(o)
2	Nasha [Our] Ukraina	13	SPU [Socialist]	27	Morska [Sea] Partiya
3	DemPU − DemSoyuz	14	Za Yedynu [For a Single] Ukrainu	30	Ruski block
5	Block Vitrenko	15	Yednist [Unity]	31	[Women for Future]
6	Zeleni [Green]	20	Ozymi [Winter-crops]	32	Yabluko [Apple]

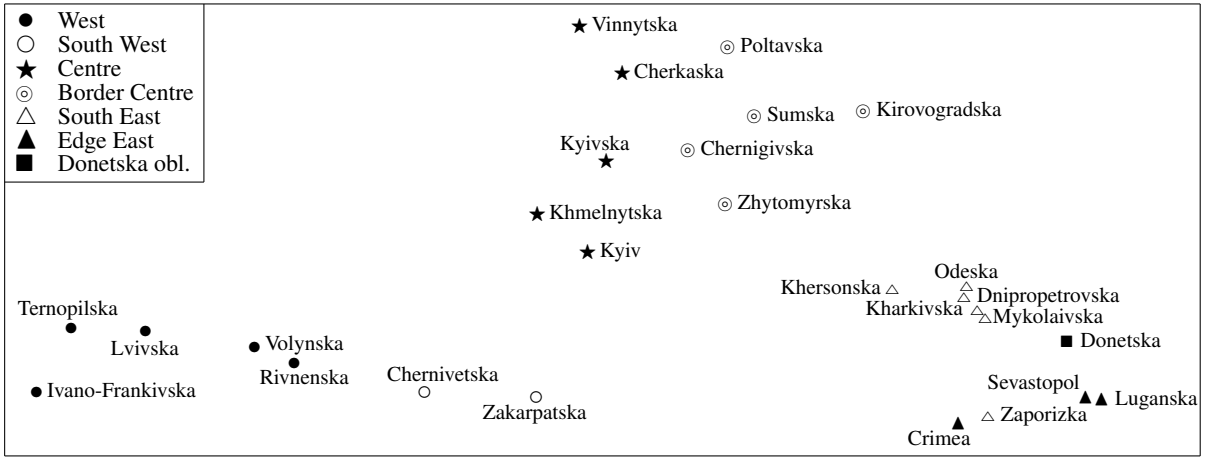

Fig. 3. Parliamentary elections 31.III.2002, see Fig. 2 and Tab. 2. Each point corresponds to one of 27 high level administrative regions of Ukraine

Matrices $\mathbf{V}_1$ and $\{\mathbf{V}_2, \mathbf{V}_3\}$ have no common column, matrices $\mathbf{V}_2$ and $\{\mathbf{V}_1, \mathbf{V}_3\}$ have no common row. But plane images of all these matrices (with the exception of anomalies) seem as several portraits of the same reality.

5 About Dynamics and Control

There is a plenty of facts from history of world mentalities, especially European, e.g. [1, 2, 5, 19, 20, 21, 22]. We concisely mention about one of new methods to mine from these facts a new knowledge as scientific models and laws. It is a method of boundary modeling [8]. This method may be regarded as development of maps comparison below (Sec. 6) of Ukrainian election maps or portraits (fig. 1, 2, 3) with native Ukrainian language map (fig. 6) (see [10], [4]).

Fig. 4. Roman limes in I–V centuries. Territorial Expansion of Rome in Central Europe

Since Reformation (XVI century) we can see Roman limes of I-V centuries as first approximation to the boundary between Protestant and Catholic confessions in Europe. Note that this boundary intersects states and nations, namely, in XVI–XVIII centures it intersects Holy Roman Empire, and since XIX it intersects single national Germany.

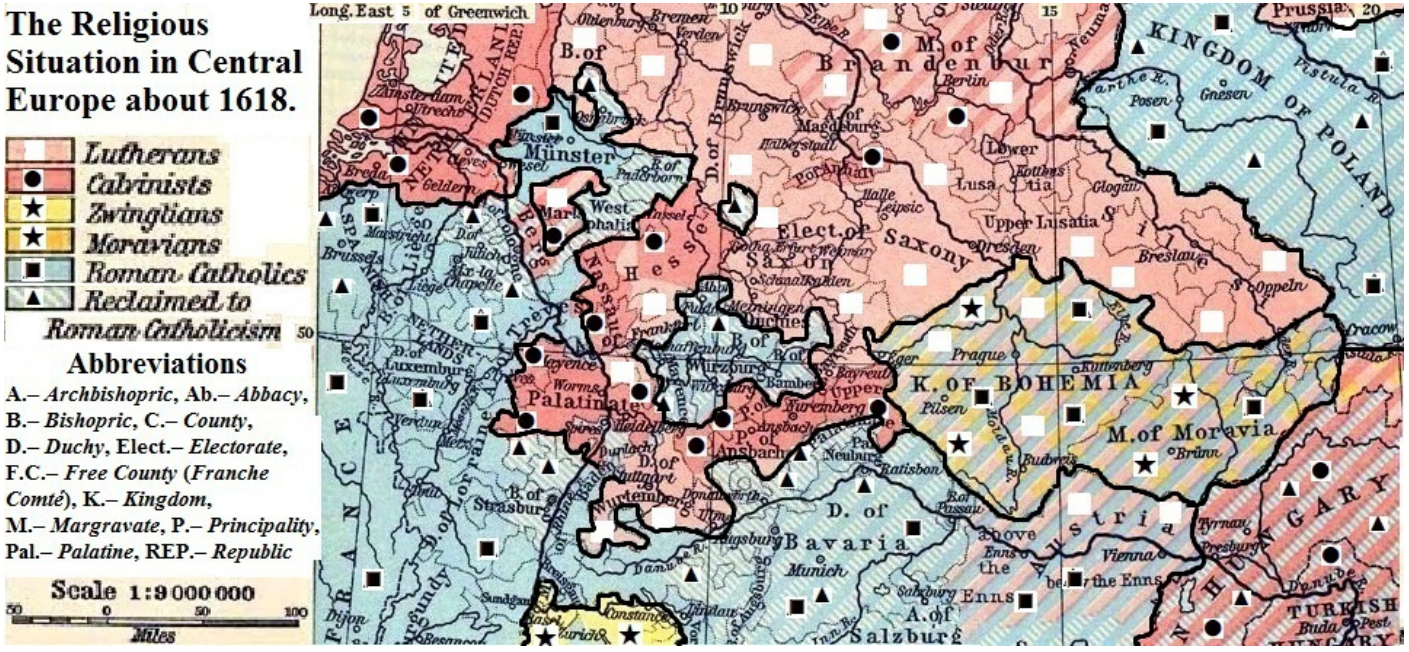

Fig. 5. Holy Roman Empire on the eve of Thirty Years' War, after Counter-Reformation

Further, second approximation. Protestant enclaves on the territory of former Roman Empire as a rule coinside with settlement areas during the Great Migration of Peoples. Catholic enclaves outside Limes as a rule coincide with territories

of migrations, omnicide or resettlement, e.g. the Saxes by Carl the Great (Massacre of Verden, Capitulatio de partibus Saxoniae) [22].

This boundary between mentalities on current historical maps is invisible in a period more than thousand years, from the fall of Roman Empire in V century to Reformation in XVI. During the Thirty Years' War (1618−48) in some protestant areas less than quarter of all inhabitants were survivor. Eventually, the confessional boundary since XVII century substantially approximates by the ancient Celtic−German boundary.

So, difference between mentalities (DBM) was unremovable by neither conviction and persuasion, nor compulsion and violence. In history, DBM changes practically parallel to changes of the ethnic composition of the population.

6 Conclusions

Main conclusions.

First. There is an invariant latent reality, which portrait is visible as a result of factor analysis.

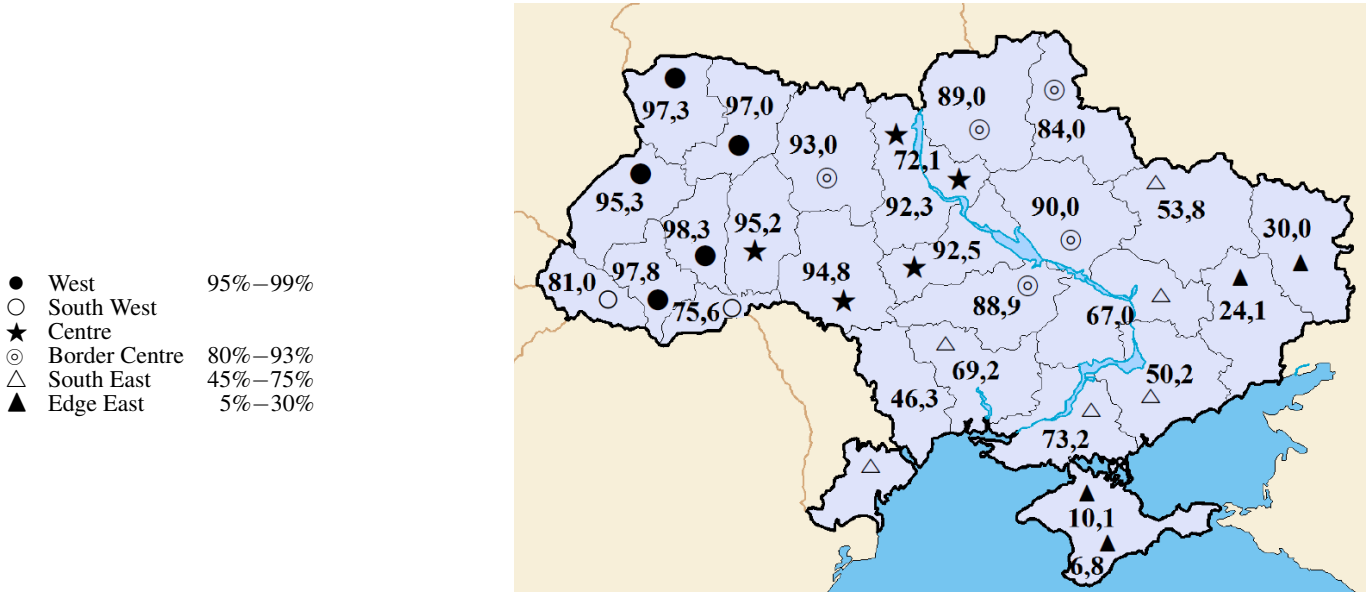

Fig. 6. Ukraine census 2001. For each region is shown a percent of population which native language is Ukrainian

Second. It should be observed that this portrait has high conformity with structure of corresponding district by native language, see fig. 6. This fact was observed in [10], and now is well known [4]: "*all preferences of voters are laying on*

the distribution map of Russian or Ukrainian language". This similarity may be explained by ethnolinguistic Sapir−Whorf hypothesis: we see and perceive the world through our language.

Third. Exceptional divergence of electoral configuration in the electoral space (portrait deformation) is a predecessor of political crisis. Local divergence is a predecessor of local crisis, global divergence is a predecessor of global crisis:

• 1994, Crimean phenomenon, type: isolated island (Yuriy Meshkov, Crimean president in 1994−95)
• 1998, Dnipropetrovsk phenomenon, type: confrontation (*Ukr: protystoyannya*) (Pavlo Lazarenko, Ukrainian Premier in 1996−97, since 1999 in USA)
• 2002, Donetsk phenomenon, type: protuberance, vigorous turnabout (Viktor Yanukovich, 1997−2002 Donetska oblast governor, Ukrainian Premier 2002−04 and 2006−07, since 2010 Ukrainian President)

Fourth. Now the way is opened to compute indices (both exact and fuzzy) for political and social forecasting and management. First of all, they are indices of national unity. It seems ineffective to build the Ukrainian state until we structure (harmonize, order) whole Babylon of unconsonant Ukrainian mentalities. It is necessary to compute and supervise the corresponding indices.

Fifth. We find that (in common circumstances) difference between mentalities may be latent over thousand years, and suddenly break out as religious or national movement, rebellion, revolution, holy war etc. This difference is unremovable by neither conviction and persuasion, nor compulsion and violence.

7 Group Mentality Mapping

The same ideas and similar methods we apply to research a group mentality. Let's we have a table of election (tab. 3).

Tab. 3. Election in a small group: $k = 36$ voters, $n = 15$ candidates on $p = 7$ positions

	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	25	26	27	28	29	30	31	32	33	34	35	36
1	1	1	1	1	0	1	1	0	1	0	0	0	1	1	1	1	0	0	1	1	1	1	0	1	0	0	1	1	1	1	1	0	1	1	1	1
2	1	1	1	0	1	0	0	1	1	1	1	1	0	0	0	0	1	1	1	1	0	0	1	1	1	1	1	1	1	1	1	1	0	0	0	0
3	1	0	0	1	0	1	1	1	1	0	0	0	1	1	1	1	1	1	1	1	1	1	0	1	1	0	0	0	1	1	1	1	1	1	1	1
4	0	0	1	1	0	1	1	0	1	0	0	0	1	1	1	1	0	0	1	0	1	1	0	1	1	0	0	0	0	0	1	0	1	1	1	1
5	1	1	1	0	1	0	0	1	0	1	1	1	0	0	0	1	1	1	1	1	0	1	1	0	0	1	1	0	1	1	0	1	0	0	0	0
6	0	0	0	1	0	1	1	0	1	0	0	1	1	0	1	0	0	0	0	0	1	0	1	1	1	0	0	1	1	1	1	0	1	1	1	1
7	0	0	0	1	0	1	1	0	0	0	0	0	1	1	1	1	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	1	1	1	0
8	0	0	1	1	0	1	1	0	1	1	1	0	1	0	1	1	0	0	1	0	1	1	0	0	1	1	0	0	0	0	0	1	1	1	1	1
9	1	1	0	0	1	0	0	1	0	1	1	1	0	0	0	0	1	1	0	1	0	0	1	0	0	1	1	1	0	0	0	1	0	0	0	0
10	1	1	0	0	1	0	0	1	0	1	1	0	0	0	0	0	1	1	0	1	0	0	0	0	0	1	1	0	0	0	0	0	0	0	0	0
11	0	0	0	0	1	1	1	0	0	0	0	1	1	1	1	1	0	0	1	0	1	1	1	1	1	0	0	1	0	0	1	0	0	1	1	1
12	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	0	1	0	0	0
13	0	0	1	1	0	0	0	0	1	0	0	0	0	0	0	0	0	0	0	0	1	0	0	0	1	0	0	0	1	1	1	0	0	0	0	1
14	1	1	1	0	1	0	0	1	0	1	1	1	0	1	0	0	1	1	0	1	0	0	1	1	0	1	1	1	1	1	0	1	0	0	0	0
15	0	1	0	0	1	0	0	1	0	1	1	1	0	0	0	0	1	1	0	0	0	0	1	0	0	1	1	0	0	0	0	1	0	0	0	0

After an instant we obtain a plane graph of this group structure (fig. 7). We see two antipodal subgroups. Of course, we obtain only moment portrait from this election viewpoint.

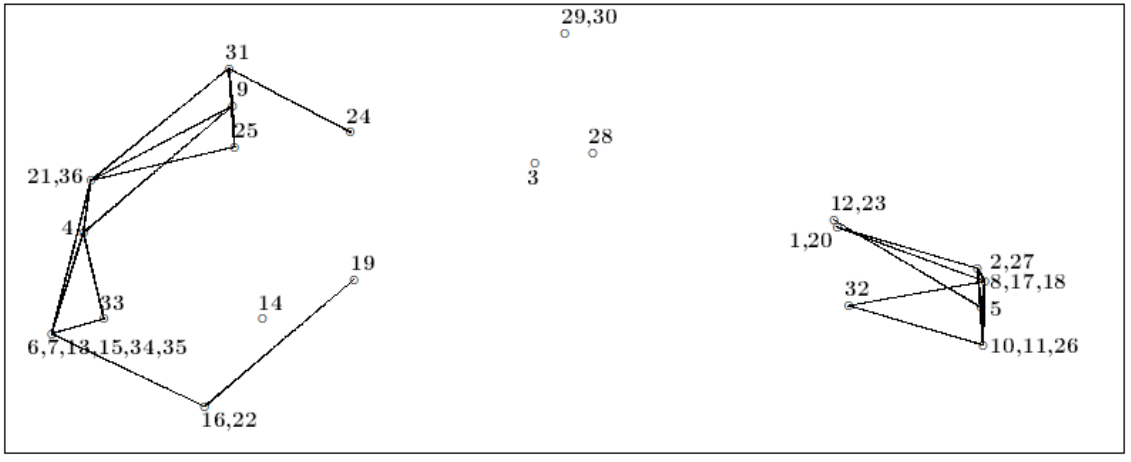

Fig. 7. Plain representation of tab. 3. A moment configuration of group mentality.

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