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## An Evolutionary Theory of Cultural Differentiation

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### Abstract

This paper introduces the cultural r/k theory - an evolutionary theory that explains why different cultures evolve in different directions. The cultural r/k theory links differences in artistic style with war and peace, geography, political system and religion. This theory is useful for explaining cultural differences, for classifying artefacts and for predicting sampling bias in the archaeological record.

The sciences of palaeontology and evolutionary biology have contributed very much to each other. A similar link between archaeology and theories of cultural evolution is much weaker. This lack of synergy is probably due to the poor state of cultural evolution theory. The various theories of cultural evolution have been criticized for more than half a century for being unilinear, teleological and ethnocentric. The theories hardly make the distinction between evolution and progress, and it is assumed that cultural evolution can only go in one direction.

The problem with cultural evolutionism is, in my opinion, that it has focused too much on defining the direction of evolution and too little on theoretical models of mechanisms that can explain why evolution goes in a particular direction.

I will therefore present a new theory, which can explain why different cultures evolve in different directions. This theory is called *cultural r/k theory* after a weak analogy with the so-called r/K theory in evolutionary biology (Fog, 1999). Cultural r/k theory defines two opposite directions of evolution called *regal* and *kalyptic*. The regal direction is characterized by bellicosity, strict discipline, intolerance and authoritarianism. The kalyptic direction is characterized by peacefulness, tolerance and individualism. A culture is driven in the regal direction by war, threats of war, or any other danger that is perceived to threaten the cultural group as a whole. A culture will evolve in the kalyptic direction in the absence of any such collective threats. The regal/kalyptic continuum is just one of a number of dimensions that can be used for characterizing a culture. Other useful dimensions are: degree of technological sophistication, political organization, and specific adaptation versus general adaptivity. The present paper will focus on the r/k dimension and its possible applications in archaeology.

The placement of a culture on the r/k scale is reflected in its political system, religion, philosophy, morals and justice system. What is particularly interesting to archaeology is that the r/k dimension is also reflected very strongly in the artistic production of a culture, including art, architecture and music.

The characteristic signs of regal and kalyptic tendencies in different spheres of life are briefly summarized in the table below.

<b>Sphere</b>	<b>Regal</b>	<b>Kalyptic</b>
Philosophy	Individuals exist for the benefit of society. Ethnocentrism, racism, growth, expansion.	Society exists for the benefit of the individual. Individualism, tolerance, human rights, protection of natural resources.
Religion	Monotheism, polytheism. Fundamentalist, ascetic, puritan.	Animism, pantheism, atheism, fertility cult, ancestor worship.
Politics	Powerful central government. Imperialism, uniformity, intolerance, slavery, censorship, severe punishments.	Decentralized or non-hierarchical government. Democracy, tolerance, peace.
Sexual behaviour	Strict sexual morals, stereotypical sex roles. Sex is only for procreation. Procreation is a duty. Early marriage. Polygamy. Contraception and abortion illegal. High population growth.	Liberal sexual morals. Sex is for pleasure. Flexible, individual behaviour. Contraception and abortion accepted. No population growth.
Education	Childhood is short. Little or no education. Children begin to work at an early age.	Long childhood. Parenting and education is important.
Art	Finical, perfectionist, very richly embellished. Repetition of small details with strict geometry. Portrays symbols of power such as gods, rulers, war heroes or predators.	Unrestrained, improvised. Depicts pleasure, fantasy, colours, animals, fertility, individualism, rebelliousness.
Architecture	Religious and government buildings are grandiose, ostentatious, rich in details, with oversized gates and towers.	Functionalistic, creative, individualistic, irregular. No stylistic demonstration of social status differences.
Dress	Decent, tidy, uniform. Differentiated after sex, social status, and group identity.	Creative, individual, colourful, sexy. Reflects personal taste.
Music and singing	Small variations in pitch. Rich and fine embellishment. By offensive regality pompous. Strict rules for rhymes and foot. Choir singing. Litany. Praises gods, rulers, military superiority or true love.	Bass accompaniment dominates over melodic voice. Rhythmic, varied, imaginative, often improvised. Broad repertoire of text themes.
Dance	Organised, restrained.	Unorganised, hilarious.
<b>Table 1. Regal and kalyptic characteristics in various spheres of life.</b>		

The most regal cultures are typically found in areas where the geography and climate facilitate war and a high population density. This includes large continents with fertile ground and a moderate climate, where easy means of transportation exist. Examples of regal cultures in historic time are the great empires in Europe, Arabia, Asia and precolonial America.

The most kalyptic cultures are found on isolated islands where there are no enemies, in areas where the natural resources cannot sustain a high population density, in areas where dense vegetation and absence of efficient transportation means limit the possibilities of warfare, and in very hot or very cold climates where warfare is difficult. Examples are found on Pacific islands, in Arctic areas and sub-Saharan Africa.

The rise and fall of big empires can be explained in terms of cultural r/k theory. The growth of a city-state into a state and then an empire is a process of regalization. The chief or ruler may decide to increase the military strength of the group for defensive or offensive reasons. Improvements in military technology, such as horses or gunpowder may contribute to the process. Improvements in food production technology, such as the introduction and spread of agriculture leads to increased population density and the possibility for increasing the size of the army. Population growth creates a need for enlarging the territory. The growing military strength of the group makes it possible to defeat the more kalyptic neighbour states and incorporate them into the empire. The regal culture is imposed upon the annexed populations, whereby the empire grows. This process continues until the empire has reached the maximum size that is practically manageable. The size of the empire is limited by the available communication technology and other practical factors. It is difficult to lead a war on a distant boundary of the territory where communication with the ruler is slow and unreliable. And it is difficult to defend all borders on the large circumference of the territory at the same time.

The process of kalyptization starts when the empire has reached the maximum manageable size. It is difficult to motivate people to sacrifice big resources on a war that takes place so far away that it seems irrelevant. Only the most despotic government is able to keep together such a huge empire and maintain the necessary discipline and military strength. The population cannot see the necessity of a highly tyrannical rule, so they start to disobey and rebel. When the emperor is overthrown or reluctantly begins to loosen his iron hand, then the internal conflicts start to flare up. All those subgroups which, one by one, had been incorporated into the empire, have preserved some of their religious or ethnic identity. This identity is reinforced by their urge for independence and their rebellion against the despotic rule. The allegiance to the ruler is gone and the empire starts to disintegrate into smaller groups. Some of these smaller groups may be incorporated into another growing empire.

The r/k processes can be summarized in the simple principle that regalization is characterized by inter-group conflicts, while kalyptization is characterized by intra-group conflicts.

The theoretical background of the r/k theory can be explained in terms of evolutionary psychology and the theory of vicarious selection. Let me first explain what vicarious selection is. The best example of vicarious selection is cultural evolution. The capacity for culture has been created by biological evolution. The high capacity for cultural adaptation gives the human race a much better adaptivity than other species because cultural evolution goes much faster than biological evolution. As long as the cultural evolution goes in approximately the same direction as biological evolution, i.e. towards increased capacity for survival, then it makes sense to consider the cultural evolution as vicarious for biological evolution. Biological evolution has created its own substitute, which enables it to reach its goal more efficiently.

The cultural r/k selection can also be considered a vicarious adaptation process. Consider the situation where a peaceful tribe with a flat political structure is surrounded by belligerent neighbour tribes with a hierarchical rule and strict discipline. If the peaceful tribe does nothing to prepare themselves for meeting the threat then they will soon be overpowered by the stronger neighbours, who will either annihilate them or impose their political system on them. The only way to avoid a cruel fate is to produce more children, strengthen the discipline and arm politically as well as morally. Whatever they do, the evolutionary result will be the same: that the political system that leads to the strongest military power will spread in the

region. The political and moral armament that we call regalization will reach the same result faster and with fewer costs in terms of deaths than war. The psychological selection process that we call regalization is therefore vicarious for the more costly selection process called war.

The opposite process also needs an explanation. A tribe with a strict discipline and a despotic rule is not the best adaptation to a peaceful environment. The strict discipline takes a high toll on all members of the group. The unification of thought prevents the individual initiative and inventiveness that is the root of adaptation. And perhaps most importantly, the unrestrained population growth and greed may lead to an exhaustion of the natural resources that the group relies on for its subsistence. The social psychological mechanism that we call kalyptization can lower the costs to the individual and prevent exhaustion of the natural resources. This selection process is vicarious for the more costly selection process that takes place if the group perishes for failure to adapt to and preserve its environment.

My claim is now that the psychological process that I have called cultural r/k selection is an adaptation mechanism that has evolved by biological evolution as a vicarious selection process. This psychological mechanism allows a group to adapt to a changing environment faster and with fewer costs than by allowing the unfit cultures to perish. It is possible to envision many different scenarios that can account for the advantage of such a vicarious mechanism. The scenarios that I have sketched above are just the ones that I find most appropriate for what we know about human prehistory.

The cultural r/k theory is not the only available theory of why cultures change in politically strict or lax directions. The theory of the authoritarian personality makes the same connection between collective dangers and political strictness (Adorno, *et. al.*, 1950). However, the theory of authoritarianism has been criticized for being politically biased because it attaches a label of psychopathology to certain political movements (McKinney, 1973). I am proposing the cultural r/k theory as a much-needed replacement for authoritarianism theory because it has a more sound theoretical basis and because it fits into the diverse paradigms of evolutionary psychology, cultural evolution, social psychology, political history and culture studies.

Having explained the theoretical basis of this theory, I will now return to the factors that have driven cultures in regal or kalyptic directions throughout history. The most important factor pushing in the regal direction is, of course, war or threats of war. But other collective dangers such as natural disasters, famine and economic crisis have, at different times in history, been strong contributors to regal developments. It makes no difference to the psychological effect whether the collective danger is real or imagined. Political and religious leaders have often attempted to strengthen their dwindling power by exaggerating the seriousness of various dangers or by inventing fictive dangers. This is known as witch-hunting.

Kalyptic developments have been prevalent in periods of peace. This process is self-amplifying because the rate of population growth is lowered in kalyptic times whereby the impetus for war is removed. Economic interdependence between groups has also been a stabilizing factor preventing armed conflict.

The cultural r/k theory is no less applicable to modern societies. The increased economic interdependence between countries around the World as well as international peace-keeping efforts are strong factors leading our society in the kalyptic direction. These factors are, however, balanced by almost equally strong regaling factors. Mass immigration from foreign cultures creates a fear of strangers in many countries in the world. Various witch-hunts and periodic economic crises are also regaling factors. The mass media have a penchant for focusing more on bad news than good news. Crime, disaster, war and terror - wherever in the World it may happen - are presented in the news every day in such amounts that

TV viewers and newspaper readers come to perceive the World as more dangerous than it is. This is perhaps the strongest regalizing factor in modern society today.

Let me finish this introduction to cultural r/k theory by discussing its application to archaeology. The r/k theory provides an easy means for classifying cultural artefacts. Artefacts with rich and perfectionist embellishment and strict geometry are signs of regal cultures, while artefacts depicting unrestrained fantasy and variation are signs of kalyptic cultures. These signs can be compared with what is known about the geography, climate and the political organization of the culture that produced the artefact.

The cultural r/k theory also reveals that archaeology can be expected to have a strong *sampling bias*. Regal cultures produce big and impressive artefacts made of durable materials, while kalyptic cultures produce smaller artefacts made of perishable materials. The most impressive remnants of past regal cultures are very likely to be found, while the remnants of the most kalyptic cultures of the past may have decomposed long ago. Whoever finds a half-decomposed and not very impressive artefact may not appreciate its scientific value and preserve it. The bias is worsened by the fact that regal cultures are likely to systematically destroy artefacts left over from previous kalyptic cultures (This has happened even in modern times in Nazi Germany and Afghanistan). Kalyptic cultures, on the other hand, are likely to preserve and possibly even admire and collect the artefacts left from previous regal cultures. Regal artefacts can thus be found in kalyptic cultures, but not vice versa. This sampling bias cannot be offset by the fact that regal artefacts are more tempting objects of looting.

More details about the cultural r/k theory can be found in Fog (1999).

## References

- Adorno, T. W.; Frenkel-Brunswik, E.; Levinson, D. J.; Sanford, R. N. (1950) - *The Authoritarian Personality*. New York: Harper & Brothers.
- Fog, A. (1999) - *Cultural Selection*. Dordrecht: Kluwer.
- McKinney, D. W. Jr. (1973) - *The Authoritarian Personality Studies*. Haag: Mouton.