Archaeological criteria of civilization[*]

Nikolay N. Kradin

Institute of History, Archaeology and Ethnography, Vladivostok

ABSTRACT

In his well-known paper on the urban revolution Childe has identified the archaeological criteria of the civilization stages. In this article the problem of the state and civilization criteria is discussed once again. The source is the database on 186 societies which was published in the paper by Murdock and Provost Measurement of Cultural Complexity. The analysis of the correlation coefficient between all the features reveals the strong relation between the political integration (state), social stratification (classes), writing and records, population density, money and technical specialization. The highest correlation is observed between the hierarchy and stratification. This gives grounds to make a conclusion that, for the most part, a state origin has developed in parallel with a class formation. However, the presence of side variants suggests that, in specific cases, the mature stratification has been observed in the societies with a weak hierarchy, while the multilevel hierarchy in weakly stratified societies. The study of the correlation between the writing and records and hierarchy shows that there are many societies with the developed hierarchy but without a written language. But there are also other examples when the societies have a developed written language but their hierarchy is not developed. The correlation between the stratification and writing and records is stronger. This is attributable to that the class society should have a developed ideology.

In his well-known paper on the Urban Revolution Vere Gordon Childe (1950) identified archaeological criteria of civilization as

evolutionary stages. In the course of setting off *civilization* against the pre-state *barbarism* (thus following Lewis Henry Morgan and Friedrich Engels), Childe identified ten scales of civilization:

– appearance of urban centers;

– full-time specialists (craftsman, merchants, officials, priests etc.), who instead worked for organizations that could command surplus from peasants;

– monumental public building;

– sizeable surplus product, withdrawn by elite from taxes or tribute;

– isolating of ruling groups, including priests, civil and military leaders and officials;

– appearance of written language and numerical notation, from witch there emerge predictive sciences – arithmetics, geometry and astronomy;

– development of the sophisticated artistic style;

– appearance of distant trade;

– social solidarity, which is represented and misrepresented by the ideological means in the temple or sepulchral shrine;

– state formation (Childe 1950).

Later on, this list of scales was specified time and again. Many archaeologists and anthropologists have discussed this problem. In one of the most authoritative papers of the 20th century *Evolution of Urban Society* Richard Mc Adams identified some other criteria of civilization:

– class society;

– political hierarchy;

– administration;

– territorial division;

– independent polity;

– specialization of labor and handicraft (Adams 1966).

Colin Renfrew, in the book on the civilization origins in the Ancient Greek world, believes that the so-called multi-dimensional criterion appears as the *civilization* scale in which were included the following characteristic scales, though not always recorded by archaeologists:

– social stratification;

– highly developed handicraft specialization;

– town;

– written language;

– monumental spiritual construction.

At that Renfrew believes that at least two of the last three scales are sufficient (Renfrew 1972: 3–7).

In the Russian archaeology, there is a similar tradition. For example, in Vadim Masson's opinion, the criterion of a civilization is the archaeological 'triad' of atributes: town, monumental architecture and written language (1989: 8–11).

In this article, the problem of the state and civilization criteria is discussed once again. The source is the database on 186 societies that was published in the paper by George Murdock and Caterina Provost *Measurement of Cultural Complexity* (1973). The authors considered the problem of cultural complexity using 10 criteria: (1) writing and records, (2) fixity of residence, (3) agriculture, (4) urbanization, (5) technological specialization, (6) land transport, (7) money, (8) population density, (9) political integration, (10) social stratification. In this list, the items 1, 4, 5, 7, 9, 10 correspond directly to the civilization criteria most popular in archaeology. But I would propose to reject straight away such a criterion as monumental structures. The majestic structures in Easter Island or famous Stonehenge are monumental constructions but people creating them had no state system.

First of all, I would like to discuss the general table of correlation between 10 scales to obtain information on the correlation value in all pairs of variables (see Table 0).

Table 0. General correlation between variables.

	1	2	3	4	5	6	7	8	9	10
1.Write	1,00	,25	,35	,42	,49	,63	,53	,37	,58	,63
2. Residence	,25	1,00	,78	,45	,40	,07	,41	,71	,41	,45
3. Agricult	,35	,78	1,00	,51	,55	,23	,36	,64	,51	,44
4. Urban	,42	,45	,51	1,00	,44	,40	,38	,56	,48	,49
5. Tecnolog	,49	,40	,55	,44	1,00	,47	,42	,47	,57	,58
6. Transp	,63	,07	,23	,40	,47	1,00	,41	,21	,42	,47
7. Money	,53	,41	,36	,38	,42	,41	1,00	,56	,53	,46
8. Populat	,37	,71	,64	,56	,47	,21	,56	1,00	,57	,51
9. Polit	,58	,41	,51	,48	,57	,42	,53	,57	1,00	,72
10. Strat	,63	,45	,44	,49	,58	,47	,46	,51	,72	1,00

The study of correlation coefficient of all scales between each other shows a strong relation in two different groups (*R* is more than 0.50). The first group includes (2) fixity of residence, (3) agriculture, (8) population and, to a lesser degree, (4) urbanization. This high correlation is readily explained by elementary logic. The more are the population and population density, the more settled life is led by these people and the more they are engaged in agriculture. It is interesting that it is not so firmly related to urbanization.

The second group is of a higher interest from the viewpoint of my report. It is a correlation between (1) writing and records, (5) technical specialization, (7) money, (8) population density, (9) political integration, and (10) social stratification. These scales show the presence of a certain correlation in the growth of the society's cultural complexity and the emergence of the highest degree of complexity. It is that degree which Childe called civilization.

The careful analysis of correlation between the variables shows that none of pairs has a strict unilinear relation. The highest correlation is observed between (9) hierarchy and (10) stratification (R = 0.72). This gives grounds to make a conclusion that, for the most part, a state origin (*politogenesis*) has developed in parallel with a class formation (*classogenesis*). We all must recognize that it is a strong argument in favor of the Marxist approach in the anthropology of the state origin. Let's study this correlation more carefully.

The presence of side variants suggests that, in specific cases, the mature stratification is observed in the societies with a weak hierarchy while the multilevel hierarchy can be present in weakly stratified societies. This confirms the idea of two general lines of cultural evolution (Korotayev *et al.* 2000; Kowalewski 2000; Bondarenko, Korotayev 2000 etc.). The most striking example of this multilinear character is the ancient city-state which demonstrates the creation of high culture with writing, class stratification but without a state (Staierman 1989; Berent 2000). It gives grounds to draw a paradoxical conclusion – the creation of a stateless civilization is possible.

There is much speculation that writing and urbanization are the main criteria of civilization. Let's consider this question in more detail. At first, let us analyze the correlation between writing and hierarchy.

The study of the correlation between the writing and records and hierarchy (R=0.58) shows that there are many societies with a developed hierarchy but without a written language. But there are also other examples when the societies have a developed written language but their hierarchy is not developed.

The correlation between the stratification and writing and records is stronger (R=0.63). It is evident as a class society should have a developed ideology. However, there is no reason to consider writing as an obligatory attribute of civilization and state. The correlation between urbanization, integration and stratification is even smaller (see Table 0).

The most interesting question is the correlation between the attributes at the level that corresponds approximately to the state and civilization. Let me remind some values of the last two variables.

Level of political Integration

'4 – Three or more administrative levels are recognized above that of the local community, as in the case of a large state organized into provinces which are subdivided into districts.

3 – Two administrative levels are recognized above that of the local community, as in the case of a small state divided into administrative districts'.

Social stratification

'4 – The society exhibits a complex stratification into three or more distinct classes or castes regardless of the presence or absence of slavery.

3 – The society is stratified into two social classes of freemen, *e.g.*, nobles and commoners or a propertied elite and a propertiless proletariat, plus hereditary and/or recognized caste divisions' (Murdock, Provost 1973: 382–383).

Where are state and civilization here? In the 1970s, Gregory Johnson and Henry Wright defined state as a society with three levels of hierarchy. In their opinion, two levels of hierarchy should correspond to a complex chiefdom (Johnson 1973: 3, 141; Wright, Johnson 1975: 272). Many researchers have advanced counter-evidences indicating that a hierarchy with two and three levels is not the criterion of a state (Cohen 1981; Haas 1982 etc.). There-

fore, we can say with confidence that three or more levels of hierarchy are always a complex chiefdom but they can not always be a state. The choice in the tenth scale – stratification – is somewhat easier. 'two social classes' - it can be chiefdom or early state, however 'three or more distinct classes' - it is the state and a society of a level of civilization.

I believe, three social classes should be evidence of the society that was assigned by Childe to civilization. Therefore in this article I shall understand a *civilization as* a *complex society with three or more distinct classes*. It is a very primitive definition. But I accept it as a provisional attribute, to have a certain support for my reasoning. Two social classes can suggest both an early state and chiefdom (Claessen, Skalnik 1978). But the key question, the answer to which is unknown to me is as follows: is the class structure obligatory for a state? By analogy with the state, we should say 'no' as the ancient world of city-states is a civilization but without a state. It is possible that somebody will prove that a developed class structure is not an obligatory scale of the state. In any case, I would like to observe in what cases the developed class society (when, according to Murdock and Provost, the political integration and stratification have four scores) are characterized by the rigid correlation with variables 1-8. Such cases have been gained.

It is clearly evident that all the developed class societies have necessarily a permanently settled mode of life (4 scores). Hence it follows that the nomadic societies can not, in principle, establish a developed three-level class structure.

The correlation between a three-level political integration and settled life is not that unilinear but is sufficiently pronounced (see Table 5).

On this basis, we can conclude that the permanent residence is an **obligatory** condition for the emergence of a developed class structure.

The correlation between stratification and agriculture is also impressive. In 26 cases of 29, the developed class societies have intense (arable farming, irrigative) agriculture. Only in 2 cases, there is an extensive agriculture that serves the basis of economy. And only in 1 case this extensive agriculture is not the basis of the economy.

The correlation between a developed political hierarchy and agriculture is also quite high. Only 2 of 58 complex chiefdoms and states have a weakly developed agriculture (less than 10%, the Khalkha-Mongols and Kazakhs). However, these examples show that nomadic societies can create a highly developed political hierarchy without development of agriculture. The nomadic empires are the most powerful of them (Kradin 2000, 2002). It is not just the exception but an important feature of evolution of nomadic societies that could also create great empires in the world history without developed class stratification.

Therefore, we can draw a significant conclusion. For creation of a developed class society agriculture is necessary as the basis of economy which should be, as a rule, an extensive one.

A very interesting correlation is traced between the stratification and technology.

Nearly in all cases a developed class society has various trades but there is no society with a three-level class structure that lacked metallurgists or smiths. Thus, metalworking is an obligatory criterion for a developed class society. There was found no such a rigid correlation between the political integration and the level of technology development.

The last rigid correlation was found when studying the correlation between the stratification and ground transport.

In all cases, the developed class societies had self-propelled wheeled transport facilities. From this Table, we can conclude that the societies with a developed three-level class stratification can use different ways to transport resources (in hands, on animals, in wheel carts with animals harnessed) but those societies which were able to invent self-propelled wheel facilities always have a developed class structure.

The same conclusion is true with respect to the correlation between the political integration and transport (see Table 10). It remains only to regret that this criterion is inapplicable to the pre-industrial civilizations.

What conclusions can be drawn from this report? I hope that they will not be heard in the same banal manner as the last drawn conclusion.

1. There are not any universal attributes of the state system and civilization. Writing, urbanization, monumental architecture or any

other criterion are not an obligatory characteristics of a complex society with a state system and civilization.

2. The development of the social stratification occurs in parallel with political integration (I think this is a claim to the hard advocates of both *integrative* and *conflict* theories of state origins). However, there is a number of cases when societies with a developed class stratification have no state hierarchy or when societies with a developed political hierarchy have no developed class structure. It allows suggesting a multivariant nature of the social evolution.

3. For creating a developed stratified society with three classes, the permanent residence, agriculture as the basis of economy (extensive agriculture, as a rule), various trades with obligatory metal working are necessary.

4. A multilevel political integration does not suggest such strict correlations. This testifies that the three-level class structure is a more reliable criterion than hierarchy and state of the degree of-complexity which we, following Childe, could assign to so-called high cultures or civilizations.

5. Hence, we can suppose that a developed class structure, permanent residence, agriculture as a basis of economy, metallurgy are obligatory (but inadequate) archaeological criteria of the societies with the highest complexity (civilizations). If, as a result of excavations, these attributes are not found, the society under study can not be considered a civilization.

And the last reservation. All conclusions I have made in this work are only applicable to Murdock and Provost's sample of 186 societies. The more generalized conclusions assume an availability of more extensive sample.

NOTE

REFERENCES

Adams, R.McC.
1966. *The Evolution of Urban Society*. Chicago: University of Chicago Press.

Berent, M.
2000. The Stateless Polis: The Early State and the Ancient Greek Community. In Kradin, N. N., Korotayev, A. V., Bondarenko, D. M.,

de Munck, V., and Wason, P. (eds.), *Alternatives of Social Evolution* (pp. 225-241). Vladivostok: Far-Eastern Branch of the Russian Academy of Sciences.

Bondarenko, D. M., and Korotayev, A. V.
2000 (eds.). *Civilizational Models of Politogenesis*. Moscow: Center of Civilizational Studies of the Russian Academy of Sciences.

Childe, V. G.
1950. The Urban Revolution. *Town Planning Review* 21: 3–17.

Claessen, H. J. M., and Skalnik, P.
1978 (eds.). *The Early State*. The Hague: Mouton.

Cohen, R.
1981. Evolution, Fission and the Early State. In Claessen, H. J. M., and Skalnik, P. (eds.), *The Study of the State* (pp. 87-115). The Hague: Mouton.

Haas, J.
1982. *The Evolution of the Prehistoric State*. New York: Columbia University Press.

Johnson, G.
1973. *Local Exchange and Early State Development in Southwestern Iran*. Ann Arbor (The University of Michigan Anthropological Papers, No 51).

Korotayev, A. V., Kradin, N. N. de Munck, V. and Lynsha, V. A.
2000. Alternativity of Social Evolution: Introductory Notes. In Kradin, N. N., Korotayev, A. V., Bondarenko, D. M., de Munck, V., and Wason, P. (eds.), *Alternatives of Social Evolution* (pp. 12-51). Vladivostok: Far-Eastern Branch of the Russian Academy of Sciences.

Kowalewski, S. A.
2000. Cyclical Transformations in North American Prehistory. In Kradin, N. N., Korotayev, A. V., Bondarenko, D. M., de Munck, V., and Wason, P. (eds.), *Alternatives of Social Evolution* (pp. 177-187). Vladivostok: Far-Eastern Branch of the Russian Academy of Sciences.

Kradin, N. N.
2000. Nomadic Empires in Evolutionary Perspective. In Kradin, N. N., Korotayev, A. V., Bondarenko, D. M., de Munck, V., Wason, P. (eds.), *Alternatives of Social Evolution* (pp. 274–288). Vladivostok: Far-Eastern Branch of the Russian Academy of Sciences.
2002. Nomadism, Evolution, and World-Systems: Pastoral Societies in Theories of Historical Development. *Journal of World-System Research* VIII (3): 368-388 (http://jwsr.ucr.edu).

Masson, V. M.
1989. *Pervye tsivilisatsii* [The First Civilizations]. Leningrad: Nauka.

Murdock, G. and Provost, C.

1972. Measurement of Cultural Complexity. *Ethnology* 12 (4): 379–392.

Renfrew, C.

1972. *The Emergence of Civilization: the Cyclades and Aegean in the third millenium B.C*. London: Methuen.

Staerman, E. M.

1989. K probleme vozniknoveniia gosudarstva v Rime [On the problem of the formation of the state in the Rome]. *Vestnik drevnei istorii* 2: 76–94.
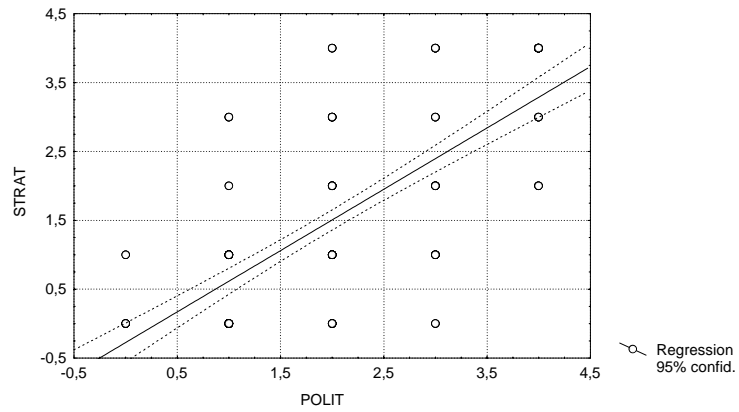
Wright, H. and Johnson, G.

1975. Population, exchange and early state formation in Southwestern Iran. *American Anthropologist* 77 (2): 267–289.

Приложения

Table 1. Political integration and social stratification

POLIT vs. STRAT (Casewise MD deletion)
STRAT = -,2737 + ,89014 * POLIT
Correlation: r = ,72284

		Stratification				
		0	1	2	3	4
Integration	0	8	3	0	0	0
	1	43	22	2	4	0
	2	9	19	8	7	4
	3	3	8	7	4	6
	4	0	0	4	5	20

Fig. 1. Political integration and social stratification

Bivariate Histogram: POLIT and STRAT
(Casewise deletion of missing data)
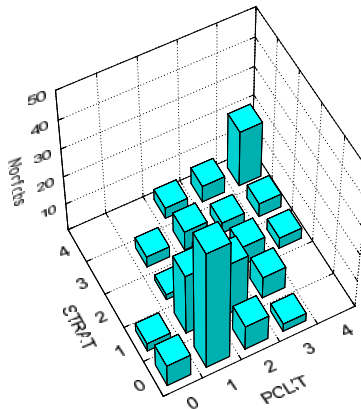
Table 2. Writing and political integration

WRITE vs. POLIT (Casewise MD deletion)
POLIT = 1,3393 + ,46355 * WRITE
Correlation: r = ,57635
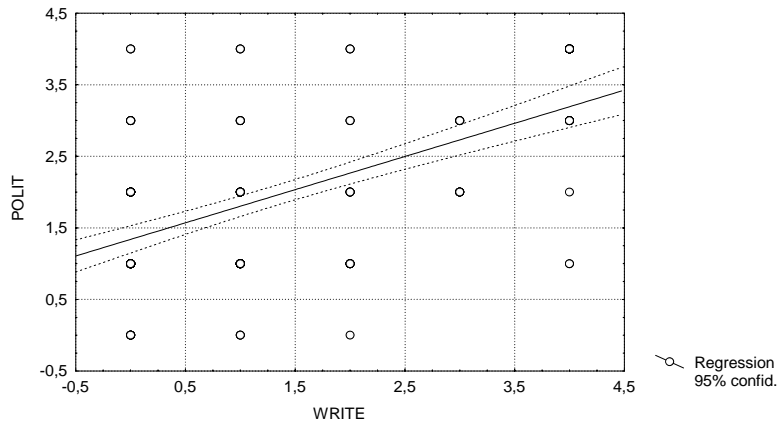
		Write				
		0	1	2	3	4
Integration.	0	7	35	22	7	3
	1	3	26	11	5	3
	2	1	8	6	3	3
	3	0	0	7	5	0
	4	0	2	1	8	20

Fig. 2. Writing and political integration

Bivariate Histogram: WRITE and POLIT
(Casewise deletion of missing data)
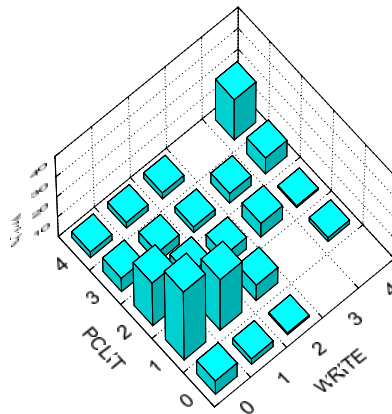
Table 3. Writing and stratification

WRITE vs. STRAT (Casewise MD deletion)
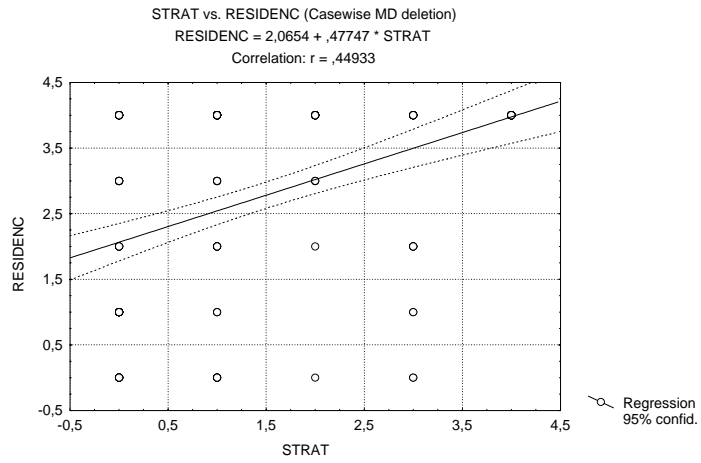
STRAT = ,63732 + ,62183 * WRITE

Correlation: r = ,62784
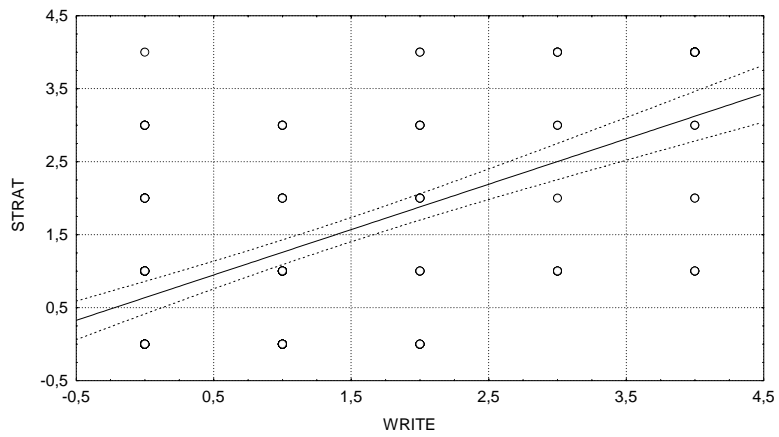
		Write				
		0	1	2	3	4
Stratification	0	35	22	9	7	1
	1	21	17	5	5	0
	2	7	4	4	4	2
	3	0	5	1	2	4
	4	0	4	2	2	23

Fig. 3. Writing and stratification

Bivariate Histogram: WRITE and STRAT

(Casewise deletion of missing data)

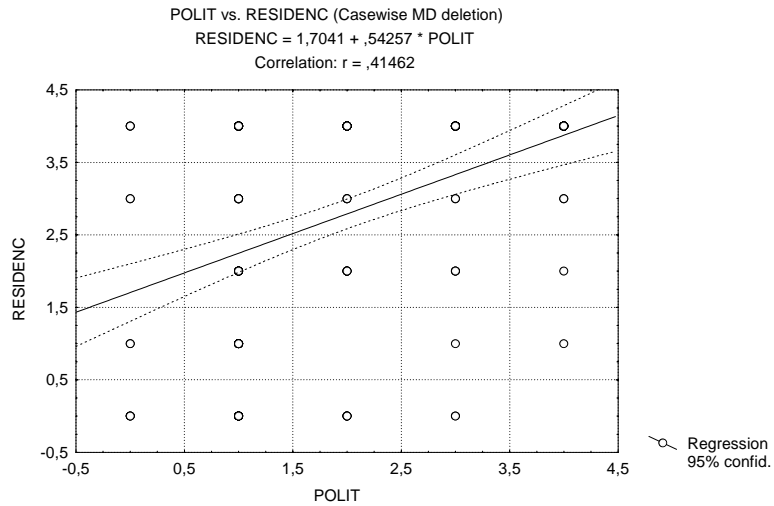**Table 4. Stratification and residence**

STRAT vs. RESIDENC (Casewise MD deletion)
RESIDENC = 2,0654 + ,47747 * STRAT
Correlation: r = ,44933
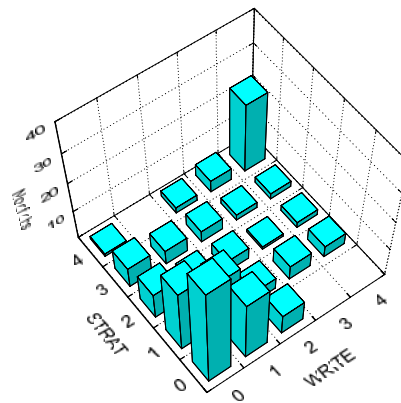
		Residence				
		0	1	2	3	4
Stratification	0	16	17	7	7	16
	1	8	3	7	5	29
	2	1	0	1	3	16
	3	2	2	5	0	11
	4	0	0	0	0	30

Fig. 4. Stratification and residence

Bivariate Histogram: STRAT and RESIDENC
(Casewise deletion of missing data)

Table 5. Political integration and residence

POLIT vs. RESIDENC (Casewise MD deletion)
RESIDENC = 1,7041 + ,54257 * POLIT
Correlation: r = ,41462
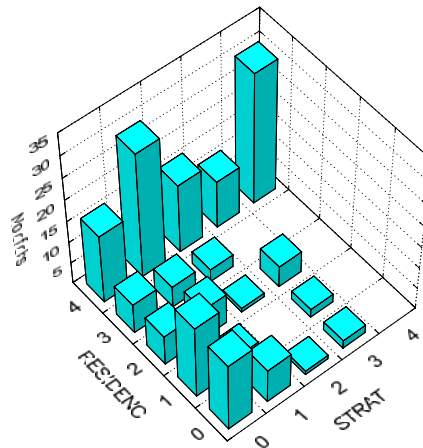
		Residence				
		0	1	2	3	4
Integration	0	4	2	0	2	3
	1	14	18	9	6	24
	2	7	0	7	3	30
	3	2	1	3	2	20
	4	0	1	1	2	25

Fig. 5. Political integration and residence

Bivariate Histogram: POLIT and RESIDENC
(Casewise deletion of missing data)
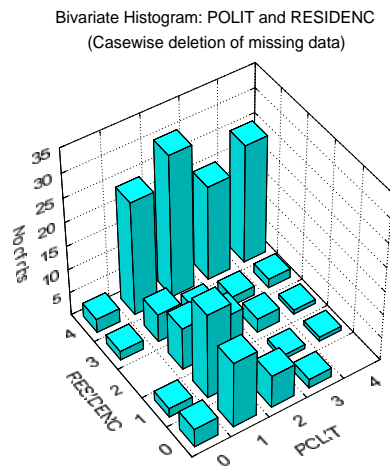
Table 6. Stratification and agriculture

STRAT vs. AGRICULT (Casewise MD deletion)
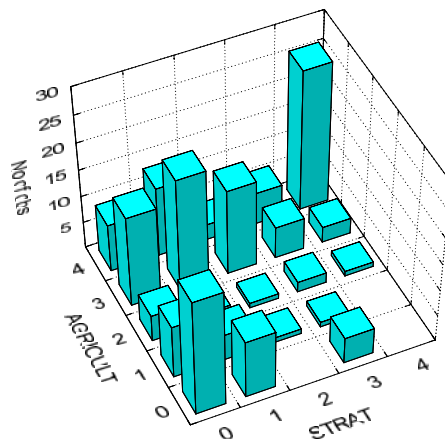AGRICULT = 1,7786 + ,45686 * STRAT
Correlation: r = ,44050
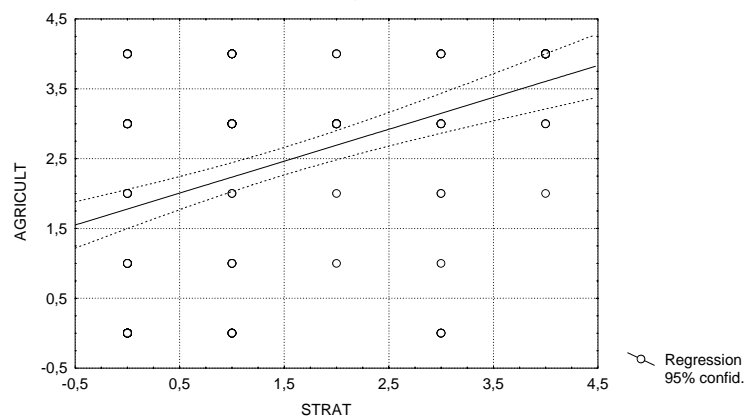
		Agriculture				
		0	1	2	3	4
Stratification	0	22	10	5	17	9
	1	11	5	2	21	13
	2	0	1	1	16	3
	3	5	1	2	6	6
	4	0	0	1	3	26

Fig. 6. Stratification and agriculture

Bivariate Histogram: STRAT and AGRICULT
(Casewise deletion of missing data)

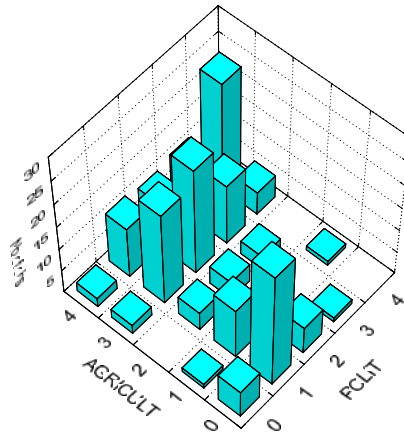**Table 7. Political integration and agriculture**

POLIT vs. AGRICULT (Casewise MD deletion)
AGRICULT = 1,1686 + ,65380 * POLIT
Correlation: r = ,51190
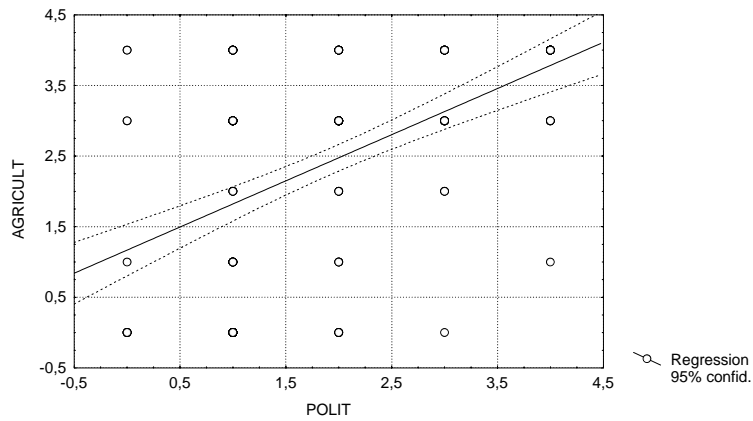
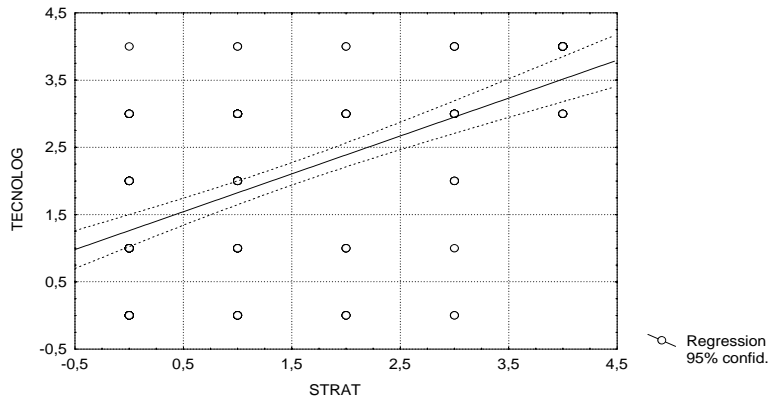|		Agriculture				
		0	1	2	3	4
Integration	0	6	1	0	2	2
	1	25	11	4	20	11
	2	6	4	4	23	10
	3	1	0	3	13	11
	4	0	1	0	5	23

Fig. 7. Political integration and agriculture.

Bivariate Histogram: POLIT and AGRICULT
(Casewise deletion of missing data)

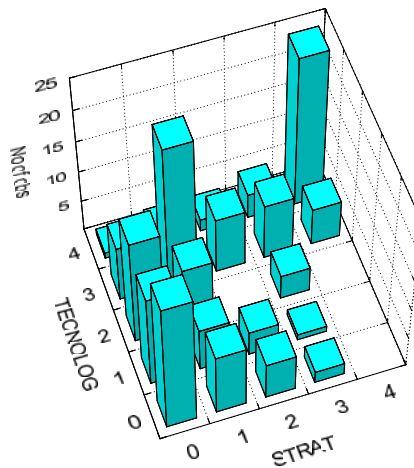**Table 8. Stratification and technological specialization**

STRAT vs. TECNOLOG (Casewise MD deletion)
TECNOLOG = 1,2618 + ,56314 * STRAT
Correlation: r = ,58035

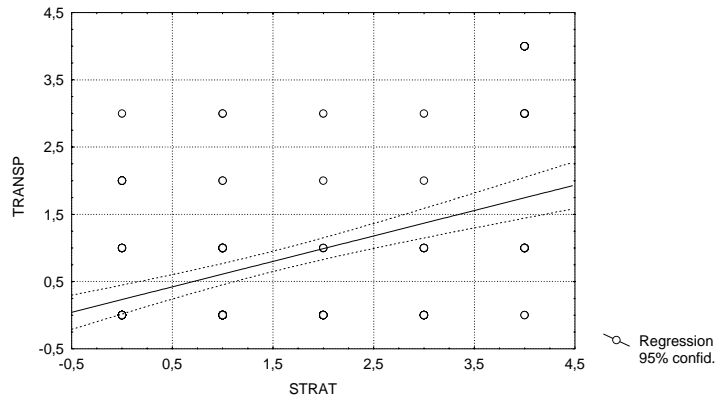|		Technology				
		0	1	2	3	4
Stratification	0	21	15	17	9	1
	1	10	7	10	23	2
	2	6	4	0	9	2
	3	2	1	4	9	4
	4	0	0	0	6	24

Fig. 8. Stratification and technological specialization

Bivariate Histogram: STRAT and TECNOLOG
(Casewise deletion of missing data)

Table 9. Stratification and transport

STRAT vs. TRANSP (Casewise MD deletion)
TRANSP = ,23297 + ,37835 * STRAT
Correlation: r = ,46765

		Transport				
		0	1	2	3	4
Stratification	0	44	8	10	1	0
	1	34	14	2	2	0
	2	16	3	1	1	0
	3	12	6	1	1	0
	4	2	11	0	6	11

Fig. 9. Stratification and transport

Bivariate Histogram: STRAT and TRANSP
(Casewise deletion of missing data)

Table 10. Political integration and transport

POLIT vs. TRANSP (Casewise MD deletion)
TRANSP = -,0328 + ,41947 * POLIT
Correlation: r = ,42103
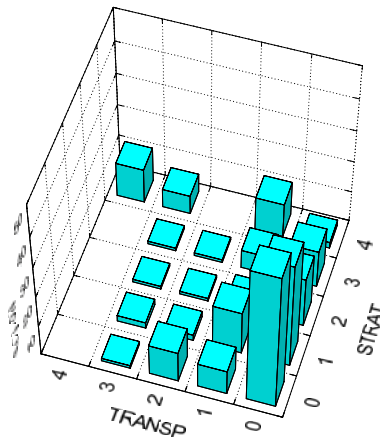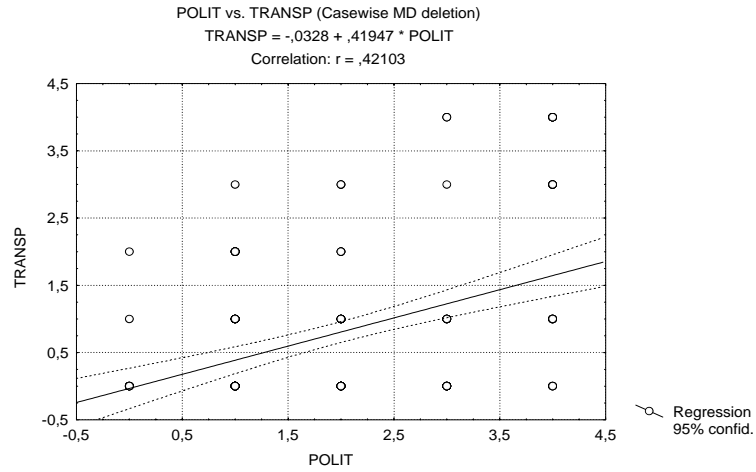
		Transport				
		0	1	2	3	4
Integration	0	9	1	1	0	0
	1	49	12	9	1	0
	2	29	11	4	3	0
	3	15	9	0	1	3
	4	6	9	0	6	8

Fig. 10. Political integration and transport

Bivariate Histogram: POLIT and TRANSP
(Casewise deletion of missing data)