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Was pre-modern man a child? The quintessence of the psychometric and developmental approaches

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ABSTRACT

The essay integrates the psychometric intelligence approach with the cognitive-developmental approach or the stage theory erected by Piaget and his disciples. The latter led to Piagetian Cross-Cultural Psychology and the accumulation of an immense body of data. It shows that different IQ levels are indicative of the peculiar stages of cognitive and personality development that characterize pre-modern and modern societies, that is, the distinction between pre-formal and formal thinking. It reveals the true significance of low IQ scores and the rise of scores, known as Flynn effect, among modern populations.

The result is a Historical Anthropology that illuminates social evolution, history, law, economics, politics, morals, etc. This new anthropology contradicts the "official spirit" of the humanities and social sciences of the past decades, both its "cultural relativism" and "universality of rationality". It resurrects the leading pre-war theories, which were based on developmental approaches, and improves, enlarges, and elaborates them.

1. Introduction

The intelligence scores or cognitive stages of pre-modern peoples have always been low compared to those of modern nations. Therefore, the pioneers of developmental psychology, J. Sully, Henri Wallon, W. T. Preyer, Édouard Claparède, E. R. Jaensch, Pierre Janet, Stanley Hall, William Stern, James Mark Baldwin, Heinz Werner, Jean Piaget, emphasized structural similarities between pre-modern peoples and children. Heinz Werner and Jean Piaget in particular emphasized parallels in regard to logical, physical, social, and moral phenomena. Over the past 80 years, Piagetian cross-cultural psychology (PCCP) has evidenced that pre-modern populations do not reach the adolescent stage of formal operations. Recently, the dominant psychometric approach has shown that pre-modern people have very low IQs. But its researchers are largely not aware of the significance of these low scores: they are symptomatic of the childlike mental age of pre-modern man as compared to the cognitive maturation of modern man. This essay demonstrates what they can learn from the developmental approach.

In earlier times, a wide range of thinkers used developmental language. Auguste Comte (1840), the founder of sociology, based his theory on the childlike structure of pre-modern man and the psycho-cognitive maturation of modern humans, and considered the latter a prerequisite to the rise of modern society. The last representative of classical sociology, Norbert Elias (1982), built on the same foundation. Between the enlightenment and 1945, and to a lesser extent thereafter, psychoanalysts and historians, especially those who travelled to the Southern Hemisphere, took such notions as self-evident. They include most of the great names we revere today (Oesterdiekhoff, 1997, 2011a, pp. 25–39, 2000, pp. 49–79, 2012a, 2012b). As Jahoda (2000, p. 29) says: "The topos of the childlike nature of 'savages' runs as a constant thread through 19th-century literature and continues well into the 20th century… (the) early writers on child psychology such as Preyer, Sully, and Stern, often made comparisons between savages and children."

After 1945, especially after 1970/1980, the ideological landscape changed. The World Wars, student revolt, and anti-

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colonialism engendered the ideologies of "cultural relativism" and "the universality of rationality". The idea that all peoples have the same level of intelligence and rationality (universalism) and that all cultures are unique forms (relativism) overwhelmed the concept of the psychogenesis of humankind from lower to higher stages, and assumed the status of sacred doctrine. This is not the first time that history has crippled science. Roman intellectuals lost the ability to understand the superior science of Hellenistic times, physical science had to shake off the structures of medieval philosophers, Soviet social scientists had to work within the frame of Marxian ideology.

Fortunately, over the last 50 years, developmental theorists have continued their research and enhanced the evidence as to the lower level of pre-modern peoples. It is time to reject the fundamental premises of contemporary social sciences and humanities. It is time to resurrect the insights of the great scholars especially of the Twenties and Thirties. It may take several generations to repair the damage, but the result will be a better understanding of pre-modern and modern peoples in regard to reason, behavior, and morals (Oesterdiekhoff, 2011a, 2011b, pp. 206–220, 2012a, 2012b; Weiler, 2011; Valsiner & van der Veer, 2000).

2. Psychometric intelligence research

The peoples of the world show the following intelligence scores: Europe (25 nations) 97.48, Africa (17) 70.82, Asia (20) 91.50, North and South America (15) 87.13, and Oceania (4) 92.25 (Barber, 2005, p. 280). According to Lynn (2006), the average IQ of Eastern Asians is 105, Europeans 99, people from India and North Africa 84, people from Black Africa 67, and the IQ of the Khoisan is only 54. These scores reveal only the intelligence of contemporary generations. Research shows that the IQ of all populations fluctuates over time, when they are exposed to modernization pressure.

According to 1992 data (on Raven's Progressive Matrices), when Britons born in 1877 were scored against those born in 1967, 90% of them fell below an IQ of 75, that is they were below the 5th percentile. All age groups had made massive gains. Those aged 18–32 had gained at least 20 points over the last 100 years, those aged 33–67 had gained 30 points (Raven, Raven, & Court, 1993). Also on Raven's, the French gained 25 points between 1949 and 1974, the Dutch 21 points between 1952 and 1982. West German children gained 20 points on Wechsler tests between 1954 and 1982 (Flynn, 1987, p. 172–182). White Americans gained 25 points between 1918 and 1995, measured by Wechsler-Binet tests (Flynn, 1998, pp. 36 f). The phenomenon of rising IQ was observed in the USA early in the Thirties (Pintner, 1931) and later documented internationally by James Flynn.

One hundred years ago, Italians, Greeks, Spaniards, Russians, and East Europeans such as Baltic, Polish, Romanian, and Hungarian peoples scored 20 to 30 IQ points below the British, French, German, and Americans of that time. Compared to current British norms, their mean IQ was about 50, as low as the lowest-scoring nations of today (Pintner, 1931: 453; Sowell, 1994, pp. 159–166). One hundred years ago, the scores of the Chinese and Japanese were below the West, similar to the scores of the Southern and Eastern Europeans of that time (Lurija, 2002: 42; Sowell, 1994, p. 160). The scores of Chinese and Japanese, living in North America in the Sixties and Seventies of the past century, were a point or two points below those of White Americans, according to the overview presented by James Flynn (1991). Today East Asians outscore white Americans (Lynn, 2006; Te Nijenhuis, Cho, Murphy, & Lee, 2012). Children aged 6 to 15 gained 20 points on the Wechsler test in Japan between 1951 and 1975 (Flynn, 1987, pp. 172–182).

The gap between Blacks and Whites in the US was greater some generations ago than today, as some authors believe (Neisser, 1998: 5), although other authors disagree. Black Africa has also made IQ gains. Its IQ of 70.82 is close to that of Western peoples 50 or 70 years ago, and betters the scores of Eastern and Southern Europeans, Chinese and Japanese 100 years ago. There is no reason to doubt the Khoisan can exceed their present mean of 54. The first data from Latin America show massive IQ gains.

In 1900, no pre-modern or early modern population had a mean IQ above 75, against current norms. And today, no advanced industrial nation, such as South Korea, Japan, or France, has low scores comparable to pre-modern societies. According to Barber (2005), the extension of school attendance explains roughly two-thirds of IQ gains. Of course, many peculiarities of the modern culture have been factors: better maternal care and nutrition, the media, more cognitively-demanding occupations. But the introduction of mandatory school attendance 100 or 150 years ago in Europe and in the USA, the rise in the number of years of schooling, the spread of modern school systems, these were decisive (Flynn, 2007, 2008; Oesterdiekhoff, 2009a, pp. 82–97; Rindermann, 2008).

In what sense do pre-modern and illiterate people have lower intelligence? At first glance, "they can not deal with abstractions", as test psychologist H. H. Goddard noted in 1913, with regard to immigrants in New York. They have not mastered the deductive and abstract forms of thinking necessary to cope with the usual intelligence test. This deficiency shapes everyday activities in pre-modern societies, although its effects are variable.

Low intelligence, devoid of important deductive and abstract reasoning abilities, has been the norm in world history. Only modern schools raise intelligence to a higher level, and these exist only in modern societies. There is a direct link between the historical and the developmental or ontogenetic nature of intelligence. Intelligence is not an ability complete at birth or a bit later, as was believed in the 18th century. In modern societies, and only there, intelligence rises throughout childhood, and peaks at the 16th, 18th, 20th year or even later. Individuals differ. There are some whose intelligence stops rising at 14 years, others boost their intelligence during the third decade of life. However, in pre-modern societies, most people make no intelligence gains after the age of 10, as I show below.

Children in modern societies do not have the same intelligence as adults but score far lower on IQ tests. Rindermann (2011, pp. 215, 218) showed recently that German children raise their intelligence during childhood and adolescence from 6 to 18 years by an average of 5.62 IQ points per year. The rates vary by age. Children between 6 and 9 raise their intelligence by 8.18 points per year, children from 10 to 14 by 5.77 points per year, and youths from 15 to 18 by 2.73 points per year. Children aged five have an IQ of 93

scored against children aged six. Adolescents aged 17 have an IQ of 170 scored against children aged 5. Measured against adults, four-year-old children have an IQ of about 20, eight-years-olds 50, thirteen-year-olds 75, and eighteen-years-olds finally reach 100. These values reflect the developmental path from pre-modern to modern humans. In pre-modern societies, humans do not take 18 years to attain the average adult level, but only 6, 8, or 10 years.

Since Alfred Binet, those with lower than average test scores have been said to lag behind the normal path of cognitive development. We still estimate "mental ages" or "developmental ages." A mildly retarded person with scores of 75 is said to be someone that has a mental age of a thirteen-year-old (Blondel, 1926; Inhelder, 1944; Vernon, 1969: 19).

Porteus (1937) equated the IQ of adult Kalahari-Khoisan with a developmental age of 7.5 years. "The Porteus Maze test has probably been applied to a wider range of ethnic groups than any other test in existence. Porteus himself claims that illiterate adults easily understand it and he provides striking evidence that it measures some kind of planning ability, adaptability to the environment, foresight and self-control." (Vernon, 1969, p. 142) P. Weil found that illiterate adult Brazilians perform no better on the Progressive Matrices than six-years-old Brazilians. Ombredane found the same among the peoples of Central Africa (references in Vernon, 1969, pp. 76 f). Maistriaux tested Black African and Arab people, both from their mother country and from France, and found that adults performed (on both Raven's and other tests) no better than children.

Maistriaux (1955, p. 412) argues that the same cognitive traits cause the low scores of both children and pre-modern humans. According to Raven, only children who are at least six years of age are able to master the Matrices. Younger children cannot focus simultaneously on the different shapes but only on one and therefore, cannot compare them. Maistriaux found the same phenomenon among his adult African and Arabian subjects. Depending on whether they were (1955, pp. 419, 441) illiterate or had some schooling, the mental ages ranged from five to nine years, although their chronological ages were 15, 22, and 27 years respectively. Rindermann (2008) found Indians in the Brazilian jungle that simply could not understand the Progressive Matrices. Special tests are needed to measure IQ levels below 50 or mental ages below seven.

These psychologists describe the intelligence of pre-modern peoples as childlike (Chase & van Sturmer, 1973, pp. 8 f; Maistriaux, 1955, p. 416), as does (Vernon, 1969, p. 215): "… their reasoning capacities remain similar in many ways to those of younger children." But they restrict the significance of test scores to intelligence comparisons. They have no possibilities to regard the lower scores as manifestations of the existence of a complete childlike personality and the higher scores as indicators of risen psychological stages. Thus, they could say that pre-modern man has the same psyche and personality as modern man *apart* from intelligence and reasoning. That is what they had actually to maintain if they raised the question. So they see only the surface of the ocean but not its depth. But the depth is the mass of the phenomenon, not the surface. And developmental psychology, rightly interpreted, sees the depth respectively the depth of differences between modern and pre-modern man beyond reasoning abilities only: it advances the thesis of the structural identity of pre-modern man and child.

This brings us to the central question: is pre-modern man adult in the same way as modern adults, only differentiated by childlike reasoning? Or conversely, are his IQ scores manifestations of a complete childlike psycho-cognitive or anthropological structure? I doubt that psychometric intelligence researchers seriously confront this question, much less provide an informed answer. The classic psychometric tradition is ignorant of the psychological phenomena that attend the common mental age of children and pre-modern humans. Its practitioners can gain a full understanding of intelligence only when they refer to the notions won by developmental psychology.

My books develop in detail what I outline here: The cognitive-developmental approach evidences the full psycho-cognitive identity or common anthropological structure of children and pre-modern humans. Common intelligence levels manifest a psycho-structural identity covering the whole psyche and personality. The psychometric approach is dependent on the developmental approach for a theoretical framework. The lower IQ scores of childlike personality structures and the higher scores that attend the psychogenetic maturation of mankind give intelligence research a foundation largely unknown. In addition, the cognitive-developmental approach is the key to understanding the transition from the lower level of pre-modern intelligence to the higher level of modern intelligence. James Flynn was uncertain about the causes and effects of the "Flynn Effect" as late as 2001. Over the next six years, he began to realize the relevance of the developmental approach and included Piagetian data in his book, *What is intelligence?* "I want to say that Georg Oesterdiekhoff brought a Piagetian interpretation of the past to my attention." (Flynn, 2007, p. 82)

3. Piagetian cross-cultural psychology

One hundred years ago, developmental psychology and psychometric intelligence research were linked. William Stern was a founder of both traditions in Germany and Jean Piaget developed his stage theory after his work in the laboratory of Alfred Binet. Today the fact that the developmental approach delivered the theoretical framework of the psychometric approach is almost forgotten.

Developmental psychology describes ontogenetic development from infancy through childhood and adolescence to adulthood. It describes the development of the total personality and psyche of the human being, of which the development of intelligence, reasoning, and cognition is only a part. There are far-reaching correspondences between the development of intelligence and other parts of the psyche and personality, and these are discoverable only by the developmental approach. The ultimate cause of ontogenetic development is the physiological growth of the human brain, which needs a long time to gain its full size and efficiency (Piaget & Inhelder, 1969; Stern, 1924; Werner, 1948).

Piaget contributed the most elaborated description of ontogenetic development. The practical and visual intelligence of the suckling characterizes the sensory-motor stage during the first 18 months of life. The child of the pre-operational stage develops language and reasoning, the capabilities that

separate humans from animals. The stage of concrete operations enables logical co-ordination of objects given to the senses. The formal-operational stage extends logical co-ordination to ideas and representations, that is, reflective, abstract, experimental, combinatorial, and hypothetical-deductive forms of thinking (Piaget, 1950; Piaget & Inhelder, 1969).

Developmental psychology and stage theory show that as humans attain higher stages, new structures of personality and psyche transcend earlier ones. At each stage, humans access new ways of experiencing the world and reality, the psychological, physical, social, and moral worlds. Humans on different stages are different kinds of humans; they are on different anthropological levels. The four stages are anthropological layers that capture the levels that allow children to become adults. People on different psycho-cognitive or anthropological stages have different understandings of logic (such as number, deduction, classification), of categories (such as causality, chance, probability), of physics (such as mass, length, volume, quantity, space, time), of social affairs (such as perspectives, empathy, interactions), and of morals (such as rules, responsibility, intentions, shame) (Mogdil & Mogdil, 1976, vol. 1–6; Piaget & Inhelder, 1969; Stern, 1924; Werner, 1948). Whereas the psychometric approach measures only intelligence, the developmental approach encompasses all aspects of the psyche and personality and discloses the core structures of how humans understand the world.

Piagetian cross-cultural psychology (PCCP) began roughly 80 years ago and reached its peak in the period 1960–1980. More than 1000 tests were administered to hundreds of ethnicities, milieus, classes, and nations. The results reveal the anthropological levels that characterize bands of hunters and gatherers, tribal societies, peasant societies, backward illiterate milieus, developing nations, and modern civilizations. The data of PCCP are a foundation on which we can build a great Historical Anthropology or Historical Psychology, one that lays bare the mental structures of human beings across continents and times.

Setting aside rare exceptions, the formal operational stage develops only in modern societies. It evolves by stages between the tenth and twentieth years of age, primarily as a consequence of the effects of modern school education on the brain and psyche. Attaining the formal stage marks a sharp break with the lower stages of cognition but the graduations that lead to higher forms are more subtle. Therefore, Piagetians divide the formal stage into sub-stages A and B. This division does not, of course, capture steps that are more subtle still. Broadly speaking, in today's most advanced societies, only 30–50% of adult people attain the higher sub-stage B (Mogdil & Mogdil, 1976, vol. III, p. 149; Schröder, 1989, pp. 204 f), while 50–70% of modern adults remain on sub-stage A. They are less capable of abstract, and hypothetical-deductive forms of thinking. This implies that the lower 50–70% have a developmental age between 10 and 15, whereas those who reach sub-stage B have a developmental age between 15 and 20.

Considerable percentages of adult people in pre-modern societies never reach the stage of concrete operations. They go through only the first two stages of human development (and do so in much the same way as modern peoples do). Differences between them relate to where they are in terms of the two operational stages. Their thinking, worldview, and behavior are primarily shaped by the pre-operational stage. Hallpike (1979) and Piaget (1975a, vol. 8–10) determined that the pre-operational stage was the dominant stage characterizing pre-modern adults and cultures. “On the other hand, one can compare these ‘participations’, so fully described by Lévy-Bruhl, to the ‘preconcepts’ that, in our societies, children employ from 2 to 4 or 5 years of age and that manifest both a systematic difficulty in understanding the substantial identity of individual objects and an incapacity in constructing the hierarchical conclusions of logic.” (Piaget, 1995, p. 137)

Pre-modern populations are distributed along a gradient that covers the pre-operational and concrete-operational stages. The more archaic a population the more it attains only the pre-operational stage. Only the more advanced pre-modern populations have subgroups that reach the concrete-operational stage, for example, illiterate or poorly schooled people in developing countries. Even then, they can apply it only in narrow spheres and lack the comprehensive world view usual among modern humans. These subgroups are quite incapable of reaching the fourth stage. The lack of formal operations applies to all pre-modern populations whether in pre-modern tribes, ancient civilizations, developing nations, or early modern societies, irrespective of race, culture, and continent (Dasen, 1977; Dasen & Berry, 1974; Eckensberger et al., 1979; Hallpike, 1979; Lurija, 1982; Mogdil & Mogdil, 1976, vol. 8; Oesterdiekhoff, 1997, 2000, 2002a, 2002b, 2006, 2007a, 2007b, 2007c, 2008a, 2008b, 2009a, 2009b, 2011a, 2011b, 2012a, 2012b, forthcoming; Poortinga et al., 1977; Werner, 1979).

When Lurija (1982) did his famous study on the Kashgar in Uzbekistan, he found that the illiterate adults did not usually develop beyond the seventh year of European school children in regard to tasks like abstraction, deduction, inference, problem-solving, imagination, and self-awareness. Laurendeau-Bendavid (1977, p. 144), in her study of Rwandese people, also discovered that illiterate adults do not develop beyond the seventh year. “If there is no schooling, and if the cultural environment offers no particular challenges of its own, development very rarely reaches the level of concrete operations. It seems that the age of seven years, the unschooled subjects have already reached a level which they do not surpass in subsequent years.” Barbara Freitag (1983) found similar results with regard to illiterate Brazilians, and Kelly (1977) with regard to people from Papua New Guinea.

Jean Piaget regarded the pre-operational stage as typical of pre-modern societies, viewing the concrete stage as emerging only in the early philosophy of the Greeks. He identified the first steps toward formal operations in the European philosophy of the 17th century, when mechanical models and physical science appeared (Piaget, 1975a, vol. 8–10, with Piaget & Garcia, 1989). Piaget (1974, p. 309) offered this summary statement: “In particular it is quite possible (and it is the impression given by the known ethnographic literature) that in numerous cultures adult thinking does not proceed beyond the level of concrete operations, and does not reach that of prepositional [formal] operations, elaborated between 12 and 15 years of age.” Dasen (1974a, p. 418) agreed: “According to this evidence, it can no longer be assumed that adults of all societies reach the concrete operational stage.” Dozens reached the same conclusion. I will add only one more quotation: “It would seem that throughout history many societies have never

manifested combinatorial and prepositional logic or the other characteristics of formal thinking." (Ross, 1974, p. 413)

I will call the anthropological stage of pre-modern people "pre-formal and conceptual-realistic." These terms cover both the pre-operational and the concrete operational stages.

The lack of formal operations in pre-modern societies affects the logical, physical, social, and moral spheres. Pre-modern people experience themselves, other persons, society, and nature the same way as children do. They share with children pre-formal understanding of physical concepts such as time, space, volume. They are like children in that they lack logical concepts such as syllogisms, hypothetical deductions, and combinatorial systems, they share with them moral concepts such as immanent justice, belief in eternal rules, objective responsibility, and they resort to draconian punishments. Both pre-modern people and children do not distinguish between dreams and reality, or between subjective and objective experiences. They share the same concepts regarding causality, chance, probability, possibility, and necessity. They have the same worldview, consisting of animism, ghosts, magic, artificialism, and conceptual realism. There is not one concept and feature characterizing the reason and thinking of children, which is not described by ethnographers as typical of the reason and worldview of pre-modern humans (Hallpike, 1979, 2004; Ibarra, 2007; Oesterdiekhoff, 1997, 2000, 2002a, 2002b, 2006, 2007a, 2007b, 2007c, 2008a, 2008b, 2009a, 2009b, 2011a, 2011b, 2012a, 2012b, forthcoming).

There is one way in which pre-modern people and children differ. There is a widespread assumption that the intellectual deficits evidenced among pre-moderns can be removed by education or a simple change of milieu, an assumption that this would clean the pre-modern mind of all its belief systems and ideologies and implant the operational structures of reason and worldview that characterize modern persons. In fact, while we can acculturate our own small children, we cannot remake people whose archaic culture has reinforced a comprehensive world view throughout childhood and adolescence (Dasen, 1974b; Kearney et al., 1973; Kelly, 1977; Oesterdiekhoff, 2009a, pp. 63–129, 2011a, pp. 40–75, 2012a, 2012b; Staewen, 1991).

4. The hidden kernel of the intelligence and developmental approaches

Piagetian research in modern societies has determined typical ages at which transitions take place. The pre-operational stage lasts from 18 months to six or eight years. The conservation of mass, weight, length, generic identity, and number usually begins at six or seven. At eight or ten, the concrete operations are largely intact. The evolution of formal operations begins at 10 and ends at about 20 with 15 the usual year of transition from substages A to B.

Although pre-modern people are predominantly on the pre-operational stage and correspond to "modern children" of eight, there are populations with even lower mental ages. Many pre-modern peoples do not master numbers, generic identity, weight, or time, and believe in magic, witchcraft, metamorphosis, treat dreams as real, etc.; that is, they resemble modern children of six. On the other hand, contemporary people in developmental regions (the backward and traditional milieus within the developing countries) range over the pre-operational and concrete operational stages as well, with only the formal stage completely absent. Their mental ages would fall between eight and ten with 12 as the maximum.

In sum, the anthropological peak of modern adults ranges from ages 10 to 20, while the developmental age of pre-modern adults ranges from 4 to 12. There may be a few individual exceptions. Thanks to the Flynn effect, the gap between archaic people and adults in more advanced societies has widened enormously. In 1700, people throughout the world ranged from ages four to 10, most being below 8 years. Even 100 years ago, the peoples of Eastern and Southern Europe, Japanese, and Chinese had IQ scores around 50, and at that time, prior to beginning of modernization and mandatory school systems, Western Europeans had scores of about 70.

A summary table: ages, stages, and IQ

Mental age	IQ	Stage of development	Some characteristics of behavior and practice
2–8	20–50	Pre-operational stage	Non-conservation of mass, weight, length, generic identity, number, etc. Immanent justice, objective responsibility, eternal rules, mysticism, conceptual realism, magic, animism, artificialism. A mythical, magical, and religious outlook, a fairy tale worldview. Intuitive understanding of objects, immediate beliefs, and unlimited fantasy. Egocentric convictions, lia ble to contradiction and exaggeration.
6–12	50–70	Concrete operations	Conservation of mass, weight, number, length, generic identity, etc. Belief in immanent justice and the other irrational beliefs decrease continuously. However, the magical-animistic worldview and the religious mentality persist. In ability to reach hypothetical-deductive, abstract, and combina torial conclusions.
10–20	Beyond 70	Formal operations (adolescent stage)	Disappearance of animism, magic, artificialism, immanent justice, objective responsibility, conceptual realism, and mysticism. The world is progressively "disenchanted". The rise of rational understanding, the mechanical worldview, and eventually, the dominance of empirical-causal explanations. Emergence of abstract, combinatorial, hypothetical-deductive, and experimental conclusions, that is, the preconditions of science.

5. The anthropological nature of pre-modern and modern man

As we have seen, nearly all representatives of early developmental psychology emphasized the similarities between children and pre-modern humans. Nearly all of the founders of psychoanalysis agreed, among them Sigmund Freud, Carl Gustav Jung, Erich Neumann, Sandor Ferenczi, and Karl Abraham (Jahoda, 2000; Oesterdiekhoff, 1997, 2000; Wallon, 1928).

Werner (1948) was the first to give a comprehensive account of the childlike nature of pre-modern man. He described the "parallels" between children and pre-modern humans with regard to all aspects of the psyche and personality, perception, reason, magic, world understanding, animism, emotion, and morals. He found no difference between children and pre-modern peoples. The book was famous and influential in Germany, the USA, and elsewhere between 1926 and about 1970.

Werner correctly explained the "parallels" by positing an early ceiling on the ontogenetic development of the pre-modern peoples. However, he should not have spoken of parallel paths: there is only one path and it is common to children and pre-modern peoples. When pre-modern man stops at the level of an eight-year-old child, his arrested development implies a full structural identity with that child. Werner's evidence proved this structural or anthropological identity but he did not state it. Basing on his data he should or could have said that "pre-modern populations remain on the anthropological stages of children aged 5 to 10 and differ from them only in knowledge and life experience". He had uncovered the most important fact concerning the humanities and social sciences but did not conceptualize it.

Piaget then regarded his child psychology as a tool or laboratory that we could use to reconstruct the mind of pre-modern man and illuminate the history of consciousness, science, philosophy, and culture. He believed that children afford an insight into the minds of our deceased ancestors. But he never saw that research on current pre-modern humans is the obvious way to reach that goal. He never elaborated an anthropological theory that encompassed all adult humans throughout history. Instead, he wrote books on all aspects of child psychology, and merely inserted some sentences or sections dedicated to comparisons with antiquity or pre-modern humans. His books on causality (1969) and chance (1975 b) are full of remarks about historical parallels. His unique book on the worldview of children (1959) underlines that pre-modern humans share all four core concepts of children's philosophy, namely animism, magic, artificialism, and conceptual realism. "Is there really such a difference between the child who controls the motion of the sun or the moon by running through a field, and the Son of Heaven who controls the motion of the stars while making the rounds of his kingdom?" (Piaget, 1995, p. 229) His unparalleled book on morals (1932) reveals that the core concepts of children's morals, the belief in the eternal status of rules, immanent justice, objective responsibility, severe punishment, are also the organizing concepts of pre-modern societies, shaping their morals, justice, and legislation.

Nonetheless, Piaget never wrote a book on the anthropology or stage development of pre-modern humans, or a book on the history of societies, customs, law, morals, arts, and technology (although he wrote books on the rise of sciences: 1975 a, vol. 8–10, with Piaget & Garcia, 1989). It is true that the scattered passages throughout his works collectively improve on Werner. They offer a more detailed description of ontogenetic development, thus enriching our knowledge of pre-modern humans. Rather than speaking of parallels, he explains the childlike structures of pre-modern humans by identifying them with the stages children go through. But even he, who more than anyone else understood the foundations of human development, did not use it to formulate a central anthropological theory.

The ethnologist Christopher Hallpike wrote two books on the subject (1979, 2004). His first book was the first comprehensive book on the subject since Werner. And it is the first book that truly combines ethnological theory and Piagetian theory. It explicitly uses developmental psychology as the foundation of ethnological theory and thus marks the first real breakthrough in ethnology since the great books of Lucien Lévy-Bruhl, who virtually dominated the field between 1910 and 1970. Hallpike bases his theory on the data of the PCCP, thus doing what the psychometric psychologist could not: grounding the intelligence data in an adequate theory. Hallpike shares Piaget's belief that the pre-modern humans are shaped by pre-operational structures mainly, only partially attaining concrete operational stages. He shows that only modern adults reach the formal stage.

Hallpike dedicates a special chapter in his book (amounting only 4 1/2 pages) to the comparison of children and pre-modern humans. He concludes that children and pre-modern humans share the same cognitive structures but differ in life experience and knowledge. They share the same qualitative development (stages and structures), but differ in their quantitative development (knowledge and experience). This distinction is valid and crucial but it leads Hallpike to some misleading conclusions. He says that not all wisdom and reason stems from the stage structures and that there is a common adulthood pre-modern humans and civilized people share. He emphasizes that experience and knowledge have the same importance as the stages do (chapters 1.3 and 1.4). In other words, he restricts the understanding of the stages and structures to be mental techniques or reasoning abilities only; he does not regard them as anthropological stages and as psycho-cognitive structures of an encompassing character or a complete world view. He provides implicitly two paths of developmental psychology: one describes four stages that differentiate the pre-modern and modern adults, the other focus on some kind of universality of adulthood. He does not understand that the pre-formal structure of the pre-modern personality creates a structural identity between adult pre-modern humans and children. He overlooks that a common anthropological stage is decisive, not accumulated life experience or knowledge. Therefore he fails to reach the key insight: "Pre-modern populations stay on the anthropological stages of children aged 5 to 10 mainly, *except for some forms of experience and knowledge*."

My ten books and numerous essays correctly explain the nature of both pre-modern and modern man, and offer the appropriate formulations, definitions, and determinants related. Additionally, I elaborate a theory of socialization that explains both arrested and advanced development. I put divergent developments into a macro-sociological and historical context. I offer interpretations and summaries of PCCP. My work evidences that all types of pre-modern societies, tribal societies and ancient civilizations, have been on the lower stages. PCCP evolves into a complete Historical Anthropology that shows that all pre-modern nations have stayed on pre-formal levels in regard to all aspects of world understanding, logic, physics, social affairs, and morals. I call my theory program a "structure-genetic sociology", which applies Piagetian data to history, sociology, ethnology, and other sciences. I write history based on developmental theory, with regard to subjects such as mentality, everyday behavior, customs, world understanding,

animism, magic, artificialism, religion, philosophy, sciences, literature, law, politics, and morals. I am at present formulating a comprehensive theory of religion based on the developmental approach (2013).

My theory of social change illustrates the central role of the new Historical Anthropology in explaining the long temporal duration of Pleistocene, the main characteristics of ancient civilizations, and the emergence of modern, industrial civilizations. Piaget himself (1975 a, vol. 10), Jürgen Habermas (1976), and some others emphasized the central role of formal operations, the adolescent stage, in the rise of modern society. I argue that this modern society consists mainly of five evolutions: "sciences", "industrialism", "enlightenment", "humanitarian revolution", and "democracy". Three of these phenomena are purely cognitive evolutions; two of them are mixtures of institutional and intellectual change as well. They all appeared in the same world region and in the same period. They completely match the characteristics of the formal stage. The evolution of the adolescent stage (formal operations) is like a hand, whereas the five evolutions are the five fingers. In other words, "structure-genetic sociology" (1997–2013) provides the key to explaining the rise of modern, industrial society (or the rise of the West). My theory program shares key assumptions with the sociologies of Baldwin, Comte, Hobhouse, Weber, Elias, and Habermas.

6. Culture, thinking, and behavior in pre-modern societies

One hundred years ago, many ethnologists said they could understand the thinking and behavior of the pre-modern humans only by presupposing a childlike mentality. Today, the fashion is to say that the data of PCCP (particularly low test scores), which attest to a childlike psyche, do not really measure the ability and reasoning capacity of pre-moderns and are contradicted by the sophistication of their customs and institutions. This is a classic case of lost insights and deterioration of scholarly standards. Today's ethnologists, educated in the spirit of relativism, frequently ignore what is evident and overlook the mass of irrational behavior in pre-modern societies. If Piagetian theory did not exist, it would be necessary to invent it in order to explain pre-modern peoples and cultures. Pre-modern humans understand everything that surrounds them differently from modern adults.

Every ethnographic report documents belief in the metamorphosis of "species" among pre-modern adults. Stones, plants, humans, animals can transform themselves into something else. Modern children believe this, too, by age six. Understanding the invariance of species belongs to the concrete operational stage (De Vries, 1969; Flavell, 1977; Lévy-Bruhl, 1931, 1938; Oesterdiekhoff, 2011a: 110). Almost every early child psychologist and ethnographer described the prevalence of animism as a device for comprehending nature. Children and pre-modern humans usually believe that mountains, rivers, stars, and objects are living beings (Evans-Pritchard, 1976; Lévy-Bruhl, 1931, 1938; Piaget, 1959). Both believe that plants and animals can reason much as humans do.

For example, pre-modern people take blood revenge on animals that do harm. If they have judicial institutions, they accuse, convict, and punish them in the same way they do with criminals. They are absolutely convinced that animals understand human speech, have will power, decide between good and evil, and are morally responsible (Fischer, 2005; Oesterdiekhoff, 2009b, 2011a, pp. 102–109). "The capital punishment of a dumb animal for its crimes seems to us so irrational and absurd that we can hardly believe that sane and sober men were ever guilty of such folly." (Evans, 1906, p. 157) Trials against animals evidence better than any psychometric test the childlike personality of pre-modern man. They prove that pre-modern adults not only had childlike reasoning abilities but also a complete childlike structure regarding emotions, world view, and morals.

Ethnography shows that every pre-modern society is dominated by magic, witchcraft, and sorcery. Pre-modern humans believe they can use charms and rites to affect the forces of nature and the fate of people. They believe magical charms can cause waterspouts, hurricanes, rain, sunshine, droughts, sickness, and death. They believe the thoughts and intentions of humans and animals have a direct influence on all sorts of phenomena. Children believe the same. Cognitive egocentrism, weak rationality, a weak sense of reality, wishful thinking, lack of categories such as causality, and other childlike mental functions account for the phenomenon of magic. Whereas modern children overcome their belief in magic by seven to 10, pre-modern adults retain their faith throughout life (Evans-Pritchard, 1976; Fortune, 1963; Lévy-Bruhl, 1923, 1931, 1938; Oesterdiekhoff, 1997, 2000, 2002a, 2002b, 2006, 2007a, 2007b, 2007c, 2008a, 2008b, 2009a, 2009b, 2011a, 2011b, 2012a, 2012b, forthcoming; Piaget, 1959, 1969, 1975b; Stern, 1924; Werner, 1948; Zeininger, 1929). This alone is sufficient to evidence their childlike psyche. It is not just weak reasoning ability but the total childlike personality that accounts for adherence to magical dreams, beliefs, and procedures.

Pre-modern people tend to regard birth and death, sickness and health as purely magical phenomena. Whenever someone dies, people immediately ask which sorcerer killed him. They use fire, water, and poison as ordeals to force "murderers" to confess, or otherwise determine their innocence, and then execute the "guilty". Thus, every death from natural causes such as accident, sickness, or old age is followed by a murder. Millions of innocent people died while millions of guilty people walked free. This epitome of irrationality dominated all five continents for millennia and was one of the main causes of low population growth throughout world history. It is only one among hundreds of examples of how profoundly low intelligence and a childlike psyche undermined the wealth, life expectancy, and security of pre-modern humankind (Evans-Pritchard, 1976; Lévy-Bruhl, 1931, 1938; Oesterdiekhoff, 2011a, pp. 127–132, 2012a).

Making judicial decisions dependent on so-called hazard games (Edward Tylor) is characteristic of children. Piaget demonstrated that initially all children believe in the "immanent justice" of natural elements. Developmental psychology is unique in being able to evidence that both children and pre-modern humans subscribe to such beliefs, and that they are abandoned by modern adolescents only because they reach the stage of formal operations (Evans-Pritchard, 1976; Lévy-Bruhl, 1923; Piaget, 1932; Oesterdiekhoff, 1997, pp. 93–102, 2002a, 2002b, 2006, 2007b, 2009a, pp. 344–368, 2011a, pp. 118–126, 2012a, 2012b).

These examples are only a small selection of the hundreds offered in my ten books about "structure-genetic sociology". But they are sufficient to prove that the huge gap between pre-modern and modern humans (and societies) can only be interpreted by using developmental psychology, PCCP, and structure-genetic sociology.

7. Conclusions

Developmental psychology, PCCP, and structure-genetic sociology reveal the true significance of the IQ results obtained by psychometric intelligence research. The Flynn effect hints at the core of the relationship between culture and intelligence. Test scores and the reasoning abilities skate on the surface of phenomena whose real depth the intelligence approach can neither perceive nor interpret. They are manifestations of different anthropological layers and stages, and only one dimension of certain developmental stages of the psyche and personality. Humans staying on different anthropological or psycho-structural stages manifest different ways of being human. My theory offers classical intelligence research fruitful collaboration with ethnology, history, other social sciences, and the humanities. Such a research program promises a comprehensive theory about "human beings" based on the fact that different people remain on different anthropological layers - based on the implications of this fact for culture, history, religion, sciences, law, morals, politics, and manners. It improves the possibilities in explaining social change and world history.

This program would continue the tradition of the first two generations of developmental psychologists, classical sociologists such as Comte, Hobhouse, Weber, and Elias, classical British Anthropology, the ethnology of Lévy-Bruhl, and the philosophy of Cassirer and Feuerbach. Early developmental psychology was a logical extension of Darwin's evolutionary theories, particularly his awareness of resemblances between children and pre-modern adults. To my opinion, the childlike anthropological stage of pre-modern man and the psychogenetic maturation of modern humans are the most important and most fascinating phenomena within the humanities and social sciences. Just as evolutionary theory turned biology into a real science the new Historical Anthropology can raise considerably the scientific level of social science and the humanities.

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