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**FROM THE NEOLITHIC “REVOLUTION”
TO THE URBANISATION.
AN APPROACH OF THE GENERAL ANTHROPOLOGY**

1. Theoretical assumptions

The description and explanation of a sequence of changes which have occurred in the transition from the Palaeolithic hunting-gathering way of life to the settled mode of the Neolithic farmers and further towards the first centres of urbanised civilisation, demands a formulation of a conceptual reference frame. It should include concepts of:

- human culture;
- norms of human behaviour;
- peculiarity of the specific nature of man;
- two main adaptive strategies in culture and
- principle of a basic role of ideological regulation of human behaviour.

All these concepts, formulated by the author in a series of papers, originate from the approach of the general anthropology. The general anthropology may be defined as a science which aims at a possibly adequate description and explanation of the course of the evolution of man as a biocultural species (Wierciński, 1978). It is worth emphasizing that the interaction of the specific nature of man with his cultural and natural environments plays a very important role in these considerations.

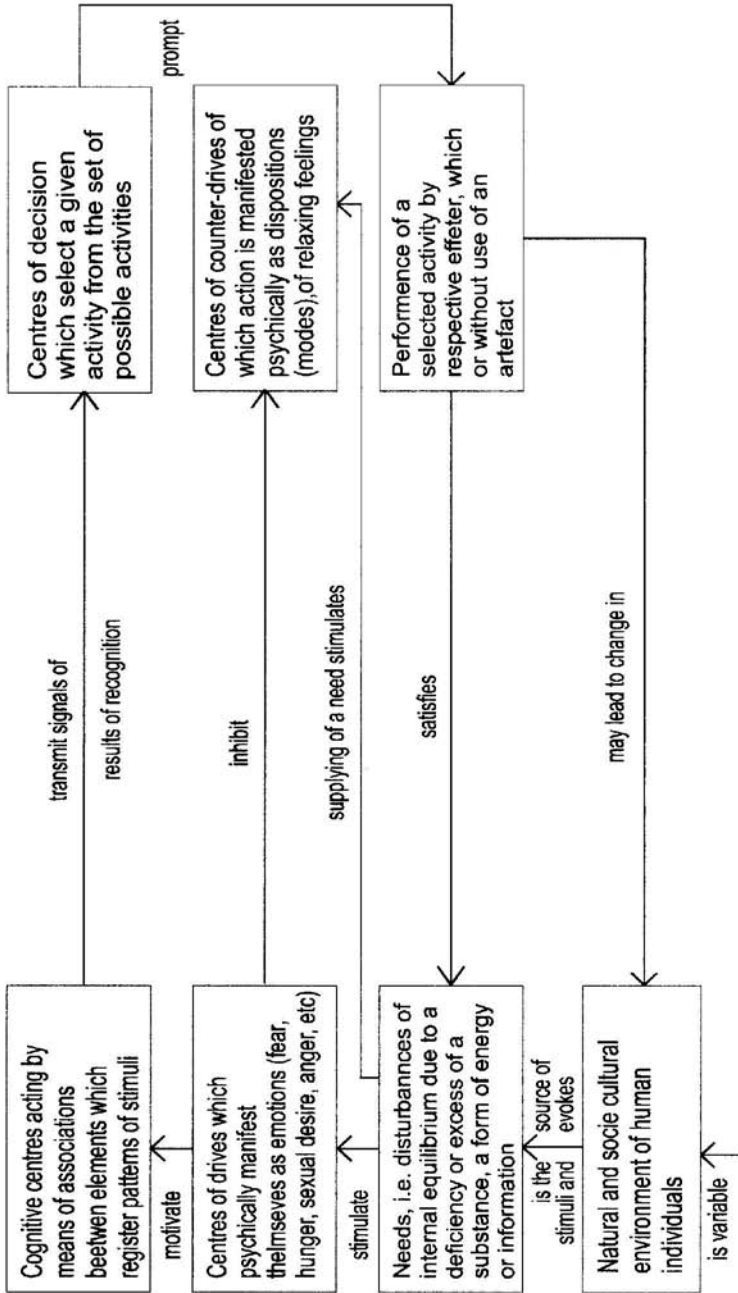
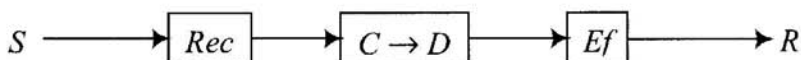


Diagram 1. Functioning of human individual from the point of view of his needs (Wiercinski, 1981)

At the beginning, the following definition of culture may be proposed: “culture is the species-specific and socially organised system of conscious adapting of man to his surroundings by means of artefacts, aiming at satisfying his various needs which in turn prompt arousal of his emotional centres” (Wierciński, 1977).

Principally the notion of *need* (Diagram 1.) denotes a stereotyped disturbance of the state of equilibrium within the individual due to a deficiency or an excess of a substance, form of energy or a piece of information which compel, in turn, the performance of the activity aiming to an adequate satisfaction of the need. Consequently, the *adaptive functions*, considered at the level of human individuals and regulated by mind/brain complex, are those reflexes or consciously motivated activities (often a combination of both) which lead to the restoration of a dynamical equilibrium. It is easy to see that the notion of the need may be generalised into the *social needs*. Undoubtedly, new needs can be induced in the course of evolution which, in turn, induces the rise of new adaptive functions. The main criteria for adaptivity of cultural behaviour have been formulated by Wiercińska (1987).

It should be remembered, however, that the *cultural adaptation* of man proceeds by mediation of the *artefacts*. Their adaptive significance means that they constitute a kind of extension or completion of the biological organs of man which serve for assimilating, storing and processing matter, energy and information acquired from the environment, as well as, for reacting to it. Thus, the following meaning of the *artefact* is proposed: any element of the environment which has been transformed by man through his *conscious productive activity* and which partakes in satisfying his needs. It is worth recalling that the artefacts may be *biotic or abiotic*. Consequently, the *human personality* (Persona) belongs to class of artefacts since it may be considered as the effect of imposing a set of socio-cultural norms (N_{sc}) upon the inborn norms (N_g): $P = N_{sc} + N_g$. The term *norm* denotes any relatively stable psycho-neuronal association between the registering elements (C) of cognitive centres and estimating elements (D) of decision-making centres. The norms make possible a definite activity (R) of an effector (Ef) under an influence of environmental stimuli (S) acting upon a receptor (Rec):



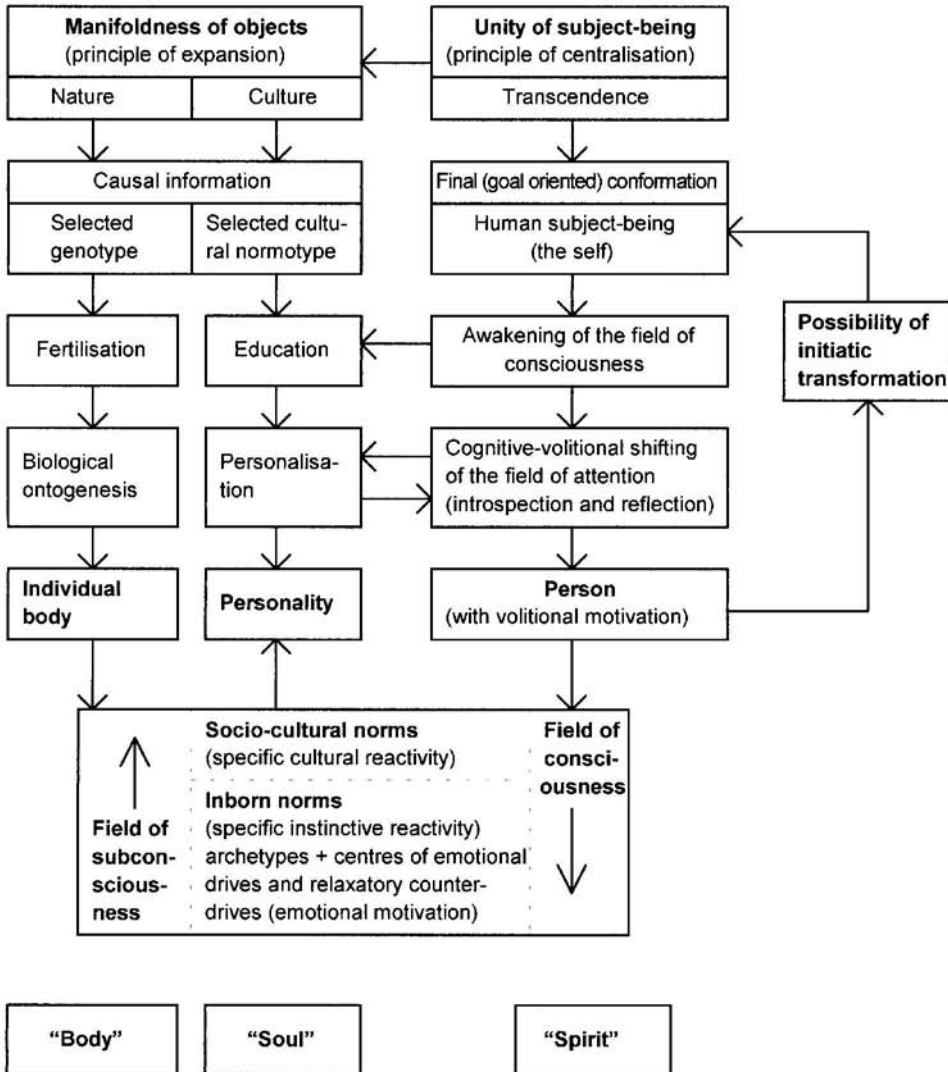


Diagram 2. An outline of development of human individual (source: Wierciński)

It should be emphasised that a very precise cybernetic theory of regulative function of socio-cultural norms in the society, conceptualised as an autonomous and self-referential system, has been recently published by Kossecki (1996).

Coming back to the anthropological approach, it should be stated that a human individual is postnatally living under the impact of two programming devices:

- 1) the *genotype*, formed by the associative process of fertilisation and the *cultural normotype* (of which the Persona is a well integrated part), usually

formed associatively, in the course of a process enforced by education and socialisation.

However, the Persona is organised around something which is usually called the Ego, which leads us to the problem of the *subject-object articulation* (see: Diagram 2.). Thus, the *human subject* is constituted by the individually unique and quasi-point feeling of self-identification at the level of the abstract thinking (the intuitive Ego) which in turn is superimposed upon the ape-like self-identification based on a sensory representation of one's own body (the bodily Ego). Both kinds of Ego are manifestations of a *double* centralisation of the field of human consciousness which enables specifically human functions of *introspection and reflection* ("A man knows that he knows and is able to direct his psycho-neuronal activities"). This concept leads to the notion of the *human nature* as a scheme of a fundamentally polarised creature. The poles are: *ape-like side* (i.e. natural) which was inherited from ape-like but already bipedal ancestors (i.e. the australopithecoid body and partly psyche) and a *psycho-cerebral potential of humanness* (see Table 1. and Diagram 3.). Within the framework of such polarisation one can, therefore, think of three relations:

1. The animal side overwhelmingly dominates over the potential of humanness.
2. The animal side dominates in an incomplete way because the potential of humanness "spreads" unequally (a mosaic specialisation).
3. The potential of humanness undergoes a "spreading" in all directions and the animal side is consequently subdued by the former (Wierciński, 1990, 1992, 1994).

Table 1. Polarisation of man (Wierciński, 1990)

Ape-like side	Specifically human potential
1	2
1. <i>Bodily Ego</i> : centralised representation of body; directly associated through perceptions and archetypes with the emotional stereotypes.	1. <i>Intuitive Ego</i> : centralised representations of associative relations (semantic field), separated from perceptions and archetypes by zone of symbolica images; isolating and correlating various imaginative elements – fantasy and abstract thinking sign-based.
2. <i>Extraspective consciousness</i> , dominated by perception, emotions and moods which "extravertise" activities and behaviour; "an ape only knows and feels".	2. <i>Introspective and reflective consciousness</i> which generates current internal images, thought (notional intuitions) and sensations of will (introspection), as well as influences the distribution of associative power (reflection); "a man knows that he knows and controls his psychological activities".

3. <i>Analytical and reifying attitude</i> : “a world of things separated each from other”.	3. <i>Processual and synthesizing attitude</i> : “a variable and intracorrelated world” – a search for single essence of the Universe (only one explanatory device).
1	2
4. Life in the time of <i>perceptual synchronicity</i> : “a psychological slit of a conscious present”.	4. Life in a threefold time: memorised past – experienced present – predictive future; subjective “flow” of time.
5. A “naive realism” of perceptions, diagnostic and emotional hesitation (sometimes only).	5. Cognitive criticism and awareness of a necessity of verification; awareness of the area of the Unknown.
6. A “psychological submersion” in performed activities.	6. A “psychological distance” to performed activity through internal discourse.
7. Recognition by <i>natural receptors</i> .	7. Recognition through <i>technical receptors</i> or one’s own body transformed by initiation.
8. <i>Individualisation</i> by a memory acquired in a herd imposed on the genetic memory.	8. <i>Personalization</i> by socio-cultural memory imposed on the genetic memory & possibility of individuation in the sense of C.G. Jung.
9. <i>Domination of instincts</i> with some spontaneous and very limited animal inventiveness.	9. <i>Creative inventiveness</i> , rationalised or heuristic: imaginative-notional models of goals.
10. Submission to needs of self-preservation and maintenance of species, caused by perceptions, self-equalising process and/or input of the elements of the genetic program: “a regulation from outside and from below”.	10. <i>Specifically human</i> needs of the generalised cognition of the world (producing of ideologies) and the sense of life (purposiveness); creation of new needs; “a regulation from the above and from inside”.
11. <i>Emotional</i> motivation of activities and behaviour according to values of emotions (principle of pleasure and pain) – reflexes.	11. <i>Volitional</i> motivation directed by models of goals and their hierarchisation (producing the systems of values), what makes possible self-deprivation even against emotional values.
12. Behaviour driven causatively towards a determined final state.	12. Behaviour guided by a goal intentionally projected for even distant future: behaviour “attracted by goals”.
13. <i>Autocentrism or nepotic and/or reciprocal altruism</i> .	13. <i>Obligatory</i> (ethic) <i>altruism</i> which may embrace unrelated enemies or even abstract ideas.
14. <i>Exploitation</i> of natural environment.	14. <i>Technical creation</i> of a new environment, or a <i>withdrawal</i> from the surroundings by means of the body which was transformed in the course of an initiation ritual.
15. Tight bounds with own ecological niche.	15. Drive towards unknown parts of the environment.

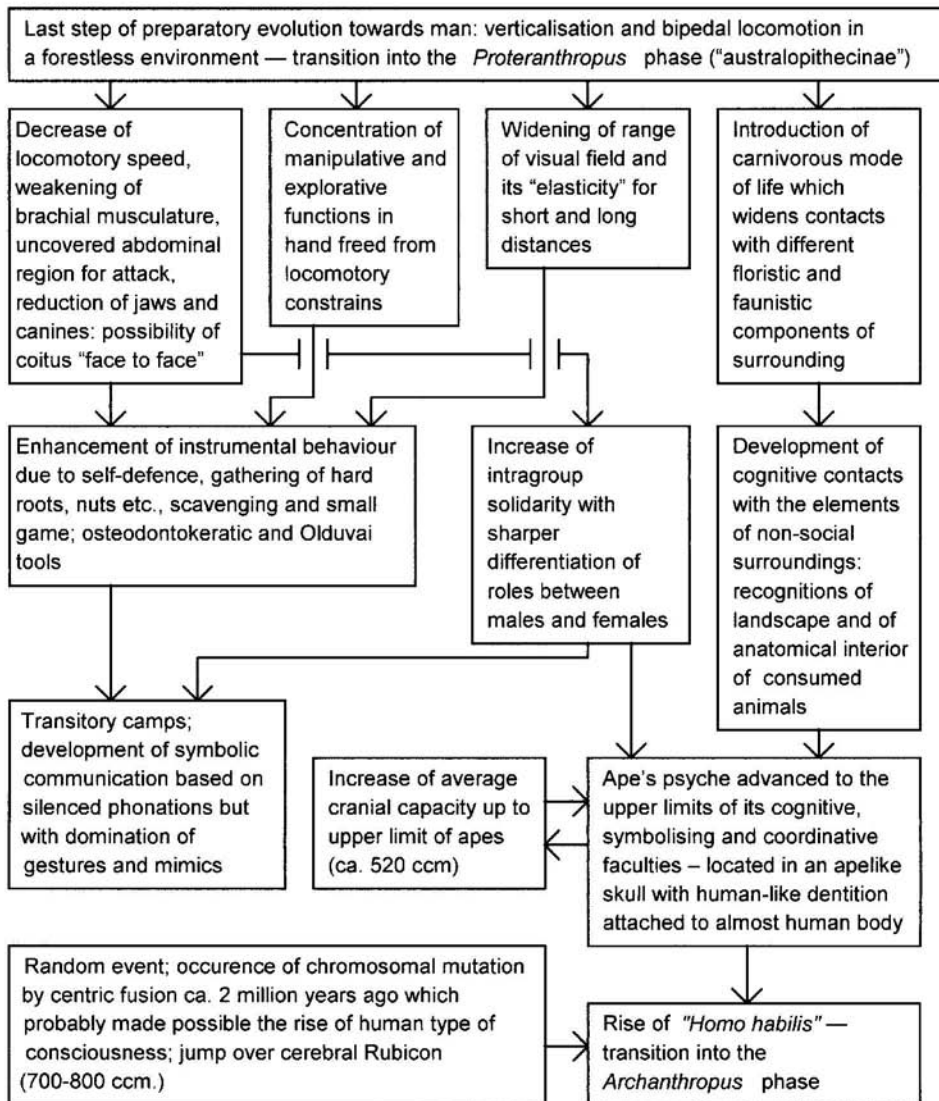


Diagram 3. Possible origin of "*Homo habilis*" (Wierciński, 1991)

The world composed of *multiple objects* presents itself to human consciousness in the veil of the following cognitive experiences:

- sensory depiction of perception;
- internal images of imagination;
- hallucinated depiction (e.g. internal images converted into percepts in altered states of consciousness);
- abstract thoughts (i.e. notional and non-iconic intuitions).

The “reacting against it” comes out of the two functions of decision-making, i.e.:

- the emotional motivation and
- the volitional motivation.

The general feature of objective reality is that it makes a stand against transformative activities of man.

The following division of human needs may be inferred from the polarisation of man (who actually is still the condition of ape-man) outlined above:

1. The *animal needs* of self-protection and reproduction which are shared by humans with other animals and which are largely satisfied with inborn reflexes.
2. The *specifically human needs* of the generalised cognition of the world and the meaning of life, of emotional social contact as well as aesthetic needs, which constitute strongly developed animal needs or, they appear as new qualities in the course of evolution (the first two needs); they are satisfied by greatest part of consciously motivated activities.

In reference to this division, it is possible to maintain the traditional concepts of material and spiritual aspects of human culture.

Accordingly, the *material culture* is meant as the totality of cultural activities and artefacts which partake in satisfying the animal needs of man. The *spiritual culture* embraces all the cultural activities and artefacts which partake in satisfying specifically human needs. Thus, the material culture consists of:

- the instrumental behaviour which aims at acquiring, processing, storing and consuming foods and other material and energetic resources;
- the house and public buildings with all their equipment, as well as clothes, which ensure the spectrum of biologically comfortable micro-environment;
- the production and use of means of transportation;
- arms and military activities;

- other possible activities and artefacts which warrant hygiene and health.

In turn, the spiritual culture includes:

- the methods of acquiring, coding, processing and transmission of information (language spoken and written, science etc.);
- the ideologically regulating systems and managing systems of law and administration (magic or religion, philosophy, customs, forms of government, political parties etc.);
- the systems of education of children and youth and propaganda addressed to adults;
- the artistic activities and products of art.

Despite the fact that these two aspects of culture cause multiple feedbacks and that the artefacts may be multifunctional, such division is not so ambiguous as it would seem. It is also useful in the scientific analysis because different parameters can be analysed accordingly.

However, culture as a specific and most important *ecological criterion* of man represents the *supersystem* being a net of local socio-cultural systems. As any empirical system, the *socio-cultural system* includes:

- the *material* (“stuff”) consisting of a set of *artefacts* and a set of *men* acting as their *makers* and/or users, who usually constitute a biological population;
- the *energy*, measured by kinds and magnitude of the productive work (*sensu latissimo*) and work performed during the utilisation of the artefacts;
- the *information*, measured by a *level of organisation*, i.e. by the number, kinds and power of dependencies which connect all the components of the socio-cultural system.

It should be remembered that men and artefacts are not sharply delineated sets since we already know that men act both as the subjects and objects of culture.

The acceptance of such a concept using notions relating to the theory of systems inevitably leads to the assumption that it must dynamically interact with the changeable environment and homeostatically counteract against the self-equalizing processes, i.e. against the increase of entropy. It is so because any society with its culture can be considered as an organised and self-referring system. Consequently, it must be subject to developmental (evolutionary) changes of which factors might be analogically conceptualised to those of the bioevolution in general (Table 2.; Wierciński, 1977).

Quite independently, the very similar approach to culture as a co-evolutionary entity within the Biosphere has been developed by Cavalli-Sforza & Feldman (1981) with a remarkable success. Now, it is the proper time to ask the following question: why rate of development of tools was so slow in the Lower Palaeolithic period and, despite that men could expand into harsh environments in its later phase?

Table 2. Correspondence between evolutionary notions of biology and of culture (Wierciński, 1977)

Biological evolution	Cultural evolution
1. Biological population.	1. Society, socio-cultural system.
2. Gene pool of a population.	2. Pool of cultural memory of a society.
3. Genetic and chromosomal mutations.	3. Random disturbances of the transfer of cultural memory, discoveries and inventions.
4. Bioreproduction.	4. Educational transfer of cultural memory to subsequent generations.
5. Negative and positive natural selection (through differential mortality and differential fecundity).	5. Cultural selection which promotes or eliminates.
6. Stable environmental rhythms which generate individual and population biorhythms.	6. Stable rhythms of the cosmic and biospherical environment which synchronise the rhythms of cultural activities.
7. Gene flow and the metisation process.	7. Cultural diffusion and assimilation.
8. Genetic drift.	8. Cultural drift in very small societies.
9. Founder effect.	9. Cultural founder effect of setting of a new society derived from some maternal culture.
10. Isolation in out-breeding process.	10. Isolation in the exchange of cultural information between different societies.
11. Ontogeny.	11. Individual development of personality.
12. Anagenetic and cladogenetic evolution (succession of phyletic phases or branching into genetically different local populations).	12. Anagenetic and cladogenetic cultural evolution.

Possible answer to this question is not difficult. Thus, from the condition of the above discussed polarisation of man into his ape-like side and a psycho-cerebral potential of humanness it follows a fact that this potential interacts with *two* environments, namely, the *internal* (animal-australopithecoid) environment of the psycho-body and the *external*

environment which is dealt with through the mentioned psycho-body. Consequently, a human has at his disposal *two* main directions of cultural adaptation, i.e.

- he can either change his internal environment thereby changing his relations with his surroundings or
- he can technically change his external environment.

The first transformation can be effectuated by means of the procedures of *initiation* in the shamanic style (see Diagram 4.). In this case, the respectively changed psycho-body may be considered as a very efficient and multi-functional artefact.

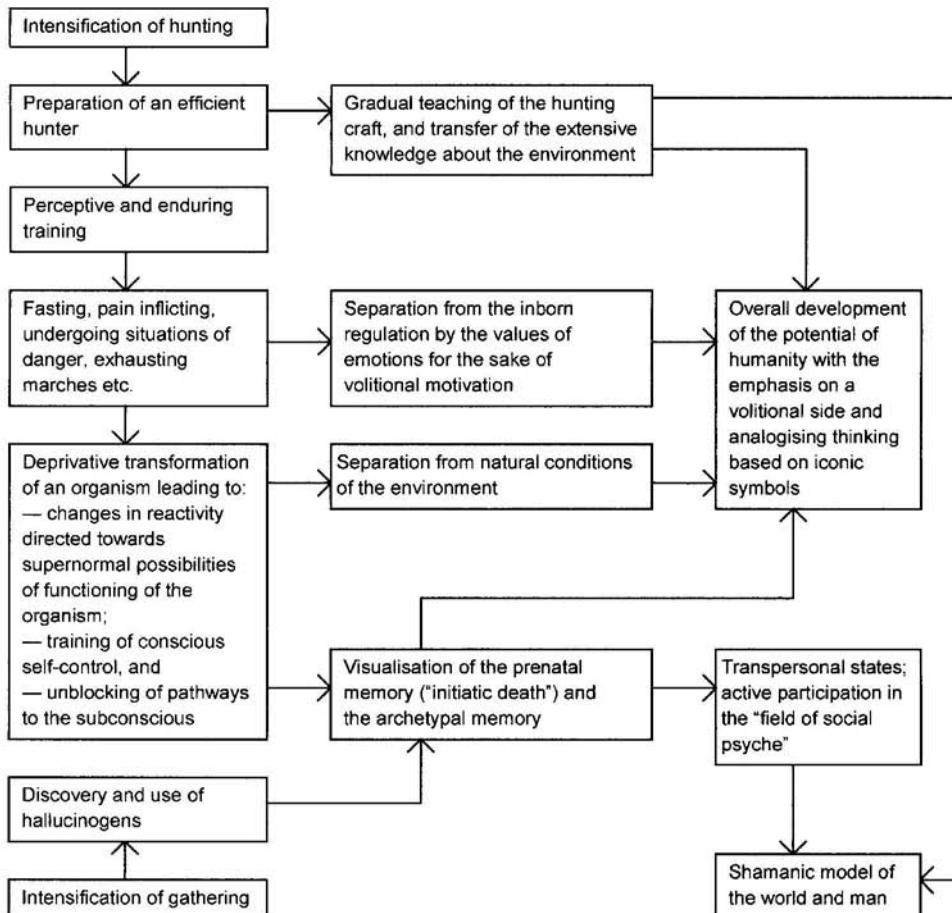


Diagram 4. Origins of shamanism (Wierciński, 1989^a)

It is fairly obvious that mixed strategies were always employed. The division, however, also indicates that in particular local culture, or in a global phase of cultural evolution, one of these adaptive strategies can dominate.

In general, it may be postulated that (at least) from Middle through Upper Palaeolithic the initiation strategy dominated while the Neolithic “revolution” is the turning point for a future preponderance of the technical strategy (Diagrams 5. and 6.; Wierciński, 1989). It is evident that a culture based on the latter strategy could progressively evolve only on account of the reciprocal devastation of the Nature. But, how to define Nature, both operationally and cognitively?

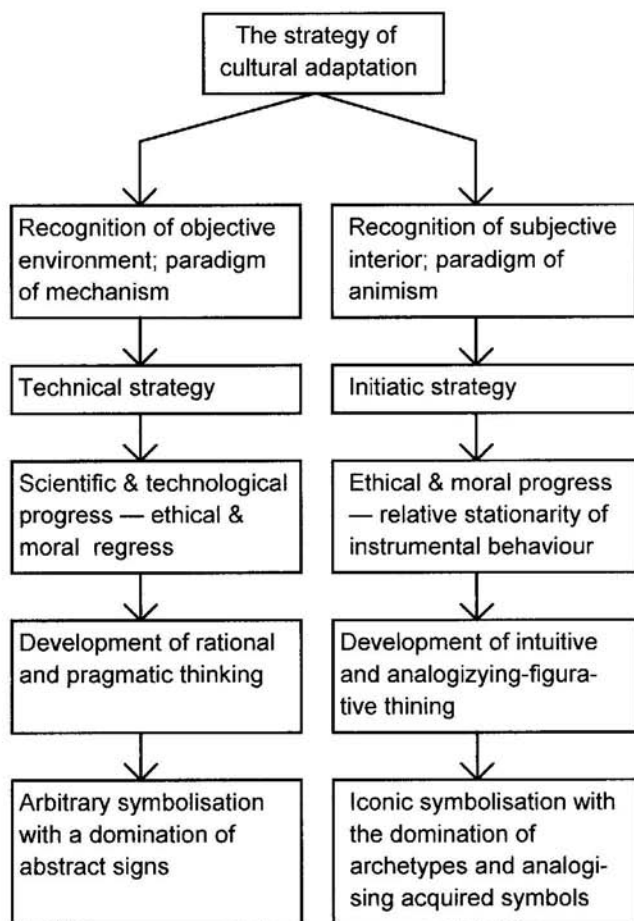


Diagram 5. The strategy of cultural adaptation

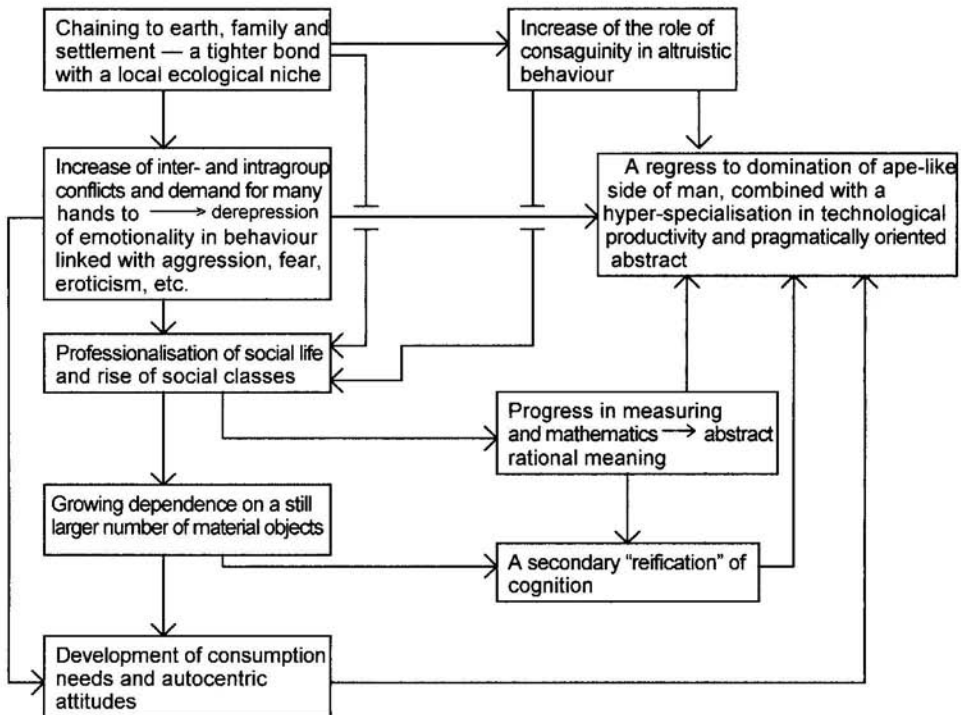


Diagram 6. Trends originated by the neolithic revolution (Wierciński, 1994)

Generally speaking, *Nature* consists of the objects of the internal and external environment of the human subject (as the source of the potential of humanness) which have not been transformed by his cultural activities. Also, it should be incessantly remembered that the *cognitive vision* of Nature is always species specific being based on *sensory perception*. In other words, it is always the result of the specific cognitive reactivity of man which he inherited from his ape-like ancestor. In fact, this perceptually simulated Nature of which greater part is beyond sensory perception, is, to a greater extent, an adaptive illusion which makes possible functioning of man as an “australopithecoid” organism. Of course, the perceptual recognition of Nature should be independent on the cultural affinities and display the range of the species (like, for example, differentiation of main colours whose names and symbolic classification are only culturally biased). Moreover, they should not be confused with the culturally produced models of such natural reality. For instance, the concept of genotype is not a fragment of the Nature but is only a scientific

model represented in the artefacts of verbal description, chemical formulas, photograms etc. which try to simulate something which is natural, i.e. a hereditary substance which is beyond the perception. Even a successful experimentation of the genetic engineering does not imply the achievement of a deeper knowledge of the latter. The carpenter knows different features of various kinds of trees and how to make furniture from their wood but, he is not e.g. a botanist. Surely, also behind Nature, understood as the perceptual reality, is hidden some other reality. Even our remote forbears were quite well aware of this fact, which does not necessary imply that they reached a correct knowledge about this hidden reality.

Moreover, as it was stated above, I am an advocate of a thesis that any essential cultural change, not to mention major trends in cultural evolution, are determined by the respective change in an ideological regulation of the society.

The *ideology* is an adaptive response which aims at satisfying the most specific needs of man i.e. the generalised cognition of the World and a meaning of life. Both of them consist in stereotyped disturbance of equilibrium in the highest psycho-neuronal centres of an individual due to deficiencies in the respective cognitive-emotional and/or volitional associations (=norms). As regards the less definable *need for the meaning (purposiveness) of life*, we may say that it deals with such associations which establish the *general goal* of life of the human individual. It is the goal which motivates and hierarchizes various activities, performed by an individual, due to his species specific, socio-cultural and individual nature. In other words, it is a need of defining a mission of life because of a fact that he is a human, member of a given society and that he has his own unique traits of personality.

For the sake of brevity, Diagrams 7. and 8. may be quoted to illustrate that (Wierciński, 1987).

It is apparent that there must exist strong dependence between a kind of a general model of the World and a promotion of one of a mentioned above three possible ways of “spreading” (realisation) of a potential of humanness versus the ape-like (animal) side of man (see Table 1.). It must be so because mentioned above cultural normotype, educationally internalised, is generated within a given ideology.

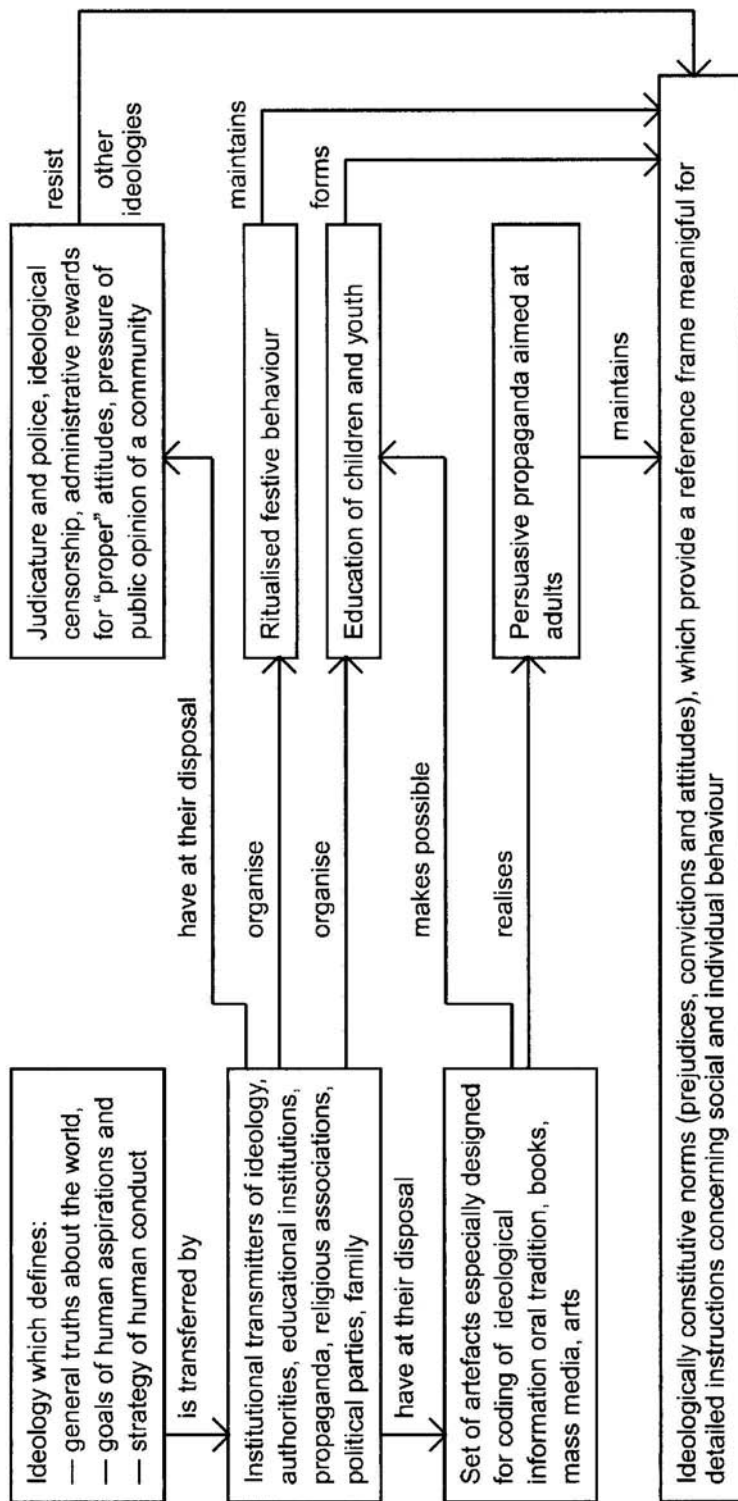


Diagram 7. Functions of ideologically regulating subsystems — IRS (Wierciński, 1987)

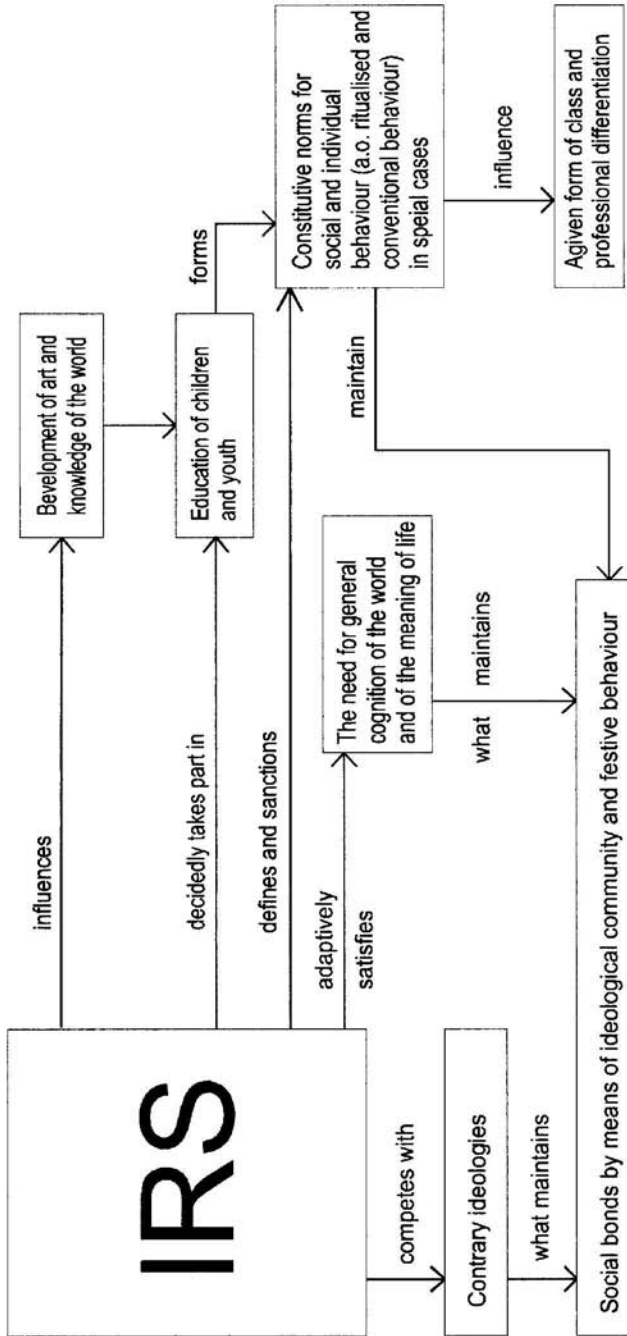


Diagram 8. Adaptive functions of ideologically regulating subsystems (Wierciński, 1987)

Consequently, it is always an ideological change which induces changes in remaining factors of human behaviour. Such a change is usually an individual random event consisting of appearance of a person of the “messianic” type able to essentially reformulate previous ideology and create around him/herself the new ideological elite with a definite potential for expansion (see: Wierciński, 1994^a, Chapter X).

Then, there is a possibility of the emergence of a new phase of cultural development.

Unfortunately, due to a lack of scriptural documentation, it is rather impossible to demonstrate a priority of an ideological change in initiation of such a transition for a prehistoric past.

Thus, there remains only a possibility to show mutual relationship between the particular factors of the transition into a new epoch and the ideological change.

In this case, however, a danger of an entirely false impression may occur (what is quite common) that such conglomerate of factors, other than an essential ideological shift, is actually responsible for changes in the ideology, and not *vice versa*.

2. A Description of Cultural Changes

Now we proceed with an outline of cultural changes on core areas of both the Old and the New World, which led to the neo-eneolithic development stage. We cannot embrace a vast volume of data gathered in the course of archeological research, so we rely on some sites of selected cultures.

At the moment the ice-sheets had withdrawn, the geographic and climate environment, fauna and flora drastically changed. Previously under pluvial influences, large deserts and semi-deserts took their almost contemporary shape. Proglacial tundras transformed into forests and swamps. Large animal populations, including beasts of the game, quickly diminished both in numbers and in the range of species. Wild boar and red deer predominated in European forests.

Man was forced to adapt to all the named changes. The peak of upper-Paleolithic hunting and food-gathering system was gone beyond return. At the same time the totemic shamanism declined with its monumental zoomorphic art.

So the Mesolithic (approx. 12,000–6,000 B.C.) started. A previously large range of forms of stone tools was reduced which was accompanied by the two following two trends in their manufacturing:

- a. microlithisation – manufacturing of various geometric shapes of insert blades for bone or wooden handles;
- b. gigantolithisation – production of large stone tools, being counterparts of later axes, which were used for wood processing.

The changes described above meant no technological regress but necessary adaptations. Microlithic edges ensured extension and sharpening of cutting (or sawing) edges of lighter tools. Also gigantolithic axes had proven useful, as it can be seen from an example of large trunk boats.

Archery was disseminating, too – arrows were being equipped with handy insert heads, having distinctive caps of multiple forms and sizes, which enabled hunting of diverse animals and birds. It can be seen from the example of hunting that fishing nets, traps and snares spread and differentiated, and a respective progress in plaiting including basketry was achieved. Manufacturing of diverse types of stone mortars and querns is another example of technological progress. It supplemented plant diets, especially by edible grasses. The latter spread among folk of both Worlds, inhabiting dry and woodless areas. Inhabitants of such areas were forced to intensify their farming practices.

There was a rise in gathering of molluscs and crustaceans at sea-sides and banks of large rivers, as manifested in shell mounds. The latter are found in such different and distant places from each other such as e.g. Scandinavia, Vietnam, Peru or Brazil. We have a meaningful example of parallelism in the cultural advance!

The Mesolithic also saw dissemination of various wooden dwelling constructions, usually sheds, later semi-dugouts and dugouts. The domestication of animals was announced by taming of dog and probably of wild boar.

Of course, in line with general evolutionary principles some human groups resisted these changes. Such cases are labelled as **epi-Paleolithic cultures**.

It is however difficult to determine the nature of respective social and ideological transformations. The Mesolithic being clearly a transient period marked with multiple reductions of the range of material tools saw also elements of decomposition of totemic structures. They lost the ground in favour of various form of magic (especially hunting one) but still in the frame of shamanism. It is evident from numerous petroglyphs depicting silhouettes of beasts of the game and humans (often shamans) which are more or less simplified and contracted or abstract symbols found on vast areas of Eurasia and America. Geometric symbols of the

Azilian culture painted on river-born pebbles are very characteristic, although only in a local sense.

Anyway, obvious increase in the number and differentiation of symbolic and abstract marks speaks in favour of further development of abstract thought.

As social structure is concerned, we must allow the possibility of strengthening of tribal system due to emergence of chains of interconnected seasonal (even permanent) settlement. It was caused by increased share of fishing and water food-gathering. Clan and tribal systems of Siberian groups as Evenki or those of Northern-American Indians are the closest ethnographic analogies.

In such a short presentation, being not an archaeological monograph, one cannot describe the whole range of epi-Paleolithic and Mesolithic cultures in the world perspective.

It was similar in the case of rich variety of cultures of the next Neolithic phase. It is characterised by dissemination of ground stone tools, invention of pottery and weaving, development of permanent dwellings but first of all by replacing of **assimilation** (gathering and hunting) by **production** which was **revolutionary for human ecology**. According to the present data, this shift first occurred in Western Asia where already in 10th millennium B.C. favourable conditions for sowing and breeding of ruminants have commenced. Such a cultural breakthrough, **enabling urbanisation**, will be reviewed on few selected archaeological sites which represent typical situations.

Before proceeding we must realise how large is an adaptive difference between assimilation and production, and between gathering of seams and plant cultivation. In the course of few million years of *Hominidae* evolution, winning of subsistence was based on an assimilation eco-nomy (gathering and hunting) which exploited plant and animal resources without disturbing equilibriums of natural communities.

Small groups corresponding to "large families" which gathered fruits and roots in a quite uniform way and also hunted various animal species were not able to cause permanent changes in relations with their natural environment. Losses in animal and plant populations were relatively minimal and uniform both in space and time due to annual differences in life cycles of exploited species. The damages were soon compensated which was facilitated by wandering way of life of gatherers and hunter groups.

Thus deep changes in faunal and floral composition, even in a local climate, mostly due to changes in humidity are inevitably caused by agriculture and animal breeding. The principle of the latter is not the

exploitation of natural food resources but a cultural food production including changes in global conditions, harvesting forests, irrigation, pasture of large flocks.

Man is thus culturally changing his own environment and the further evolution is largely influenced by a feedbacks with the close environment which was already culturally changed.

It is also quantitatively and qualitatively changing selective interactions which increased genetic mutability. Social organisation of larger and settled groups assumes a special adaptive role. Selection of groups becomes more important in shaping the gene pool of the whole species due to intensification of ethnic conflicts.

As for the adapting of the whole species, cultural assimilation, processing, storage and use control of information is placed first as a decisive element of survival of a given society in the course of selection.

Parallel to introduction of Neolithic production economy, a relative uniformity of primordial hunting-gathering societies was to be destroyed and differentiated:

- a) the Neolithic system caused fast growth of populations and enabled stability of their settlements despite high population densities on limited areas; it forced creation of permanent and differentiated administration;
- b) the system enabled larger excess of output – a condition of maintenance of expert professional groups and formation of social classes.

A peculiar feature of this process was production of luxury goods which stimulated merchandise trade and plundering raids. These goods did not fulfill any vital needs but aroused new habitual needs in cultural way. They were further preserved by means of education and propaganda. So positive feedbacks between constantly rising needs and cultural products supplying them have emerged. As a result, the cultural development became autonomous and continued until it reached human possibilities of exploiting material and energy resources of his environment.

To sum up the above comparison of the systems of assimilation and production it is enough to mention that maintenance of one hunter or gatherer an area ca. 20 sq. km is needed. If converted to arable land it suffices to feed 5,000 farmers!

Note that cultivation of seed plants (crops including maize, rice and beans) was of far more importance than cultivation of fruit-trees and beets (e.g. sweet potatoes or cassava). The latter developed in hot and wet subtropical conditions which were favourable neither for greater demographic

changes nor for increased search for new arable grounds. Such an agriculture did not supply an excess of feeding stuffs needed for extensive breeding of ruminants. It is hard to overestimate the importance of the later as meat supply and transport means. We must add relative cultural isolation and a necessity of co-operation between subtropical digger farmers and retarded tribes of hunters and gatherers maintained on large areas by presence of primeval forests which stabilised the development.

As mentioned, the most favourable conditions for the origin of seed plants cultivation and ruminants breeding originated in the 10th millennium B.C. on mountain areas of Western Asia. Three determinants joined there:

- a) a presence of extensive (few thousands hectares) congestions of wild grasses, especially ancestors of wheat and barley, at hillsides of Zagros (Iran and Iraq), Taurus (Turkey) and Galilee (Palestine);
- b) a presence of various ruminants as wild ancestors of goat, sheep, pig and cattle (bezoar goats, muzil and mouflon, wild boar and aurochs) which is not strange in view of a);
- c) a presence of human groups exercising comprehensive hunting and specialising in intensive gathering of edible grasses, moreover, having at their disposal needed tools as sickles, grinders and mortars.

Few springs of water on dry areas and natural fields of wild crops, supplying plenty of starch, stabilised settlements. According to experiments carried out by I.R. Harlam 1,440–2,250 gms of wild grains per hour can be gathered with bare hands. Using stone sickle this amount can be increased to 2,450. According to P. Bieliński (1985), 1 ha can supply from 500 to 800 kilograms of wild grain. However, torus in such plants is too fragile and hull is hard, hardly removable and indigestible. So invention of mortars and grinders was necessary and further breeding went not only towards increased fertility, number of grains per ear but also to varieties with more resistant tori.

Fields attracted not only gatherers but also numerous flocks of ruminants. Contacts between these animals and humans tightened as semi-permanent settlements at water springs emerged having own flora which obviously included randomly sown edible grasses (e.g. growing out of derelict granary holes).

An intensive gathering of edible grasses had stimulated growth of knowledge in vegetation cycles which, combined with observations of flora near encampments, caused the first intentional sowings.

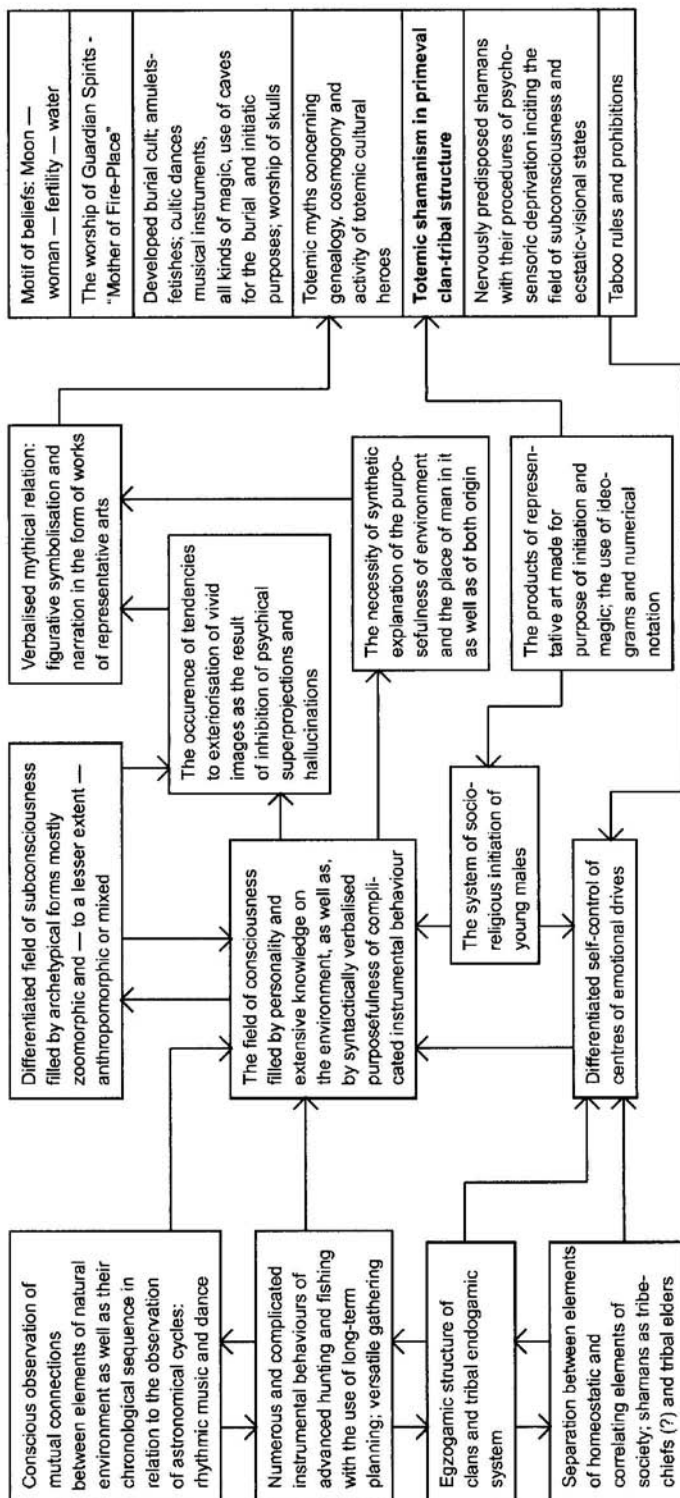


Diagram 9. Origins of Upper Palaeolithic totemic shamanism (Wierciński, 1981)

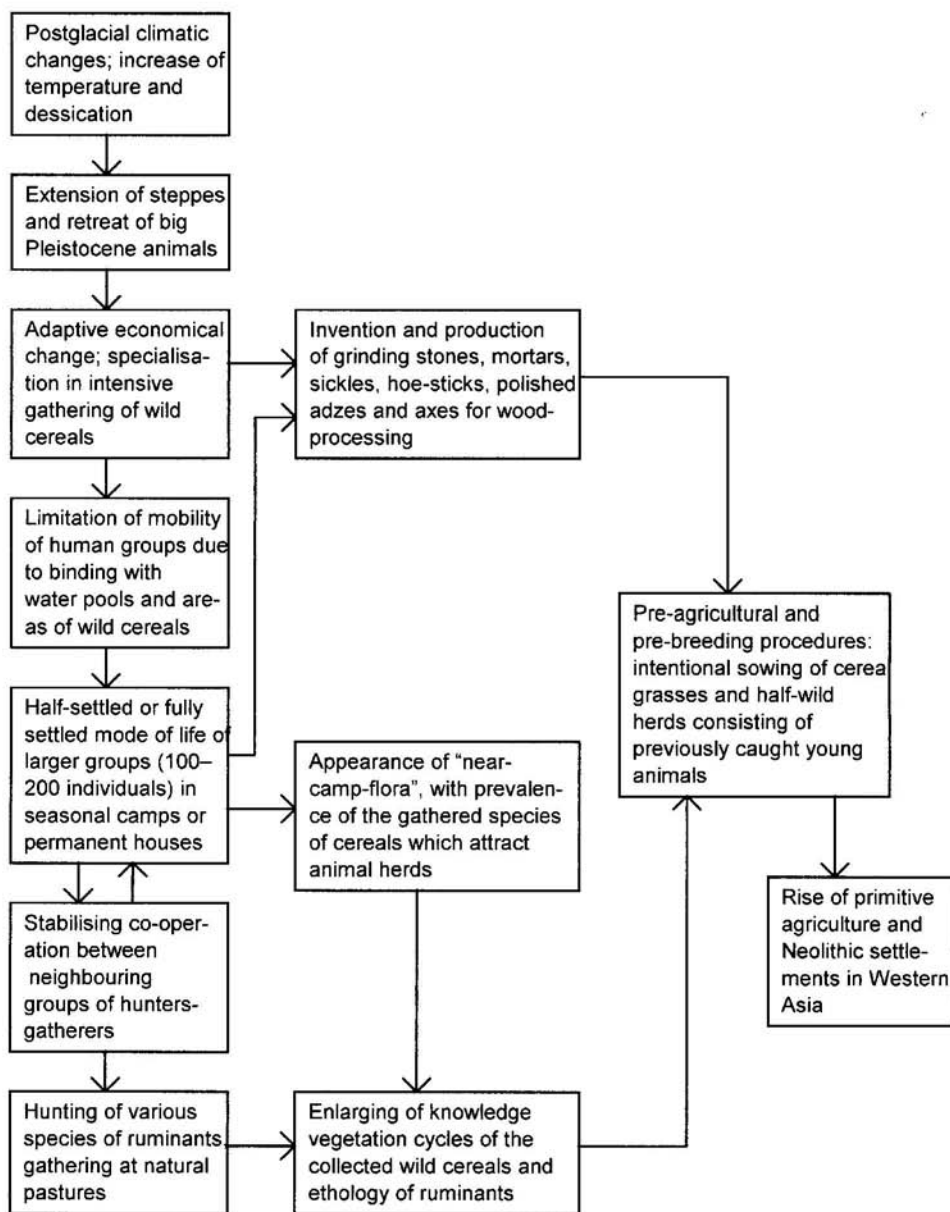


Diagram 10. Possible origin of agriculture and breeding of ruminants in Western Asia, ca. 10,000–8,000 B.C. (Wierciński, 1981)

It must be at first the following system of digging using dig sticks and stone hoes loaded with handles loaded with stones. Only later an intensive agriculture developed on flood areas of great rivers (Tiger and Euphrates, Nile, Indus and Yellow River) due to irrigation demanding constant and well organised work of large groups.

As for domestication of ruminants, it probably began with (given that the above named favourable conditions occurred) with catching and taming of young heads which then formed half-wild herds ravaging at encampments. Watching them was easier with the help of previously domesticated dogs. In due course, smaller ruminants were domesticated at first (goat and sheep), then larger ones, like horse. Use of sheep and cattle as tracting forces contributed greatly to growth and speeding of trade exchange. These animals serve this purpose until now e.g. in Tibet and in Eastern Africa. For a summary see Diagram 10.

Such an introduction should be complemented by a consideration of selected archaeological data from Western Africa.

Already in Mesolithic the Natufian culture developed in Palestine and Syria (10,000–8,300 B.C.). It intensified not only hunting but also gathering of wild crops. Sporadically a settled mode of life was adopted. Its range of tools includes microlith edges of quadrilateral, triangular, trapeziform and crescentic shapes, scrapers, cultivation instruments, simple sickles with insertion blades, cylindrical grinders and stone cup mortars. One of the oldest sites of that is Ain Mallaha (Eynan) beside lake Huleh in Palestine. It is dated to ca. 9,400 B.C. Some fifty circular huts of 7 meters in diameter, partly sunk into the ground were discovered. Walls of rammed earth and stones were covered with bulrush roofs. In one of the huts a fire place was discovered with nearby mortar and a basalt jar. There was a stone basin at the northern wall. A plate covered grave of an infant. Storage pits were scattered among the huts. Both huts and pits contained 24 burials of skeletons covered with red ochre. One dwelling contained an interesting multiple grave. An adult facing the Mount Hareman was laid at the bottom being partly covered with stones. Nearby a female skeleton had a head adornment of *Dentalium* shells. This grave was covered with ground and circular layer of stones. The latter covered traces of a fire place with burnt bones of another adult male. Other graves displayed no peculiarities but some of them contained **only skulls**. Here we see also a full complex of the Upper-Palaeolithic burial cult, as flexed bodies were inhumed in dwellings or nearby and covered with ochre. Separate skulls were found, as well. Shell adornment is also peculiar characteristic. Most

probably, distinguished position of the multiple grave containing a possible human burnt-offering is an evidence of religious separation of the settlement's chief and his spouse.

Surveyed animal bones include deer, gazelle, fox and hare. The inhabitants lived off hunting and fishery in a nearby lake, supplementing their diet by an intensive gathering of edible grasses as it was proven by pollen analysis. Estimated population was 150–200. Possibly, the development of Natufian hunting went towards animal husbandry as remains of youth of smaller animals (many sheep and goats, 44–97% of gazelles) prevail at these sites.

The oldest stratum of Natufian site in Nahal Oren is also dated to 10th–9th millennium B.C. It contained traces of an encampment encircled by a ground wall, reinforced by debris from stone mortars. The latter formed a part of covering of a local cemetery. Almost all graves were equipped with two stone jars (of up to 70 cm height) without bottoms. Bodies were flexed and covered with ochre. The equipment included carved figurines and slate plates engraved or painted with symbols. Upper levels (8th millennium) contained next Natufian settlement of 15–20 roundish huts of stone with 2–5 m diameter and centrally located fireplaces. Tools included stone bowls, mortars, adzes, axes, sickle inserts and arrowheads.

Among leading Natufian sites are also Mugharet el-Kebara and Mugharet el-Wad caves at Mount Carmel. Crescentic edges and small arrowheads, bone scrapers, polishers for leather processing, spearheads and fish-hooks were found there as well two adze-like implements (possibly hoe heads) and pre-sickles with stone inserts and bone handles with careful ornaments which depicted deer, goats, horses and oxen. Similar sickles were used in Palestine until the iron age. At the el-Wad cave 50 burials were found, one body was adorned with *Dentalium* shells. For both sites a date between the beginning of the 9th millennium and the end of 8th millennium B.C. is likely. Especially interesting is the oldest level in Jericho, bearing traces of a Natufian encampment (radiocarbon date 9,551 B.C.) which was organised around a water spring. A nearby quadrilateral temple (!) 3 metres wide and 6.5 long had stone foundations and a dirt floor. Two large stone blocks with holes of 30 cm diameter were attached the foundations in order to hold two cult poles. The latter had their counterparts in double cult columns met frequently at Assyrian, Urartu and Phoenician temples. However the most important examples are Jachin: “he (Jehovah) establishes” and Boaz: “by his (God’s) strength” placed in front of Solomon’s Temple which symbolised male and female tribal organisation. The building at Jericho was burnt at the end of 10th

millennium; the next level shows only rests of mud huts. Yet around 7,300 B.C. the city was encircled by a powerful megalithic wall 1.6 meters thick and 4 high. The wall encircled an area of 2.5 ha. The city was densely built with roundish houses made of bricks of sun-dried clay. The population was 3,000 (sic!). One of uncovered towers measured 8 m in diameter and in height. It was covered with square plates 1.5 meters long. Stairs of 28 stone steps led to the entrance. The wall was encircled with a fosse, 8 m wide and 2.5 m deep which was cut in limestone ground and filled with water from a spring. Not far off the tower a stone cistern was located. Rain water was distributed from the cistern by a channel.

A skull cult occurred in Jericho A (8,350–7,350 B.C.) as it is indicated by groups of 3 skulls and an circle of skulls facing the middle of the group. Unfortunately we do not have any archaeological evidence explaining how so many of its inhabitants maintained themselves. Traces of goat breeding and wheat and barley farming are not sure. Living barely on hunting and gathering was hardly possible. One could think about a “monopoly” on intensive trade in salt, sulphur and bitumen from the Dead Sea coast. In this case we get an explanation of powerful walls which would defend precious stocks, first of all of indispensable salt. Noteworthy that implements found in Jericho were made of obsidian imported from Anatolia.

Jericho A lasted for almost one millennium, as indicated by a continuous series of 25 settlement levels. It was seized and destroyed ca. 6,950 B.C. (C¹⁴ date). The invaders built a new settlement (phase B) and again surrounded it with walls. This time dwellings were of quadrilateral shape, a few had templelike character. One included a basin with traces of fire (burnt-offerings?), another a cult column made of volcanic stone. Still another building was a forerunner of *megara* known from the Mycenaean Greece. The way from the building’s front with columns led to a vestibule, then to a proper temple space including a column supporting the roof. In this temple, clay sculptures of a group consisting of a male, a woman and a child were discovered which possibly were representations of the “Holy Family”. It was the divine triad so specific for religions of ancient Mesopotamia and Egypt. Numerous clay figures depicting bulls, goats and rams were scattered around the temple, being an evidence for animal husbandry. Pottery is still lacking. Peculiar objects of sacral character are 7 skulls with faces fashioned in clay and eyes made from shells. Similarly modelled faces occur at Tell Ramad (7th millennium B.C.). It is a possible evidence for clear social differentiation into clans of human and not totemic origin.

All mentioned data on the pre-pottery period of Jericho (A and B), which ended in 5,850±(200) B.C., clearly speak for stable administration which ensured order among few thousand of crowded people as well as organisation of large public works in order to raise previously designed monumental buildings. A Council of Elders being also a college of priests and including a permanent warlord could wield such a power, to judge from the later Babylonian epic *Gilgamesh*.

Another early example of a compact settlement is the port of Ugarit VI at the Syrian coast. It was encircled by a powerful wall 5 meters high covered by stone plates. The enclosed area of 36 ha was covered by quadrilateral houses constructed from sun-dried bricks. Various flint and obsidian tools were discovered there, among others polished adzes and female figurines.

The first traces of specialisation of handicraft, including a possibility of forced labour, are also dated at 6,600 B.C. They came from the unearthed part of a pre-pottery Neolithic settlement of Beida (Jordan), comprising 8 stone buildings. The latter were composed of residential parts and numerous rooms 1 meter long by 1.5 metres wide, separated by extraordinary thick (1.5–2 m) walls. Unambiguous traces of different workshops were found, e.g. for horn and bone or stone processing and a butcher's shop. Apart from these forerunners of urbanisation, extensive areas of Western Asia hosted typical clan settlements where first signs of developing production were co-operating with still dominant assimilative economy.

The Karim Shahir settlement in northern Iraq (ca. 8,450 B.C.) consisted of circular semi-dug-outs with stone-covered walls. Geometrical microlithic edges gave the way to polished flint axes, bowl grinders and mortars which is characteristic for implements of this site. Pre-sickles were found, too. Similar dug-outs were discovered at Zawi Chemi Shanidar, founded ca. 8,920–8,650 B.C.

The settlement of Qual'at Jarmo shows certain traces of animal husbandry and cereal cultivation. Jarmo is located in a mountainous region of northern Iraq. The settlement is dated between 6,500–5,800 B.C. It has been estimated to have comprised of 20–25 rectangular-roomed houses, built of mud walls on stone footings and equipped with wooden doors, with an assumed population of 125–175. The inhabitants used in the pre-ceramic phase stone bowls and fire pits with hard-burnt sides where hot stones were thrown in order to heat contents. Tools include flint edges, mostly microliths and sickle inserts, bowl grinders, axes and obsidian implements which material was imported from the vicinity of the Van lake, located 500 km apart from Jarmo. Some 5,000 pieces of male and female clay figurines

were excavated. Female figurines dominated in upper layers. Animal bones were mostly of dogs and goats, however later strata also included cattle.

In a survey of plant fragments the following grains were found: two varieties of wheat, which were very close to wild one, their hybrids, two-rowed barley, peas, sainfoin and lentils, pistachios, and acorns. Various animal bones included bear, leopard, deer, ass, onager, aurochs, wolf, wild boar, fox and wild sheep which is an evidence of importance of hunting. The inhabitants were also engaged in fishing and gathering of molluscs and fresh-water crabs. They bred goats and possibly sheep. Painted ceramic imports arrived there as late as in 6th millennium.

The oldest, pre-ceramic Neolithic layer at Hacilar in Anatolia was dated for the same period (7,040 B.C.). Thick walls of sun-dried bricks and red painted quadrilateral rooms were excavated there. Fire-places and granaries were located in courtyards and at house corners. Among stone tools flint and obsidian edges as well polished axes were found. Plant residues indicate wild one-grained wheat, domesticated emmer, two-rowed barley and peas. In a few houses human skulls standing on stone plates or buried under entrances were found.

The 7th millennium B.C. saw a shift of the centre of cultural development towards Asia Minor, as indicated by later strata at Hacilar and stunning variety of findings at the Çatal hill which is located on the fertile and well watered Konya plateau in Anatolia.

The levels span uninterruptedly the period from 6,250 to 5,400 B.C. J. Mellaart found a well designed and quite compact settlement of completely juxtaposed buildings 8–10 meters long by 4–6 meters wide. Access was by ladders through openings in the roofs. Equipment of the houses does not indicate any social stratification of the inhabitants. However, the buildings were divided into residential ones and shrines which were uniformly distributed and quite frequent, comprising almost 35% of total. 48 shrines were surveyed in total, containing peculiar equipment as sacred sculptures, reliefs and numerous mural paintings. The dead were buried beneath plastered platforms in both groups of buildings, but shrines hosted only female bodies. It implies that a separate class of priestesses served there. Female skeletons were the only covered with ochre.

Besides, such a rich equipment of shrines demonstrates an early and almost complete complex of beliefs linked with Great Mother Goddess. Later, her mysteries turned out to be characteristic for the whole Mediterranean.

The most suggestive of her numerous images found at Çatal is a naked enthroned woman, relying her feet on human skulls and with an

infant head coming out of the perineum. She is therefore the Lady of Life and Death who is supplied by ancestor's ghosts with fertile power. Such a meaning is stressed by placement of this figure in a storage pit. Images of female breasts around vulture heads, fox or weasel skulls and wild boar bones (which are animals of death and of the Underworld) are also typical.

Differentiation of cult types is also noteworthy. One of the shrines was dominated by funeral motifs, symbolised by human skulls placed on clay plates at painted walls. The paintings depicted a giant vulture wheeling over dead headless bodies. This corresponds to images of peaked buildings full of skulls. Some of the vultures have human legs.

We should note that many burials consist of mere skulls and long bones placed in baskets or bags. Other bodies were wrapped in mats at various stages of decay. Funerals took place probably once per annum during the spring new year festival. Persons who passed away well before this term were represented by their bones gnawed by vultures. Other bodies had some flesh on them. Also a relief of a woman dancing with wind-blown hair may have something in common with this festival. The just named dancer is a prototype of bacchants, as the one met on a famous jar from Samarra. The role of women in the Great Goddess' cult is additionally stressed by rich equipment of female burials including rich adornments of stone and copper beads, bones, shells and obsidian mirrors, possibly used for divination.

Still another shrine displays a meaningful association between Great Goddess and bee. Beneath three modelled bull's heads with actual horn cores incorporated a painting was found showing four stadia of bee metamorphosis, three pupae and an imago. Bull heads paintings on walls and cult poles are generally quite frequent in temples. This animal appears in meaningful symbolic associations, this time emphasising importance of the masculine. The few male figurines include two depicting bull riders. A painting shows a giant bull encircled by dancing males, one of them somersaulting over the animal. As it is well known, cult performances involving bulls occurred later on Crete then in India and China. Ancient gods of storm also rode bulls, as Syrian Hadad, Hittite Teshup or Mesopotamian Adad. They were sometimes associated with double axe (*labrys*), the symbol of thunder which we met on a Çatal painting among other symbols, namely Sun, cross and a cross formed by female silhouettes with stretched arms. Similar representations are known in ancient cultures of Asia Minor, Crete and other Mediterranean isles. They are connected with Great Goddess and spring resurrection. Also the cult of Ishtar and Tammuz is announced by a figure of a woman holding a child.

Representations of leopard or its fur are rarer than these of bull. A bisexual pair with leopard heads and stone sculpture of a woman with cereal offerings, standing before multiple leopard images painted on a wall are especially interesting. The latter is linked with ancient renderings of Ishtar as the Lady of War, surrounded by lions or leopards. A shrine contains a series of interlaced leopard and lion heads.

A full domination of elements of Great Goddess' cult does not exclude a continuation of masculine hunting cult. Two shrines were devoted to it. Paintings there depicted males in aprons who were dancing among deer and holding arches, horns or drums. One of the depicted was of unnatural height (the settlement's leader or a chief of hunters only?). Two other paintings show capture of a large wild boar with bare hands.

Closing the presentation of the ideological aspect, which in the case of Çatal was more detailed in order to show the breakthrough leading to the matriarchal phase, we should describe the social organisation and its economic foundations.

Surveyed traces of plants indicate cultivation of three kinds of wheat, two- and six-rowed barley and peas. Oil was made from nuts, pistachios and acorns. Countless *celtis* seams, of which wine was made in ancient Anatolia, seem to indicate that wine was known in Çatal. Cattle was also bred (it accounted for 90% of animal bones) and dogs were kept. Tools included various flint and obsidian edges, scrapers, arrowheads but not adzes nor axes which, however, were certainly in use as is seen from wooden containers and elements of buildings. These implements were probably made of copper because different artefacts made of this metal were found. Copper was acquired as native metal or it was extracted like lead. So the significant innovation of metallurgy was achieved in Anatolia as early as 7th millennium B.C. In the same region and period pottery-making had originated in the form of primitive containers imitating baskets or wooden jars. The latter were abundantly preserved in Çatal, as well as these made from stone, bone and horn.

Thus the invention and dissemination of pottery was preceded by a period of containers made from other materials. Some traces of weaving and highly developed plaiting were also found at Çatal.

Scattering of cult buildings which did not differ from the rest of the settlement, diverse equipment of interiors and presence of 20 different clay stamp seals with geometric patterns (probably clan signs) throw light on social relations.

All that seem to imply a developed and mainly matrilineal clan community which was ideologically directed by means of Great Goddess mysteries linked with an ancestral cult. The resistivity of Çatal was enhanced by compactness of the settlement and by the lack of external access. However, this site too was brought to an end by a fire. Its total population can be estimated for 5,000.

The 6th millennium in Western Asia was a period of rapid growth of population density due to dissemination of animal husbandry accompanied by flourishing of various megalithic cultures of painted pottery type which expanded east-, north- and westwards. The pottery included various, specialised and sophisticated forms covered by rich, often symbolic ornaments. It is an evidence of fast development of this branch of handicraft.

There are numerous proofs that constant production surplus occurred and was accompanied by growing social differentiation. The golden age of internal harmony of primitive clan community was **irrevocably lost**. These events are perfectly illustrated by other Anatolian sites at Hacilar and Yümük Tepe.

We already mentioned the older aceramic phase of Hacilar (7th millennium B.C.). Now we proceed with description of next levels. The lower stratum of Hacilar II (5,800–5,600 B.C.) contained only 9 large two-storey buildings made of cubic mudbrick with stairs and poles supporting roofs. The complicated plans of the buildings included centrally located residential chambers and adjacent kitchens and anterooms. Chambers were separated from each other with plastered wooden walls. The kitchen had an oven, a grain-storage and stone grinders. A well was located in the courtyard. No trace of workshops or cult buildings was found. Animal and plant remainders indicate swine, goat, sheep and cattle breeding, presence of dogs and cultivation of three kinds of wheat, barley, lentils and vetch. There were sickles with bone handles and stone inserts, whorls, bone spoons, palettes etc. among the tools. Adornment included various beads. Imports comprised of shells, obsidian, ochre and lentils. Pottery is still monochrome and stone vessels are still present. Vessels have partly animal shapes (deer, swine, cattle). One jar had the shape of a human head. Every house had female figurines made of dried clay (12–30 cm high), including mothers with children, women with a wheel on their arms or of women seated on thrones supported by leopards.

The next settlement (5,400–5,300 B.C.) is characterised by a substantial change in the social organisation which was preceded by the

emergence of a perfect painted pottery. This time the site was rounded by a brick wall, 1.5–3 meters thick. It enclosed an area of 57×36 m where 15 two-storey houses were built. The northern part of the settlement was occupied by a temple with 5 entrances and a main chamber measuring 6 by 6 meters and having a few fire-places. Eastern part of the temple had elevated alcoves. The open section included a row of columns and a well. The building was full of pieces of pottery. Underneath its floor two burials (**a mother with a child** and a single) were discovered.

For the first time the temple was separated from residential houses. Near the middle of the compound three potters' workshops were located with adjacent huge clay ovens. Plenty of pottery at various stages of production was also found. Stone adzes, bone needles and spoons, stone edges, bone beads but no storage pits were discovered in the workshops. This is an evidence that a group of specialised potters who lived there did not produce food. Their site was destroyed about 5,250 B.C. The place was converted to an unusual settlement. Namely, an artificial mound 3 meters high was piled up. A 4 meters wall was then raised which enclosed a court of 100 sq. m. Next to the wall a group of two-storey buildings was constructed. The complex was probably a fortified site of a ruler. A large amount of pottery found there was of eastern-like style. This settlement was burnt as well (ca. 5,000 B.C.).

A contemporary settlement was excavated at Yümük Tepe in south-eastern Anatolia. A continuous development of pottery from the monochrome variety to the painted one can be observed here. In spite of a fortified character of the settlement, it was destroyed by Halafian invaders who arrived from Syria. About 5,000 B.C. a new stronghold was built with a wall 1.5 meters thick and two adjacent identical constructions, where pottery, stone and copper implements, grinders, and grain repositories were excavated.

The painted Halafian pottery developed in south-western Anatolia from the monochrome style between 5,600 and 5,500 B.C. It then spread over an area ranging from the Syrian coast to western Iran and the Persian Gulf. Another branch penetrated southwards over Syria and Palestine. It was a group of Halafians who destroyed the late pre-pottery Jericho about 5,600 B.C.

Almost at the same time the Hassuna culture, named from its basal settlement at the tell of Hassuna near Mosul (northern Iraq) rose in Mesopotamia. The oldest level was that of goat shepherds who practised seasonal agriculture and were competent in pottery. During the mature phase of Hassuna culture, groups of its population began to search for new pastures and farmland, finally reaching flood-lands of southern Mesopotamia, which

were covered by a jungle and swamps. This event was a turning point in the development of agriculture. The newcomers easily discovered how much more fertile was the mud soil. However, irrigation and import of copper and stone for tool making turned out to be indispensable. A stimulating dependence on supplies from the northern highlands had developed. These areas were the home of Samarra culture with its elaborated pottery ware decorated with geometric and naturalistic motifs.

One of its major sites is the tell of es-Sawwan, located at the eastern side of Tiger, 11 km south of Samarra. The tell (30×110 m) has hidden 5 levels. The oldest one is dated at 5,600 B.C., the youngest at the 5th millennium B.C. The first settlement was equipped with drain ditches 3 meters deep and 2.5 wide and with a massive defensive wall. In the ditches and at the wall a plenty of clay beads was found. The wall was guarded by two huge one storey buildings. The smaller one comprised of 14 chambers. Its eastern part contained a four-room temple with an alabastrine figure of Great Goddess. Beneath the building's floors numerous burials were discovered, with alabastrine figurines of females and few males, copper beads and a copper knife. Also alabastrine pestles and black stone tools and grinders were found. Pottery of es-Sawwan I corresponds to Hassuna culture, that of es-Sawwan IV is a counterpart of the Samarra ware.

It is possible that the Samarra culture is a result of a strong Anatolian influence: the pottery ornaments include motifs which are characteristic for Çatal Hüyük (labrys, cross, leopard fur, bull's silhouette, impressive she-dancers with wind-blown hair).

Meanwhile, the four-coloured Halafian pottery reached the peak of its development. During the late 6th millennium this ware spreads from Ugarit to Tilki Tepe at the Van lake and Tepe Gawra near Mosul.

Halafian settlements are the first where the so called **tholoi** occur, which became one of characteristic grave forms in megalithic Europe. Halafian tholoi were constructed from adobe and were combinations of rectangular chambers (up to 17 meters long) with circular ones (10 meters or less in diameter), on stone foundations. Such buildings contained ovens, fire-places and grain stores. Tholoi concentrated mainly in the east, whereas in western and northern territories quadrilateral buildings located at stone-paved streets are found. A settlement at Arpachiya is especially interesting. There, a huge quadrilateral building was located among dwellings of the poor. One of its chambers was a potters' workshop with thousands pieces of broken pottery, some luxurious, and numerous decorations, figurines and amulets. Other chamber was used as a temple.

A figurine of 6 cm height depicted a woman with a male (1.7 cm high) on his knees before her, presenting a gift with his right hand. Hang-ups and amulets symbolised hands, phalluses, double axes, animals (pigeons, cattle, swine, goats and hedgehogs) and houses. Stamp seals resembling those from Anatolia also occurred but this time were impressed in clay on vessel closings. It is a probable evidence of private property. Halafian and Samarra influences reached also Eridu in southern Mesopotamia about 5,400 B.C. A quadrilateral temple (4×4 m) was located in the centre of the settlement, having a separated place for an altar. In the next level, the temple was expanded to 6×8 m.

Large cities with their social stratification and state structure controlled first by theocratic elites, then by political-religious rulers, emerged in the course of a thorough transformation between 4,500 and 3,100 B.C. Writing was also introduced which was indispensable for recording rites and beliefs of the astrobiological religion, ownership relations, administration, chronicles etc.

Similar urbanisation and state-forming processes began later in Egypt, Crete, the Indus valley and northern China. With the exception of Cretan economy, which relied mainly on merchandise trade, all the named centres developed on the basis of intensification of animal husbandry and plant cultivation, supplying large surplus of production due to fertile grounds and irrigation.

At the same time, the Ubaid culture emerges in southern Mesopotamia. It is distinguished by a standard simplification of bulk pottery production which already employed potter's wheels. Clay models of sailing-vessels were found, confirming a wide range of trade relations.

A contemporary large temple in Eridu, constructed on a terrace 2 meters high, displays a complicated design. It measured 15 by 20 meters. Stairs between a pair of towers led to its main hall (20×4m) with an altar showing traces of fish offerings. Flanking chambers were inhabited by priests and their plenipotents. The whole construction could serve as a fortress, too. Similar separation of theocratic elite is also visible in Tepe Gawra.

A settlement from the 4th millennium B.C. had at first a temple 7 metres wide and 11 long. In the second half of the millennium three adjacent temples (9×12, 18×15, 20×17 m) with a court (18 metres by 15) were built. Later the sacral complex was clearly separated from the ruler's palace.

The city of Uruk is a good illustration of the continuation of state structures formation after the arrival of Sumerians (5th millennium B.C.) who assimilated local traditions. Uruk became one of the leading

Mesopotamian cities between 3,600 and 3,100 B.C. A monumental sacral complex was separated with huge walls from the rest of the city.

Now we synthesise origins and early development of farming and urbanisation in Western Asia, then we outline the main routes of expansion of Neolithism.

The first two points are clearly illustrated by Diagrams 10. and 12. They are in line of the previous considerations and need not any further explanations. Neolithisation of other areas deserves more attention and a detailed description.

Two factors could play a decisive role in the dissemination of early Neolithic farming:

- a) extensive fallowing agriculture which demanded still new areas;
- b) chronic population excess being a direct effect of food-production economy, enabling nourishment of larger human groups in limited areas which was accompanied by falling infant mortality and growing number of births.

Specific cases could be of course characterised by diverse random and historical factors. The assumption that Western Asia was the point of origin for neolithisation of other Old World regions is natural because here subsequent phases of the process first occurred there, including the onset of urbanisation.

Natufians arrived to Helwan (northern Egypt) about 7,600 B.C. The pottery period starts in Egypt ca. 4,500 B.C. The oldest farmers' settlements (grouped in separate archaeological cultures but with clear Western Asian patterns) appear in Fayum (3,900 B.C.), Merimde (3,800) and Maadi (3,020). The areas of Amratian (Nagada I, ca. 3,600 B.C.) and Badari (southern Egypt, late 4th millennium B.C.) cultures were invaded across the Red Sea by a Western Asian people, probably of Semitic origin who developed the Gerzenian culture. According to the author's surveys (Wierciński, 1963) the invasion formed the core of ancient Egypt's racial composition. Since then it included Berberic, Mediterranean and Oriental elements mixed somewhat with Negroid component, especially in the south. It should once more be stressed that since the end of the 5th millennium B.C. a cultural style specific for this country had been formed. Occupation of fertile alluvial ground of the Nile valley was favourable for urbanisation and rise of state structures. So the decisive influence of foreign, Western Asian, populations can be asserted beyond any doubt.

Despite all that, the time span between the origin of farming in Egypt and the rise of state during the Early Dynastic period seem to short for

a purely evolutionary transformation. The problem of such an acceleration will be considered below in a broader context.

An early Neolithic expansion was directed towards Europe. It reached the Balkans already in 7th and 6th millennium B.C. (e.g. Nea Nikomedeia, Lepenski Vir, Vinca culture) and embraced also nearby Aegean isles, such as Crete (ca. 5,000 B.C.).

An important factor of neolithisation of European and American coastlands was overseas migrations, disseminating Impressed Ware which was decorated by finger, nail or stick prints. The first real urbanised civilisation (separated administration and monumental architecture) appears in Minoan Crete about 2,000 B.C. and in mainland Greece ca. 1,600 B.C., during its Micenaean period.

Surely, neolithisation was not an uniform process based on colonising migrations only. As far as Europe is concerned, we can assume (following Tabaczyński, 1970) that this kind of expansion dominated up to the northern border of evergreen forests. Having crossed this line, neolithisation disseminated gradually, beginning with loess areas, most suitable for cultivation. This time the process based on assimilation and cultural diffusion depending on social and cultural traits of local people. Even in the case of colonisation, a transformation of arriving culture inevitably appeared, due to contact with other environment and aboriginal cultures.

Moreover, little initial settlements were differentiated by cultural drift – random elimination of cultural elements from the pool of cultural memory.

Still another factor was the founder effect, namely the accumulation of random changes in an isolated population as a result of its proliferation from only a few parent colonisers. Last but not least, ecology of the new environment also played its own role.

Finally, all the mentioned factors evoked an enormous richness of Neolithic cultures and then differences in daughter civilisations of the next urbanised phase. The diversity of writing systems can be an example (Chinese and Egyptian hieroglyphs, cuneiform characters of Mesopotamia, both Cretan systems and pictograms of the Indus valley). It should be borne in mind that all writing arose from a common source of a set of figurative ideograms.

The Iranian plateau was probably an early centre for neolithisation of India and China. Iranian influence infiltrates northern India at the beginning of the 5th millennium B.C. The Indus Civilisation of Mohenjo-Daro and Harappa had grown rapidly being probably preceded by developments of a shepherd Nal culture (central Baluchistan) and an agricultural Amri culture which achieved the level of potter's wheel. Urbanisation and state-forming was even faster than

in Egypt, with its own cultural style which was based on an Dravidian substrate despite of undoubtful similarities with Mesopotamia, as argued e.g. by analogies in measurement systems.

Neolithisation and urbanisation in China started after an expansion of painted pottery people from Western to Central Asia. Jeitun-Tepe is the first case of a farming settlement there when a more certain dating can be assigned (ca. 5,500 B.C.). It is one thousand years before the earliest radiocarbon dating for the first Chinese Neolithic culture of Yang Shao (at Pan-po-t'sun in Shensi) – 4,115 B.C. The Neolithic in China was distributed on the loess ground along the Yellow River and developed between 4,115–2,300 B.C. Settlements were mostly small villages consisting of circular dug-outs or huts, grain storages, a kilt. The people cultivated 3 varieties of millet, wheat, rice and cannabis (probably of southern origin). Swine, dogs (included in the diet), cattle, sheep and goats were domesticated. Red ware painted in geometric forms is very similar to those from Turkmenia and Ukraine (Tripolye pots). Anthropomorphic jars analogous to Hassun ware also occurred.

Further evolution continued through the phases of black and grey wares and culminated in urban civilisation of Shang dynasty (ca 1,700 B.C.) which belongs to the Bronze Age.

We cannot describe other areas of the Far East or South-Eastern Asia, so we move to the New World. Mesoamerica was its core neolithisation area.

Substantial information was supplied by a systematic field research carried out by MacNeish in Tehuacan valley, northern Mexico. A clear evolutionary series from assimilation to productive economy was established for this area. The **Ajuerrado** phase (10,000–7,000 B.C.) saw a switch from the Pleistocene climate to contemporary conditions. The second half of this period was considerably drier. The range of stone tools embraces knives, spearheads, harrows, choppers and prismatic edges. Beasts of game (deer, antelopes, rabbits) account for a half of the diet. The second half comprised of seeds and roots, implying an intensification of gathering. Such a way of life was practised by small family groups (up to 10 persons), migrating 3–4 times a year from one micro-environment to another.

The valley's population grew during the **El Riego** phase (7,000–5,200 B.C.). Proportions of the inventory of tools change in favour of choppers and harrows used for gathering and processing of plant foods. The first implements for grain crushing appear at this time. During the rain season deer, peccary, small game and fish were caught. In the dry season deer hunting dominated. Animals still accounted for a half of foods consumed.

45% of foods comprised of gathered wild maize (!), *pochote* and *Cucurbita mixta*. The last 5% included the first cultivated plants: amaranthus, pepper, chilli and avocado. Wandering family groups joined greater ones with stable camping sites.

The **Coaxtlan** phase (5,200–3,400 B.C.) had basically the same implements, but microlithisation of arrow- and spearheads occurred due to the introduction of spearthrowers (*atlatl*). We note also the appearance of querns (*mano* and *metate*) as well as coarse stone vessels (!). Seasonal encampments of larger groups had stabilised during rain seasons and were more oriented towards gathering and intensification of cultivation: maize (its little cobs did not differ very much from these of wild maize) and beans enter the range of crops. The latter now account for 14% of the diet, gathered plants for 52% and beasts of game for 34%.

Refinement of stone vessels and querns as well as the beginning of imports of obsidian edges was achieved in the **Abejas** phase (3,200–2,400 B.C.). Seasonal societies began to occupy river terraces, intensively gathering and cultivating the plants listed above. New varieties of maize appeared. Dogs were domesticated and consumed, as it was done in China. This time the cultivated plants shared 21%, wild species 49% and animals 30% of the diet.

The next phase (**Purron**, 2,400–1,500 B.C.), when rude pottery first appeared, is not well documented. A variety of maize and *Cucurbita pepo* add to the range of domesticated plants. There are no data on structure of the diet.

During the **Ajolpan** period (1,500–900 B.C.), settlements including villages of fine plastered huts with population between 100 and 300 underwent complete stabilisation. Advanced pottery, including storage pits similar to those from Vera Cruz, Oaxaca and Pacific coast of Guatemala, was accompanied by the first female figurines being so characteristic for the first stable settlements of primitive farmers of both Worlds. Cultivation of the previously domesticated plants had been developed and cotton growing began. As estimated domesticated plants provided 55% of food supply, wild animals and dogs provided 27% whereas gathered plants decreased to 18%.

The **Santa Maria** phase (900–200 B.C.) was marked by increasing links with Vera Cruz and the early Monte Alban as well as by concentration of villages around single settlements being cult sites. The pottery is now painted using two colours. The inhabitants seemed to employ irrigation.

Systematic irrigation occurred beyond any doubt during the **Palo Blanco** period (200 B.C.–700 A.D.). Villages were grouped around a monumental centre of sacral architecture which, typically for Mesoamerica, consisted of a complex of pyramids with temples at their tops and of

pelota grounds. Crafts and arts underwent full specialisation. Peanuts, guava, a new variety of beans and turkey were domesticated. There are certain links with Monte Alban III.

The final phase of **Venta Salada** (700–1450) witnessed increase in merchandise trade in salt and cotton as well as rise of typical cities-states.

Analogous stages, although of various intensity of respective developmental symptoms, are observed all over the Central America. Finally, it can be said that the settled mode of life spread over the central plateau during the early formative period (2,300–1,500 B.C.).

During the middle formative phase (1,500–500 B.C.), the matrix for classical cultures, consisting of Olmec monumental centres of architecture and art was formed. It can be assumed that the rise of theocratic elite of power was an effect of interference between the group of chieftains and the elders of secret inter-tribal religious societies. Like their counterparts in the Old World, they organised builders and shamans and arose from earlier secret societies of shamans-sorcerers who led systems of social and religious initiation. Similar processes which led to urban civilisations can be demonstrated for the second American centre, namely the Central Andean region.

The problem of the origin of production in the New World can be regarded as solved, moreover, independent and convergent origins and development of agriculture (cultivation of both seeds and beets) seem to be doubtless. The fact that the only domesticated plants common to the New and the Old World before 1492 were sweet potato, cotton, and bottle gourd can be put forth as a quantitative argument. Potato, certainly of American origin, grows only in Polynesia and New Zealand where it was introduced late (ca. 1,000). Bottle gourd, grown in Mexico as early as of 6,000 B.C. could resist ocean water for a few months. As for American cotton, many botanists are in favour of its independent origin.

On the other hand, there is no reason why possible diffusion from the Old World should not bring typical crops, as millet, wheat or barley, to the Central America. However, these plants are absent there!

Another quantitative argument is the pattern of temporal changes of shares of various crops in the diet of subsequent cultures of Tehuacan. It can be demonstrated that it fits logistic curve, being so clear evidence of evolutionary processes. Here the starting point is the mere 5% of crops in the diet 7,000 B.C.

Therefore in Mesoamerica and in Peru an analogous development pattern was convergently realised which led from the origin of production to urbanised ancient civilisations.

All but two (Egypt and Northern India) of the six civilisation centres listed in the Table 3. confirm this hypothesis. In the case of the two, periods between dissemination of Neolithic traits and emergence of the first urban centres are much shorter.

The last fact is hard to explain given characteristic features of these civilisations. It can be supposed that:

- 1) earlier Neolithic cultures had not been discovered yet or
- 2) specific accelerating factors set on or
- 3) the state organisation was of an external origin.

Leaving the question open, let us stress the two points: (see comparison below)

- a) Western Asia was 2,000–3,000 years ahead in cultural development;
- b) the period of approximately three millennia needed to reach the level of the state organisation is strikingly common for the 4 other centres.

A considerable temporal shift of Mesoamerican development is marked though the origin of production is dated here at 7,000 B.C.

A developmental retardation of reaching the level of ancient cities-states (at the beginning of the Christian era) is visible as compared with the Old World.

Among the possibly random retarding factors the following should be named:

- lack of developed animal husbandry, especially of cattle, which supplies plenty of meat and dairy being also beasts of draught;
- as a consequence, lack of wheel transport (though the principle of the revolving wheel was known) which intensifies trade, inter-cultural relations and specialisation of shepherding. All that gave rise to conflicts between farmers and shepherds which stimulated development;
- so a co-operation with hunters is still indispensable;
- retardation of the development of tools due to usage of hard metals;
- full or at least large isolation from other analogous civilisation centres.

In such a situation it is virtually strange that only a normal developmental time (2,500–3,000 years) passed since the spread of Neolithic to the rise of such a large metropolis as Teotihuacán. However, it seems that at least this period saw cultural diffusion influencing Mesoamerica (which was at the very least a stimulus) originating first from the Western European megalithic cultures, and later from China of the Shang-Chou period.

Such sporadic trans-Atlantic and trans-Pacific migrations could explain not only the above mentioned “normal interval”, despite all

unfavourable conditions, but also striking similarities of stylistic elements of art, ideology and one of the basic measurement units (megalithic yard), and finally, the presence of Armenoid, Equatorial and classical Pacific racial elements which concentrate in the area of the Olmec influence (Wierciński, 1972, 1978).

Taking into consideration the external cultural information as the stimuli does not mean however that specific elements of the Mesoamerican cultural style are absent. On the contrary, as it was elsewhere, this style retained its peculiarity in general, so it is easy to distinguish Mesoamerican artefact from analogous Old World products.

Table 3. Origin of production and the rise of the first states

Cultural area	Introduction of Neolithic production system (B.C.)	Rise of the first state organisations (B.C.)	Difference
Mesopotamia	7,000	4,000	3,000
Crete	5,000	2,000	3,000
China	4,500	1,700	2,800
Mexico	3,000	0	3,000
Egypt	4,000	3,100	900
India	4,200	2,800	1,400

3. Great Goddess – an ideological shift of the Neolithic

As it was shown above, the peak of the Upper Palaeolithic way of life based on hunting and food-gathering was followed by a dramatic breakthrough in the ecology of mankind which consisted of the advent of productive economy of agriculture and animal breeding of the early Neolithic phase.

Thus, there appeared a set of factors which was favourable for introducing the Great Goddess in her exalted position. However, according to the theoretical assumptions, accepted in the Part 1, the blossoming of this matriarchal magic-religion ought to have been preceded by an earlier ideological change for which any proper documentation is unfortunately lacking. What can be said is only that already in the Upper Palaeolithic period, female figurines were rather abundant, embracing also some androgynic forms. Some types of them found their continuation in the Neolithic but, their amount, stylistic variation and symbolic attributes have enormously increased which was (a.o.) brilliantly demonstrated by M. Gimbutas (1974) in her famous monograph.

Regarding rich symbolism of the figurines, it will suffice to emphasise the subsets of attributes which display remarkable initiation and fertility significance. The combination of snaky and water-bird traits, as well as, those of the series of bee-butterfly-labrys, are especially conspicuous here.

Beyond any doubt, almost all of the evidenced symbolic features are potentially hidden in the morpho-functional characteristics of a woman considered *in toto* as an analogising symbol (see Table 4).

Table 4. Woman as a Possible Acquired Analogising Symbol (Wierciński, 1989)

Attributes of current observation	Possible analogising associations
1. Enhanced curvilinearity of the body, with addition of breasts and pregnant belly.	1. Wavy surface of Earth, Cosmic Mountain; sphenoid, ellipsoid or ovoid forms in nature: eggs, carp-like fishes, etc.
2. Pubic triangle.	2. Triangle of fiery lust; tripartite Moon or year.
3. Generative organs, pregnancy and parturition.	3. Earthly valleys, crevices and burrows – idea of any entrance; warm interior concealing a potential of life; Underworld absorbing and giving life again – idea of generation of vegetative and animal life – cosmogony; toad and highly fertile animals; idea of doubling and multiplication therefrom.
4. Cyclicity of menstruation, pregnancy and household activities.	4. Natural cycles; lunar associations and calculation of time.
5. Definitely greater secretion of bodily liquids: menstruation, milk from breasts, waters of birth.	5. All kinds of earthly waters – primordial watery abyss; stunning beverages; aquatic animals and birds; enhancement of lunar associations.
6. Nourishing of offspring and protective-educational behaviour.	6. Nourishing Earth and various female animals conspicuous for this and other roles, like: she-bear, hind, cow, goat, etc.; idea of discriminative & normative wisdom.
7. Maternal emotiveness, participation in erotic emotions.	7. General symbolisation of attractive emotions, as well of rivalry, and so – of warfare.
8. Bonds with foetus, child and family.	8. Social bonds in general – Mother Bee and her swarm.
9. Housekeeping and all its occupations.	9. Mistress of life and means for life; idea of any dwelling and shelter; body – house – temple – coverings of all kinds.
10. Weaving.	10. Weaving of destiny; complex of Lunar She-Spider.
11. Gathering of produce and agricultural activities.	11. Enhancing of vegetative associations; cultivated field – square or rhomboid; harvesting – bringing death; objective manifoldness of World.

In any case, the Upper Palaeolithic “Lady of the Fire-Place” and “Lady of Beasts”, associated with life, fertility and the Moon, had been now enriched by the functions of the “Lady of Settlement (and its social order)” and the “Lady of Chthonic Mysteries”.

Having no possibility to show the pre-Neolithic pattern of these ideological changes, let us concentrate on other factors which undoubtedly caused feedbacks and were strengthened by social and cultic importance of Great Goddess (see Diagram 11).

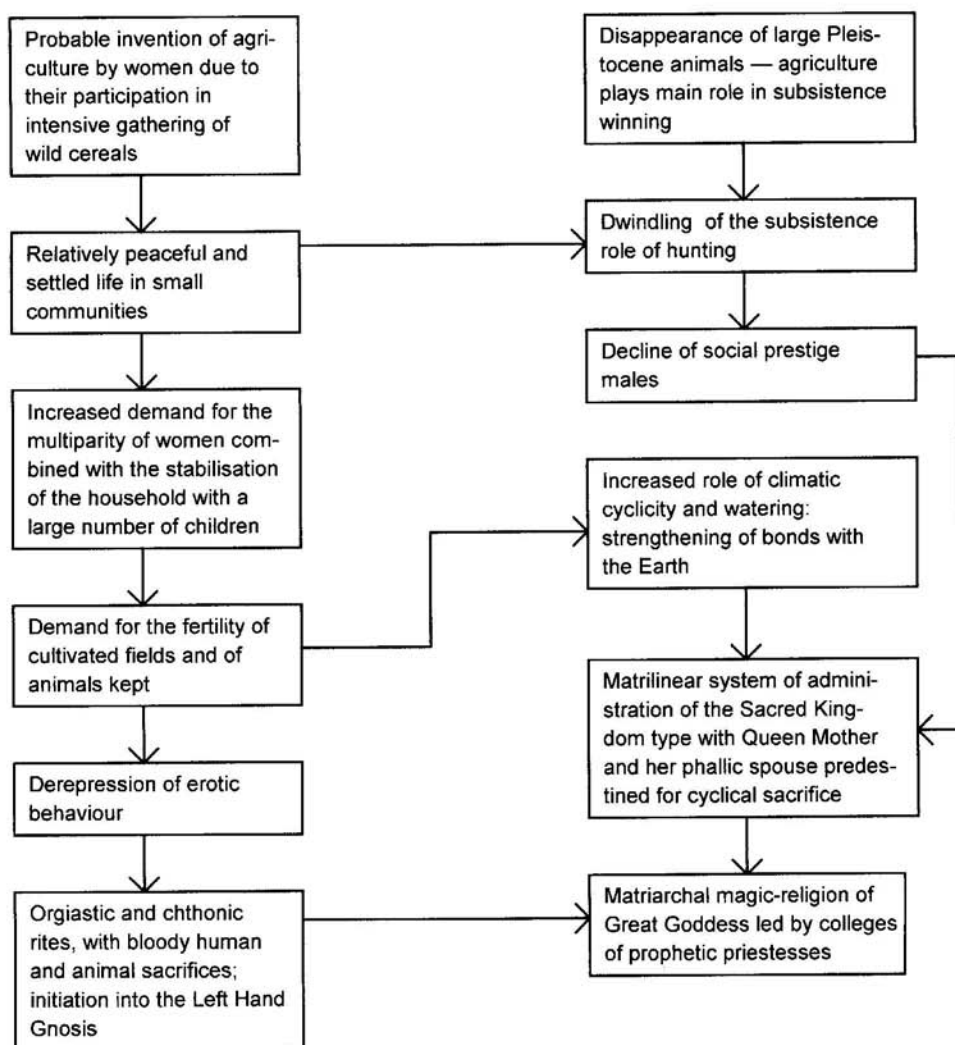


Diagram 11. Origins of the early neolithic matriarchal magic-religious system of Great Goddess (Wierciński, 1989)

These factors may be presented as follows:

1. Women probably invented agriculture in connection with their participation in intensive gathering of grain grasses from which just one step was to be made to the first intentional sowing of plants, based on observation of the flora that surrounded the camps;
2. Spread of agriculture in the Early Neolithic phase, combined with the disappearance of the large mammals of the Pleistocene, resulted in a dwindling role of hunting, which then combined with the settled and still peaceful life, and led to a decline of social prestige of males.
3. There came about an increased demand for the multiparity of women, combined with the stabilisation of household with a large number of children and on the whole for fertility of areas under cultivation and of animals kept; erotic behaviour underwent derepression and chthonic and orgiastic rites have developed.
4. Agrarian and fertility magic in a quite natural way symbolically analogise woman with the earth, the Moon and water, the latter having acquired an immense importance in agriculture.
5. The role of climatic cyclicity increased with the originally small number of the vegetation cycles of the cultivated plants which came to be automatically associated with the feminine cyclicity also related to fertility.
6. All this led to a matriarchal system of administration of the Sacred Kingdom type, a dominant role being played by the Queen Mother, her phallic spouse being predestined for a cyclical sacrifice in the system of agrarian magic.

This resulted in a development of mystery cults of Great Goddess led by colleges of priestesses with prophetic functions (when armed, of the "Amazonian" type). The site of Çatal Hüyük is the most ancient and the best example of the enthronement of Great Goddess as a kind of pre-Kybele.

Mysteries of Great Goddess did not disappear in the next period of urbanisation but found their place in and became adjusted to astrobiological religions.

4. The astrobiological religions – a next ideological shift towards ancient urbanisation

Etymologically, *civilisation* is meant to denote a level of human cultural development marked with presence of cities (with all their functions) and a state organisation.

If so, we should start a presentation of the civilised way of life considering origins of urban centres.

Relative *dolce far niente* of the matriarchal phase abruptly changes at the turn of the 4th millennium B.C. (somewhere earlier). Shepherding is accounted for these transformations, as well as quantitative development of settlements which assumed urban functions and introduction of metallurgy, first of all of gold and silver then copper and brass (see Diagram 12). All the three causes have changed social roles and prestige of the sexes in favour of males in a natural but decisive way.

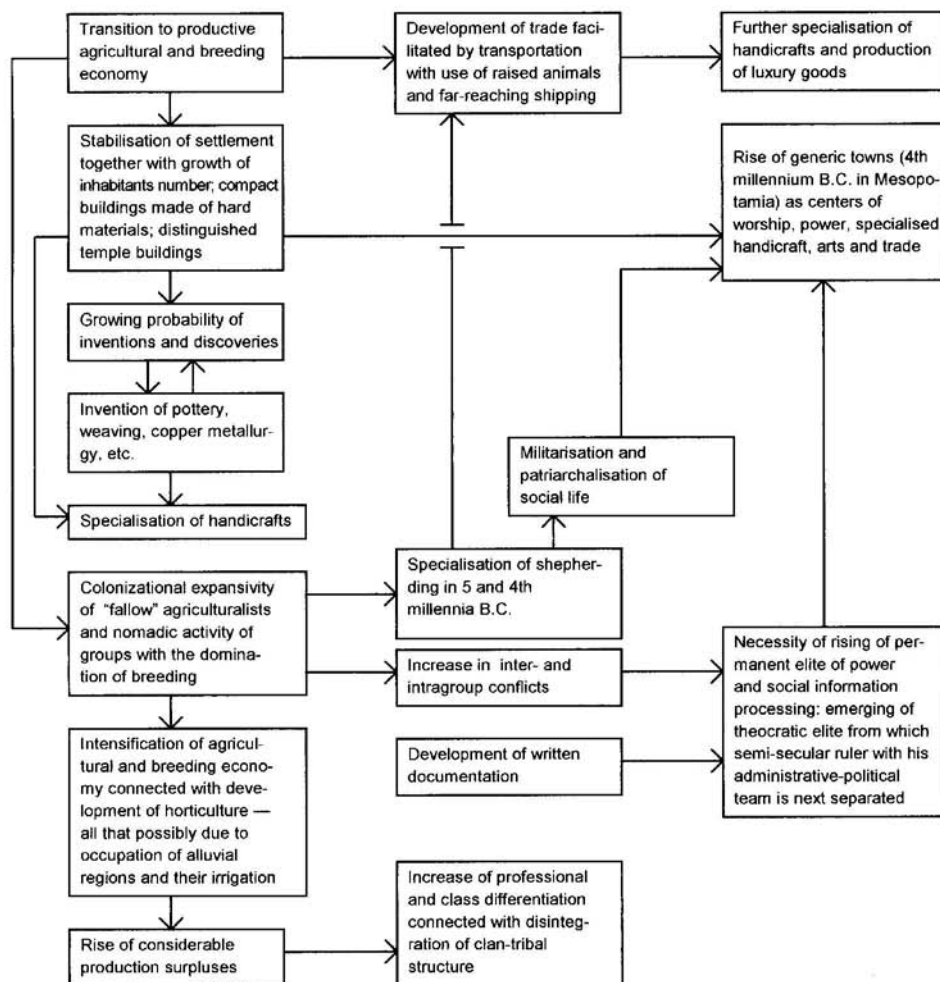


Diagram 12. Origins of urbanisation (Wierciński, 1981)

It happened in connection with patriarchalisation and militarisation of social life. So, the growth of settlements to population in the range of a few thousand, including all its professional and economic differentiation, inevitably led to control of interpersonal relations by a strong state administration, based on repressive measures. The Jericho settlement (described above) can supply a starting model where apart from figurines of *Magna Mater* and cattle, the famous plastered skulls have appeared which are an evidence for a cult of masculine ancestors. The Jericho centre is encircled by a defensive wall with a tower. Such a construction demanded an effective organisation of public works and indicates an external danger. Therefore, data on Jericho indicate that an administration have developed in the frame of a male theocratic elite, led by a ruler-priest. Such a larger settlement became a subject of raids by shepherd tribes. Thus, the urban way of life favoured militaristic attitudes and migrational mobility. Consequently, populations of the settlements underwent militarisation, as well. All that increased number of conflicts inside and between groups, as well as brought out the need of programming differentiated personalities with well fixed social norms and high level of self-control. **Man became his own greatest enemy!** He himself focused most on emotional reactions, other focusing points were vital elements of cultural environment of the agricultural and animal breeding system. Therefore we must postulate that the subconscious field was divided into the typical "Jungian" autonomous complexes; i.e. the Shadow complex (or anti-Person, see Wierciński, 1994^a; the complex was fed with huge portions of controlled aggression and fear in numerous stress situations), Anima and Animus (linked with stricter regulation of sexual life), Mother (this time painful detachment from parental home), Father (now strongly formed in the new, patriarchal family model). The process of anthropomorphisation, of archetypal imaginations or taking on fantastic or mixed forms by them was still under way. The main zoomorphic forms are carnivorous felines, reptiles, and day birds of prey (eagles, falcons, goshawks or condors), vultures wheeling over a battlefield and horses, the intimate companions of fighters.

Personal fields of consciousness and group ones differed greatly. Both had personalities and possessed some knowledge. The latter grows rapidly in various fields reaching technological level. Intensification of agriculture, now linked with advanced gardening, called for detailed schedules which was a requisite of a complicated solar-zodiacal calendar including astral and planetary cycles. Astronomical cycles are correlated

with diverse biorhythms of plants, animals and humans as well with weather and climatic cycles. So predictive astrology was born. In the course of its formation animation and deification of respective cosmic objects occurred, the same happened with atmospheric, especially storm, phenomena.

Sacralisation of power was consequently expressed in a respective cult of masculine (first tribe then state) sky and solar deity, namely of the day sky. It incorporated the former cult of Great Goddess. An elaborated complex of ideas concerning the male-female creative pair was organised. The pair represented the primordial polarisation of the absolute entity which is undergoing still more detailed manifestations forming hierarchical pantheon of cosmic gods who are creating and steering the world in its rich diversity. The hierogamy of Sky and Earth or Sun and Moon is an important core of this diversity. It is reflected by the hierogamy of the royal couple.

Numerous human groups facilitated the emergence of inventive minds and spread of useful discoveries. It was probably development of pottery production and baking that led straight to the invention of metallurgy. It is clear that metal tools, especially arms, gave decisive advantage. It can be assumed that this significant invention was made by males within existing elites of power and information which organised public works aimed at the construction of cult centres. The latter could also have served as astronomical observatories. A sharp eye was kept on the secret of metallurgy. Secret societies of constructors, astronomers and metallurgy experts were formed including complicated and multi-stage initiation rites for young males based on the world view of the astrobiological religion. The wealth of respective beliefs in their spatial and temporal variability cannot be discussed. We limit ourselves to a list of general assumptions implied by a comparative analysis of sacred texts and figural symbols of main centres of ancient Old and New World civilisations:

1. The reality is constantly changing, animated, personalised and deified. It undergoes periodic and cyclic changes; objects are only temporal cross-sections of processes (temporal stages of processes: the universal principle of psychological and biological process variability).
2. Dynamic unity of co-operating pairs of opposites is a basis of such a variability. The opposites express themselves as light and darkness, male and female elements, cold and warmth, day and night, life and death, the skies and the underworld, left and right, summer and winter, the Sun and the Moon, etc. It is the principle of the doubly polarised organising centre.

3. The opposites form a fourfold field of forces distributed according to its cardinal points. The field is an universal and organising reference system. As the cosmic reference system it is based on the Pole Star, the Earth's centre and the four quarters of the globe. Such a fourfold division can manifest itself as 4 elements, 4 parts of the day, 4 seasons, 4 stages of human life, 4 cosmic eras, 4 symbolic colours, 4 main urban districts. If taken with the central point (in the planar case) or with the vertical axis (in the space) it is transformed into fivefold division (a field including 4+1 cardinal points).
4. All mundane processes are originated and controlled by cosmic forces. Their order is reflected by the movements of heavenly bodies, mainly the Sun, the Moon and the visible planets relative to selected constellations and points of the horizon (the principle of creative and steering role of cosmic rhythms in relation to the Earth's biosphere).
5. Human environment is divided into 3 main regions: the upper (the skies), the habitat (the surface of the Earth), the lower (the Underworld). Subdivisions of these regions are zones delimited along the vertical axis of the cosmic reference system in accordance with the annual revolutions of the. So the structure corresponds to nine-, six- (+1 for the highest centre) and twelvefold (again +1) divisions. The Underworld is usually has seven or nine parts (the principle of the division into zones).
6. Co-operating opposites form universal, universally animating and destroying energy of Fire. Doses of this energy determine temporal order of structure of the processes. The Fire expresses itself in light of heavenly bodies, lightning discharges, volcanic fires, at the fireplace, in animal and human blood, human emotions and self-torments. Its symbolisation as the segmented Time Snake represents temporal order of stages of the processes (the principle of unity of the universal igneous and temporal energy).
7. The development of the universe in its detailed manifestations is pre-programmed in the highest (i.e. 7th, 9th or 13th) heavenly centre. The program is hierarchically ordered and contained in the Cosmic Schedule. Fulfilling the Schedule first produces the universe out of the state of maximal uniformity (Primordial Mother-Chaos), causes its evolution and then involution (hierarchical descending of the Universal Program).
8. The universal igneous energy is conserved and respectively distributed in cyclic processes. Human Soul-Fire, which is a part of Cosmic Fire,

can be *post mortem* confined in the underworld for some time, it also can move to some heavenly zone and then incarnate. It implies the idea of reincarnation and of blood sacrifices, self-torments and elementary catastrophes caused by human sins (the conservation of universal igneous energy).

9. Humans are the most faithful copies of macro-universe. Man is viewed as a complicated lens focusing diverse cosmic forces, so its psychological and physical structure is *imago mundi* (the equivalence between man as the Micro-cosmos and the Macro-cosmos as Anthropocosmos = Cosmic Man).

We should assume that these propositions were to some extent (e.g. with stress put on the role of Great Goddess) present yet in initiation rites of secret religious societies. Archaeological traces of the latter are megalithic constructions with its astronomical and cultic meanings. The oldest examples are found in the Near East, at the Atlantic coast and Iberian Peninsula and precede monumental pyramidal sepulchres (or temples) of ancient Egypt, Mesopotamia and Central America. It is also the case of megalithic tombs representing the Cosmic Mountain (Wierciński, 1976, 1977). Tombs and other buildings later spread towards the inside of Western and Central Europe and Africa along large rivers. Influence of megalithism penetrates India, Eastern and South-eastern Asia reaching at last Oceania. On the other side, megalithic inspirations reaches also Central America starting probably from Western Mediterranean (first urban centres as Los Millares or San Pedro emerged here in 3rd millennium B.C.) and going across the Atlantic. In the course of creative co-operation with local, Neolithic substratum and possible trans-Pacific influences (in the Chinese Shang-Chou period) a theocratic-formative matrix of classical cultures, namely the Olmec culture was formed ca. 1,200 B.C. (Wierciński, 1972).

As a result, numerous monumental centres of sacral architecture rose in Mesoamerica. Their leading elements were step pyramids which independently of their cultic and utilitarian (astronomical instruments) functions could also express sacralised calendar cycles which is very probable in the case of the Sun Pyramid of Teotihuacán. Besides, the Mesoamerican religion, the assumptions of which were compiled by A. Caso, was based on the same astrobiological world model which had distinguished analogous but earlier civilisation centres of the New World. We can suppose that the cornerstone of the diffusing or migrating megalithism was a belief in possibility of a least temporary confinement of eminent dead (e.g. distinguished members of theocratic elite) in a stone

compartment thereby causing their beneficent influence on the living. Such souls could be confined in single menhirs which is supported by ethnographic material compiled by Heine-Geldern.

Our hypothesis concerning secret religious societies of these astronomers, constructors and copper, gold, silver and brass experts which could be the starting point for the later esoteric elites of ancient priests is based on the following presumptions:

- a) the Greek mythology displays an influence Pelasgian and Libyan mysteries involving characters of mythical Cyclops – constructors and metallurgists;
- b) the secret religious society Komo (see Dieterlen & Cisse, 1972) which is widespread in Mali until now and has a large power of social control also includes a blacksmiths' guild. It employs similar astrobiological ideology and many steps of initiation;
- c) more complicated megalithic buildings with cult and astronomical aims (e.g. Stonehenge) demanded a careful design and many years of public works. It was possible only with a perfectly organised management, possibly using carriers of cultural memory which were more permanent than oral transfer (e.g. ideograms). Such a management would be separated from workers by an information barrier;
- d) according to Rivers (see Eliade, 1966) there is a marked correlation between geographic distribution of megalithic constructions and the presence of secret religious societies in Micronesia and Polynesia.

Anyway, we follow Tokariev (1969) who regarded secret religious societies as a form of primitive religion. The very social organisation, which is characteristic for decomposition of the clan and tribal community, is one of the main factors of decay of matriarchal lineage, as well. The societies were also instruments of separation of elite of societies moving towards class differentiation.

The routes of dissemination of megaliths mentioned above, and their links with local neo-eneolithic cultures bear witness rather for a peaceful character of this ideological penetration which employed means of navigation. It seems to be the source of high Mediterranean island cultures, especially of Crete, Sardinia, Cyprus and Malta. It can be said about megalithic prospectors their journeys were motivated both ideologically and economically, namely by the search for ores probably combined with merchandise.

Finally, in the course of urbanisation of inter-tribal cultural centres where handicraft and merchandise organised around sacral buildings, theocratic

administration rose and strengthened. It functioned both as a cultural correlating and a homeostatic element. The given initiation systems of primitive secret societies were taken over by priest schools comprising a few levels. These schools also educated professionals who were not necessarily members of the theocratic elites. The latter were also in charge of military forces, as it was confirmed by early Mesopotamian written sources.

In the course of privatisation of land, workshops and trade enterprises, as well as inevitable secularisation implied by such process, a split and first conflicts for power were started by men at political and military power within the very theocratic elite. This is also confirmed by Egyptian and Mesopotamian documents. The split was not complete until the end of antiquity. Priests were information and education experts still holding economic power, on the other hand, rulers retained sacerdotal titles and actively took part in rites, sometimes being themselves cult objects as in and Mesopotamian documents.

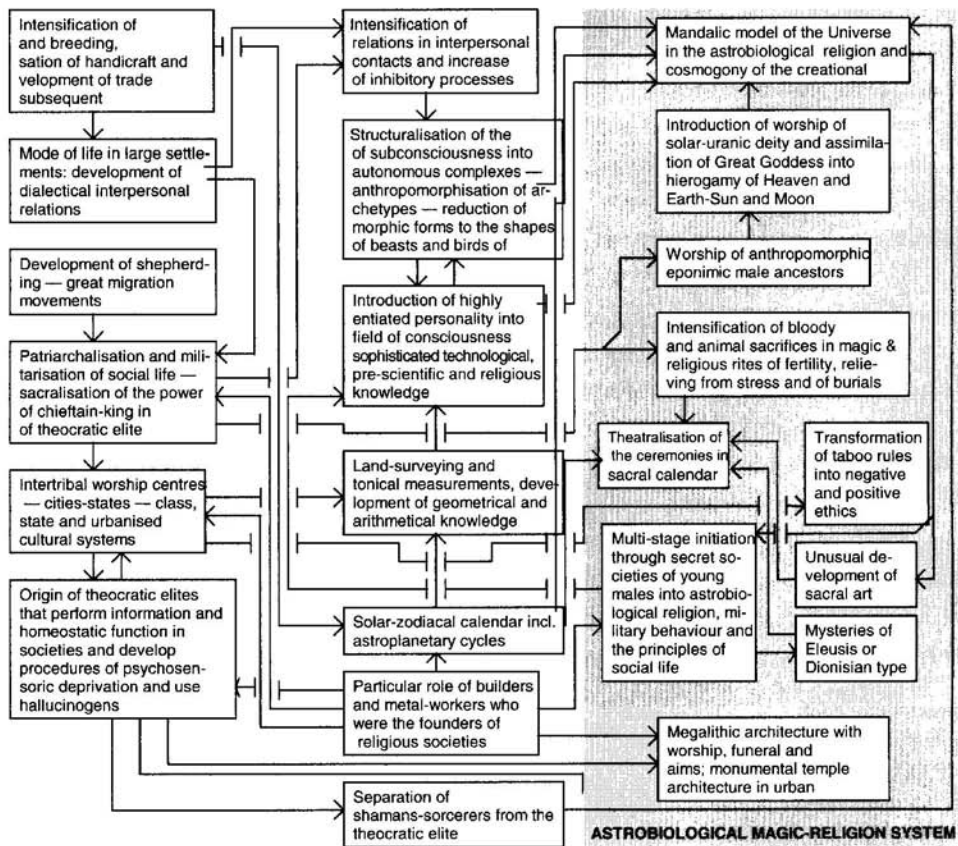


Diagram 13. Origins of the astrobiological religion (Wierciński, 1981)

The split was not complete until the end of antiquity. Priests were information and education experts still holding economic power, on the other hand, rulers retained sacerdotal titles and actively took part in rites, sometimes being themselves cult objects as in the case of caesars and pharaohs. Great steering power of ancient astro-biological systems is confirmed by organisation and management of efforts of large groups employed at irrigation works and at construction of monumental and complicated sacral architecture, equipped with symbolic art. It could not be achieved by purely energetic (repressive or economic) stimuli. Only later a slave work force was used on a mass scale in some centres of civilisation.

It does not seem strange as the astrobiological world model contained both religious elements all the whole contemporary knowledge about man and the universe, especially information concerning correlation between cosmic and biological rhythms. Priests possessed also medical and technological knowledge, the latter ranging over various fields of cultural production. In this model, educational programming was based on strong emotional associations of archetypal personal symbols. Rich variety of the latter was present in the art of that time, as well as in meaningful ritual gestures. Such a world model was supported by strictly periodic rites of sacred calendar including its theatrical expression and cosmological messages based on blood animal (or human) sacrifices. Generally, cycles of these rites were correlated with seasons and therefore with rhythms of household activities. In cases when rigid calendar ritualism dominated links with natural periodisation of utilitarian behaviour the first was after some time updated. Otherwise the discrepancy between the calendar and the natural rhythm could add to the fall of the power of a given theocratic elite. Development of numerous branches of handicraft (later manufactures operated by slaves), irrigation technologies, monumental architecture and art, measurements of the skies and the Earth not only stimulated general technological skills (yet demanding extensive and precise oral instructions) but also advancement of a systematic rational, sometimes scientific, approach. We present the set of factors connected with the rise of an astrobiological religion in Diagram 13.

*Translated by the author (Part 1) and
Robert Piotrowski (Parts 2, 3, 4).
Diagrams set by Artur Soltysiak*

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