THE SUBSTANTIAL CHANGE: FROM HIGHER EDUCATION TO SPECIAL TRAINING
An interpretation of the European Experience since 1770

Theodore Papaelias
Technological Education Institute of Piraeus, Greece
e-mail: thpap@teipir.gr

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The role of Higher Education expands between 1770 and 2006. The two (and half) centuries period can be divided into three cycles. The first cycle (1770-1880) is defined by the beginning of the industrial revolution until the establishment, in European level, of the welfare state. Economically, industrial organization dominated throughout Western Europe. The roots of this period can be basically found in the 15th century with the Humanism and Renaissance and become clear with the Enlightenment during the 18th century. Politically, the bourgeoisie prevailed and nobles were marginalized. Moreover, parliamentarism in Britain and the “air” of democratization from the USA and France (with the American and French Revolution) affects the whole Europe.

The second educational cycle lasts until 1980 and reaches its peak after the mid-war Europe (East and West), despite the political differences, tends to become homogenous. The essential characteristic of this era constitutes of the rise of the middle class. Homo universalis tends to predominate. Education becomes more indiscriminate and subjects have been influenced by classical education; it is the apex of the western spirit. Education is regarded as a public good and the welfare state is imposed. The 1929-33 crisis and the Russian Revolution accelerate the developments.

The first cycle had a very slow advancement, if one takes into consideration that it started after 1450, but in fact emerged and was accelerated after 1770. The second only lasted 100 years; the third cycle appeared after 1980.

The end of the World War II, despite the Cold War, will bring a vast liberalization and the dominance of the middle and the lower class. Never before, after the Antiquity, had such a democratization prevailed, that in some aspects was more extensive than the classical Greek and the Roman period. At the same time, the welfare state peaked in 1970. Following the oil crises of 1973 and 1979 it began to fade. During this period, the role of education essentially changes. From quantity view, the number of young people under 25 years of age attending a post-secondary studies program became gargantuan, reaching 80 per cent, whereas in some countries (USA, Canada, Sweden) this percentage was by far larger. From quality view, however, the changes are dramatic.

The duration of studies is reduced from four to three years and curricula tend to fit the needs of the market.

The object of this paper is to find the causes of this phenomenon. It proposes as explanation the existence of educational circles. The purpose of this article is double: to correlate the economic and social changes with the educational system and more specifically with Higher Education and to foresee the future trends. As will be shown, due to globalization that began to dominate after 1980, a major transformation took place, where the University transforms into a training center and homo universalis to a single-specialization man. Two tasks have been set in the Framework of the paper: to analyze the correlation between economic changes and educational system; to compose an explanation theory, a quasi paradigm, of interpretation of the trends that have been shaped over the time.

The methodology which is being used is historical and theoretical analysis.

Keywords: Higher Education, special training, curricula, economic transformation, educational cycle.

Introduction

The educational system, mostly in Europe, remarked notable changes within the last three centuries. The foundation of welfare state and massive educational curricula has guided the educational system of European countries to close targets. The attempt for European convergence (Bologna Magna Charta Universitatum 1988, Sorbonne Joint declarations 1998, Bologna Declaration 1999, etc.) is directed to the creation of single educational area, equivalent to the one of economy (Maastricht pact).

However, beneath the discussions and debates that have been provoked and the abundant bibliography that exists, there is something wider, which no Minister’s plan processes it and the bibliography remains nonexistent: the essential change of the content of curricula and the mutation of the role of higher education. This change is endogenous and stems from the evolution of economic and therefore, social system.

The object of this paper is to find the causes of this phenomenon. It proposes as explanation the existence of educational circles.

Consequently, the aim of this paper is double: in the beginning, it focuses on the research of the economic and social changes correlation from the period 1770 till this day and their effect on the transformation of educational system and afterwards, on the “trail” of future trends.

The novelty and generally the contribution of the paper are located in: first, the methodology, as it does not examine...
the changes in the educational systems of each country separately, but it **aggregately** investigates the economic and political alterations in the European area and their impacts on the education. Last, by this correlation emerge educational circles as a result of the correspondent social, which came from the variation in economy and political opinions.

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**Education-Educational System: A synopsis**

The outset of education, if that can be defined as a way of indoctrination or better as if it constitutes a person’s indoctrination goes far back to mist of the ages. Obviously, the person, as a group member, accepted the rules it imposed. Such behaviors, respect towards older people and the most powerful members of the horde, gradually formed what Max Weber defined as patriarchic pattern. Unity and settlement to a place created the first communities that developed to fortified cities.

At the same time, technology advancement, slow but steady, despite the retrogressions and constant experimentations, created the need for the existence of a primary educational “apparatus”. Already, since the Neolithic Ages, a similar system can be traced down after the introduction of language and structured speech.

Therefore basic requirements for the existence of the latter were the city-establishment and language composition.

The constantly growing needs of the city, that was replaced, in the course of time, by the state, lead to the need of an education system expansion (since the latter reproduced the gained experience). Writers in Egypt and Mesopotamia can act as a typical case.

Knowledge, however, in its greater extent (the clergy and the elite possessed it), cannot be transferred, only the technique can and more specifically only that considered as essential (Papaelias 2005). Far later, after the 6th century B.C., by the establishment of “Schools” (Σχολή) in Greek cities, the role of the educational system expanded and through them thematic subjects and knowledge itself began to augment.

Although set during the ages of the classical Greek Philosophy in a broader basis, during the Hellenistic Ages and following in Roman era, sciences (Mathematics, Physics etc) became more systematically cultivated and great inventions were realized (new techniques).

The gradual fall of the Roman Empire will lead to the decline of the arts and letters. In Ostrogothic Italy there are still some glimmers thanks to the long-term historic structure. Nonetheless, Boethius, Symmachus, Cassiodorus will constitute exceptions to the whole Western part of the empire that begins to become barbarian.

In the East, despite the conservation of continuity, Schools will be shut down due to Christianity, -during the age of Justinian- and Philosophy will be considered as competitive to Theology. The state transformation to agrarian will limit or even eliminate for quite a time the achievements gained, creating this way discontinuation.

The first Byzantine Renaissance (Arethas of Caesarea, Photius of Constantinople etc.), in the 9th century, will soon undergo an eclipse and will reappear in the 11th century, during the end of the Macedonian Dynasty (Psellos etc). Nonetheless, no internal mechanism for the conservation of those glimmers seems to exist. In the twilight of the empire during the ages of the Palaiologoi (14th-15th centuries) a new real Renaissance (Ostrogorsky, 1940) will emerge that will not last for long due to the forthcoming end. However the transition of the intellectuals to the West, and mainly to Italy, will reinforce Humanism and the Renaissance.

Education in the West until the 12th century seems to be in hibernation despite the few exceptions. The introduction to the knowledge of Antiquity, primarily through the Muslims (Arabic translations of the works of Aristotle and part of Greek literature) and later through the Greek scholars will accelerate development that will lead to the establishment of the Humanism movement after the 15th century.

The Reformation, on the one hand provides an impetus by liberating spirits from infallibility, however on the other hand, by its conservative nature holds spirits to “pure” Christianity. Processes in technique nevertheless, following the continuous inventions and discoveries gradually lead to the introduction of educational mechanisms to retain the acquired achievements.

Later on, after the 18th century and especially after the 19th, Universities will become not just reproduction mechanisms, but centers of generating education. Primary and Secondary education will act as a antechamber of either higher education or as independent production tools of the basic knowledge, necessary for fulfilling the most simple needs of the economy.

Therefore, the first educational system was born within family and race. Beyond the transmission of a code of conduct (morals), the preservation of common rules and rituals (customs), the elders transmitted the basic knowledge for the use of tools and weapons for survival.

This archaic structure of learning of the Paleolithic and Neolithic period will be gradually replaced by the rudimentary educational system of the first settlement era. Settlement in a specific place expands labour division. Beyond schooling, in the framework of unification (political, military, etc) it became obvious that the accumulation of knowledge can only be achieved through educational “tools” that concern all community members. The impartment of experience from parent to child covered all the simple functions of living. For

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1 Max Weber (1922)
2 The second paradigm of social formation, city-state (Papaelias 2005c), in the Near East did not last for longer than six millenniums, but for a few exceptions. Even if the origins of the city appear during the sixth millennium B.C. (according to the findings) during the ages of Augustus it had already disappeared.
3 The third paradigm had already appeared in Egypt before the fourth millennium. Developments in the Middle East were nearby simultaneous.
4 In the Academy, Lyceum, New Plato Schools, Pythagoreans etc, there is going to be a parallel “production” of knowledge and its reproduction.
5 Gibbon (1776) estimates the fall after Marcus Aurelius.
6 According to Anderson (1974), exactly after the end of empire, the removal of the obstacles posed by the religious and political system, allowed for this renaissance with Georgios Gemistos Plethon, Johannes Bessarion, etc.
7 First, of religion (of the Pope) and then, of science (Aristotle) etc.
the more complex - the next stage - (agriculture, navigation, commerce, handicraft, etc) the need for the function of methods and techniques to a level beyond family and race emerged. Thus, those were left to the jurisdiction of the city and later on to the state. The appearance of powerful dynasties, within the framework of the latter, led to the asymmetrical transfer of knowledge, i.e. knowledge inherent to the interests of the leaders was meticulously hidden from the people - or cultivated in an upper class – whereas, simple skills were taught to every member of the Kingdom.

Therefore, the educational system, at all times, will act as a perpetuation mechanism of “education” (at technical or economical level) and of already existing social relations. In essence, it will constitute a conservative rampant, in its most part, of the social views of the dominant class. Each educational system reflects the perceptions (about to be) of the domination social structure and tries to preserve the required educational level.

The differences in the educational systems of Antiquity, Middle Ages and the New Ages can be traced down to massivity on the one hand and amplitude on the other. During Antiquity, education was, to a great extent, a personal matter (due to the spirit of individualism developed) and the state did not care for the cultivation of the person - but for rules that related to its reproduction - nonetheless, many cities, after the fall of tyranny, offered the basic education. However, Rhetoric, Philosophy and Poetry etc. were regarded as luxury and were mostly related to the higher social strata (since besides all other it was self-funded). In late Antiquity the desertion of education came first - due to the economic decline - and the barbarians followed. In the Middle Ages handicrafts were only transmitted within guilds, while upper social classes were first to enter Universities followed by the middle class and (later) the lower class during the Renaissance.

Cloisters provide the main outlet for the poorest to gain “classical” education. That can be proved since the greatest part of intelligentsia during the Late Middle Ages and the New Ages can be traced down to the lower classes (higher classes will continue to engage themselves with weapon and management). At the dawn of the New Ages a dualism can be observed. Students at Universities usually pay tuitions and thus, usually come from the higher social strata while in the workshops, the other means of knowledge production, people form the lower social strata are found.

The political and social developments during the Middle Ages

Throughout the late phase of the Middle Ages (1200-1450), many important changes, that were hardly hidden, gradually took place.

The structure of the society and beliefs only slightly resembled those of 1000 AC.

The osmosis from the East was broadened. Humanism and later Renaissance reached their peak in Italy. Reform without extending the limits constituted in many cases a retrogression (see Luther’s – Erasmus confrontation), and gained a sufficient part of the achievements.

Christianity will be divided for two centuries (1500 – 1700) and retained this fact will constitute either a hindrance or an acceleration lever.

The existing or new inventions (gunpowder, printing, compass, caravel etc.), will begin to be used on a large scale after 1450.

The highest point will be the new Discoveries (America, navigation round of Africa and the earth etc.). The world is in transition and an overturn is impossible.

The three centuries (1450-1750) were the basis for what was called industrial capitalism. In many cases the structures of commercial capitalism resemble those of antiquity.

8 see: Burckhardt J. (1860)
9 From Shakespeare to Cervantes and from Luther to Descartes the mass will comprise of people that do not belong to the nobles or even the bourgeoisie.
10 For the middle person the Dark Ages were a static social (and political) regime. That is incorrect. The situation in 500 A.C. only slightly resembled that of 1000, as that the second millennium with the equivalent five centuries later.

11 It has been claimed (Papayiannakis 2005) that the society formation paradigms are three. The first was related to the nomad life, the second to city-states, the third to the state and thus to the empire. Under this logic globalization is nothing but a repetition of the empire of the Achaemenides, the Macedonian state, the Roman empire etc, but at a different qualitative level. The Renaissance culminated to Italy due to the fact that is nearest to the East (Byzantium etc) and because there existed few of city-states (Democracies as they were called). So competition resembled that of the Greek cities and had as a consequence the state and cultural research (in the sense of discussing systems of government, Machiavelli, Vico, etc) and the cultivation of Arts and Letters. Similar phenomena, not of such depth, appeared in Germany that was divided as well as to the Low Countries. On the contrary to the powerful kingdoms of Spain, France Turkey (and generally in the East) no similar developments took place. It is worth noting that the growth of England was achieved despite the gradual shrinkage of the central authority, already since 1205 A.C. (Magna Charta) and the handing over of power to the parliament.

12 See the catastrophe of Germany from the 30 year war, Religious wars in France, the recall of the edict of Nantes, the Inquisition that deplored Spain and Italy.

13 The competition between the two parties (the proponents of the Reform and of the Counter-reformation) reinforced the development of England, of North Germany (i.e. Prussia), of the Scandinavian states etc.

14 Of course boundaries are not the same for all countries. However, it could be said that even though the Industrial Revolution began in 1750 or 1770 in England and later on to the rest of Europe (in the early 19th century) the circumstances - material and intellectual had already been formed in the whole of West-Europe.

15 The first capitalism, a generalized form, appeared in Ancient Greece. The causes were three according to the writer: the first was the splintering of the country into small plains and islands hav- ing as a result geography, as Braudel would say, to constitute the basic reason. In contrast to the extended land of the Near East (Egypt, Mesopotamia) or India and China, the Greek territory - at least south of Olympus- provided the opportunity of the “genesis” of numerous settlements that most of them created the city-states. On a second stage the most powerful managed to constitute the so-called Commons (Kómov) or Confederacy (Συναγωγία). The second is related to the fact that they were near the East, where there existed great civilizations. So they borrowed important tools (of thought, knowledge etc) for to construct their own civilization (they did not develop around the empires just like the Phoenician or the Greek cities of Minor Asia that submitted to their neighbours).

The third stems from the ideology of individualism. Already from the Early Antiquity the first paradigm of society organization (the nomad) tends to disappear. In the Bible Abraham will sacrifice his son to God. Something similar will happen to Agamemnon and Iphigenia. However, the violent conflict between the first and Achilles, as well as the end of the Greek conquerors of Troy (murder of Agamemnon, the inglorious removal of Diomedes and Odysseus etc.) indicate that the king emperor model had already started to decline during the 12th century. It was given theological justification. In the first chapter of Theogony, it seems that Cronus was ousted by his sons. Soon political changes will follow. The king will become the first among equal (primum inter pares) and later will lose his power and the constitution will turn to aristocracy. The rise of commerce will shrink the authority of the nobles and plutocracy systems will prevail. So individualism is imposed ideologically and the society turns from agricultural to mercantile and the regime will lead to commercial capitalism. Oligarchy or Democracy will not only conserve those material and intellectual basis but will rely on them.
Intense competition initially among the cities and later on among regions or even states had as a result the reinforcement of individualism. Renaissance and mostly Reformation established this trend on a moral and later on political ground something contrary to the spirit of Catholicism\textsuperscript{16}.

At the same time, on the one hand the positive demographic development, plague and pestilences were curtailed due to the improvement of hygiene, and on the other hand the “open” horizons, resulted from the intense competition between the new national countries, led to the differentiation of ideas.

Economic life became more and more complicated (development of accounting, use of exchange bills etc.), while technique, as even complex, required more systematic education.

The gradual corrosion of the Middle Ages society resulted to the development of the national state\textsuperscript{17}. The Middle Ages represented a “quasi” case of the second paradigm.\textsuperscript{18}

The feud operated under an agriculture economy regime as autonomous “state”, found in a structural controversy with the city.

On the contrary, in Antiquity (and especially during the Classical and Hellenistic Ages) cities, the urban way of life and the respective occupations (handicraft, shipping, commerce, etc.) were dominant, while the agricultural sector (at least until the post Roman period) gained less and less importance. Nobles (landlords) did not hold the power in their hands which was now passed on to plutocracy\textsuperscript{19} that is to the ones that handled or reproduced goods (that is of a quasi “bourgeoisie”).

Commercial competition during the New Ages leads to the further shrinkage of the traditional sector. With the “enclosures” in England, part of the farmers and stock breeders were violently pushed to the urban centers, this way making the number of the proletariat explode.\textsuperscript{20}

Agricultural work, \textit{ex definition}, does not require extended schooling\textsuperscript{21} that is why even from Antiquity the farmer was identified with retrogression.

On the contrary, life in the city was under Caudine forks.

Internal, as well as, external competition compress cost, on the one hand, and on the other provide substitutes of goods and services. Simultaneously, the handicrafts-man must keep up using new techniques in production, pioneer methods of sales, new markets etc. Therefore the need of systematic education, since guild collapsed was obvious throughout the whole industrial period.

\textsuperscript{16} Max Weber was the one that stressed the role of the Reform in the creation of capitalism (1920).

\textsuperscript{17} Analytical: Andeson (1974), Goff (1964)

\textsuperscript{18} See above (note 11)

\textsuperscript{19} In some cases the seigneurs were the ones that were engaged with handicraft or trade.

\textsuperscript{20} Marx overemphasizes this process. Nonetheless it is noted that by the official historians drastically downsized, something that is in the unquestionably wrong, the role of this fact. The “Capital” (the secret of the so-called initial accumulation) Marx finds this process the separation of labour from the means of production and the rise of accumulation. Capitalism rise however and to the rest of the countries of the West where this evolution was quite mild. The primitive accumulation despite the fact that it was benefited by such a development would have happened anyway

\textsuperscript{21} The harvest depends on external factors (drought, illnesses etc.) that play a major role. Assiduity played mainly the role of the parameter in the equation, something with which Isiodus agreed.

Discoveries broadened horizons in thought, and the contact with cultures of Antiquity (in Art, Sciences and Letters) made the people of the West move into a more corporate knowledge development that could only be achieved through educational mechanisms.

At the same time, the West had been in constant conflict with the East after the 10\textsuperscript{th} century. With the broadening of the horizon during the 16\textsuperscript{th} century Europe was obliged to accumulate constant knowledge and tools not only for the defense but for its imposition as well.

After the naumachia of Lepanto (1571) it seems that the scale leaned towards the West. The East with its wealth and large population remained powerful but it was impossible to dominate. The failure of the second siege of Vienna (1683) finalized the abovementioned and made clear that the East entered a period of defense and decline. If the West did not have its internal disputes would have destroy it.

Those ideas soon become clear and the Ottoman Empire tried to modernize. Nonetheless, its structure was such that this seemed impossible. The attempt of the renaissance in Russia moved on the pattern of the West. Despite the struggles of Peter I and Catherine II it will find it impossible to compete with the rest of the Europe since its structure made it unable for fast development.

After the second half of the 19\textsuperscript{th} century when serfdom was abolished (1883) there was an intense attempt for the industrialization that was intensified after the dominance of the Bolsheviks.

So during the passage of the three centuries (1450-1750) the rupture was finalized creating a form of discontinuity (since the third society formation paradigm), that is state unity, dominated over the second (land partition into limited feuds). In the next three centuries (1750-1950) the industrial revolution was established and became globally dominant. In essence, despite the “seigniority” of existing socialism in the Second World and part of the Third, the industrial dogmatism, (i.e. development equals industrializations), prevailed overall.

After 1950, despite the phenomenal victory of socialism, the regime collapsed (to the former Soviet countries) or was transformed to military dictatorship (China). Essentially, the boundaries of the transition to globalization (third paradigm) are estimated between 1980 and 1990. The first chronological point is related to the dominance of new liberalism and the reversion of \textit{laissez-faire, laissez-passer}. The Thatcher government in Britain and the Reagan government in the U.S.A overturned the social state that gradually began after 1880 during the epoch of Bismarck and in a more intense rate after 1936, due to the crisis of 1929-1933 and the Keynesian revolution. The second chronological point is related to the beginning of the collapse of the existing socialism regimes in East and Central Europe.

Concluding:

Before 1450 an alteration of the second paradigm of social formation ruled. A large part of life circulated around the manor and the economy was basically agricultural and barter.

In-between 1450-1750 commercial capitalism, known in economic policy as mercantilism, was established. The city prevails, village “retreats” and shrinks, while authority, is found, either in the hands of the nobles (France) or both to the upcoming bourgeoisie and nobles (Britain).
In the period 1750-1950 the nobles gradually disappear (the last remnants left by the end of World War One and the national middle class imposed itself).

During 1950 and 1980 (in fact after the 1936 world crisis) the state intervention -the end of laissez faire, as the majority of the social thinkers claimed- “reigned”22. As a consequence, the controversies between the social classes were blunted. At the same time the culmination of existing socialism showed another trend of development.

Since 1980 new liberalism triumphs and socialism falls, while the market mechanisms globally dominate. Globalization imposes itself.

The three Cycles of Education23

After commercial capitalism, education was divided into three cycles. The first lasted for a century (1750 or 178024 up until 1880) and despite the fact that its origins can be traced down in the late Medieval Ages for systematical reasons its beginning is set during the first half of the 18th Century. During the period of the three hundred years 1450-1750 the basis on which the educational “wave” was set (it could be considered as a primary cycle)25.

This cycle constitutes a kind of initial accumulation. Latin as the major language of the Middle Ages is set to the margin and is substituted by national languages. Social states have already been formed26. Each country tries to entrench knowledge for the competition27 that emerges as a natural phenomenon. It is clear that the latter constitutes power. Despite the obstacles imposed, most part of the gained experience and inventions, even if belated, are diffused among the regions of the world28.

So, in the midst of the 18th century that is prevalent in Europe, as far as technology is concerned. At the same time, the mechanisms of basic knowledge impartment remain the church and barracks. Universities operating at most countries produce theoretical education that is relatively easily transferred from country to country29. Quite often, philosophers migrate for religious or political reasons. Therefore, homogeneity is achieved. Higher education provides knowledge that can easily be imparted (see the findings of science such as Mathematics, Physics, Chemistry) to people of the upper middle class (nobles are not usually involved), while inventions, despite the constraints, move relatively independent from the theoretical studies and are in a great extent related either to the residuals of the former guilds or to the lower middle classes.

Then, because the spirits are “mature”, industrial revolution will connect those two almost independent flows of knowledge (the first, mainly theory, and the second application). England initially and following France, the Low Countries and Flanders and then the rest of Europe were transformed from agricultural and commercial to manufactured. Industrial goods production limited the primary sector.

The second cycle lasts between 1880 and 1980. After 1850 some very important changes took place to the social and political reality. While in-between 1450 and 1750 the nobles prevailed, now the system of government is differentiated. The Bourgeoisie gradually imposed itself. In France despite the restoration of Bourbons after Napoleon, the old regime was overturned by the Julian Revolution in 1830. Industrialization rapidly caused the labour class to expend. Already from the French Revolution (Babeuf) the first socialistic ideas had become widely known. While in 1450-1600 the prospect of a farmers war (Bauern Krieg) was possible, from the 17th century and after on such a prospect totally diminishes.

The next overtum is expected from the labour class and the “spring of people” in 1848 seems to reinforce this expectation. The accession of the middle class (Braudel 1967), even asymmetrically in relation to the economic prevalence of capitalists, will make the need of changes obvious. Spirits change while economy needs create the appropriate conditions for such an alteration.

The upcoming industry initially required unskilled labour (that the mobile agricultural mass would provide) and following as production became more complex as Böhm Bawerk30 would emphasize- a more specialized labour force was needed. The bureaucratization of the production process (due to development) will transform the factory in a Daedalian managerial morpheme. Parallel to gangers, foremen and their gradation, employment hierarchy begins to form in an expanding scale.

Therefore, the request “education for all” becomes a logical and an inevitable process in which all social strata converge. Education escapes from the influence of the clergy and the state tries to substitute the church.

In this cycle, the attempt to reduce inequality, since the labour issue comprises an everyday matter (the labour movement even if not united puts pressure on governments), will lead to the foundation of welfare state which origins are estimated after 1880. Education is considered a “public good” and is financed by the state budget, while in the 20th century it rises from six to nine and then to twelve years. To this second

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22 A constant ideological opponent was Popper (1945, 1957)

23 During the 19th an extended literature regarding economic crises was developed in Political Economy. In the first quarter of the 20th century Kondratief as a subsequence of Juglar, Kitchin etc., presented a more concise theory suggesting long-wave cycles (of a 25 or 55-year duration). Schumpeter in his classical work Business Cycles (1939) proposed a wider explanation of long term waves (more analytical: Capitalism, Socialism and Democracy, 1942). In this essay an attempt to correlate social and economic changes with the differentiations in the educational system is made. Under this notion three educational cycles is cover the period from 1750 until today.

24 Depending on when the beginning of the industrial revolution is estimated.

25 If that is taken into account the cycles are four.

26 After the end of the 100-year War the European wars follow. The Augsburg (1555), Westphalia (1648), and Utrecht (1713) Treaties will stabilize the European borders.

27 Classical is the case in metallurgy. The metals mix is the production of the cannons (i.e. in Saxony) will comprise a sacred secret.

28 The attempt to conserve secrets in technology and more especially in military technology goes far back to the ages. In the Dark Ages this tactic burgeoned (i.e. the liquid fire of the Byzantine and the case of Urbanus who sold his invention to the Turks since the Greeks showed no interest). In the New Ages mobility increased. The migrations of the Huguenots for example after the recall of the edict of Nantes (1685) or the strong economic motives during the reign of Peter I in Russia transferred knowledge from nation to nation. Thus the religious and political reasons were replaced gradually by economical. The one who offered more gained more knowledge.

29 Copernicus views will be supported by Galileo in far Italy, see also: Gillispie (1960), Crombie A.C. (1979).

30 The third reason for the justification of interest (Böhm Bawerk, 1889).
The economic system was essentially that begins in the 1980, but becomes Bologna Physics, Mathematics Papaelias 2005c (1750-1880) goods defined it, is substituted by - Papaelias 2005b labour class that create many questions to researchers and historians. 32 ve: Becker (1962), (1964). the improvements of the educational level of the labour force (more extensive government in Britain and the U.S.A. Ideas, in the beginning less state (that had as a result less social benefits) came into existing socialism, politicians that supported less taxes and bear a similar burden. Moreover, tax coefficients had exceeded 60 per cent and that to the expansion of public debt in the developed countries. social policy (furthermore the pressure by the shine of the of 1973 and 1979, ammunition programs and the extended production was developed from the end of the 19th century and the beginning of the twentieth that is during the second wave the production of services began to magnify. Great part of the capital flows to the tertiary sector drawn away from manufacture. Differentiations in the needs and consumer standards are radical. Considerable part of the middle class income is spent for the consumption of “immaterial” commodities. Simultaneously, the labour force transforms. “Blue” collars are replaced by “White” ones. Productive labour, as the Classical Economists defined it, is substituted by non-productive, and its role that is glorified by Malthus, even post mortem, seems to be justified by the prevailing Keynesian logic. Even in companies that produce industrial products the number of employees tends to increase, while the number of workers to decrease (specialized or unskilled).

That brought, invisibly an ideological and therefore a political modification that equals a transformation. If the assumption that the position in production forms the equivalent perception of things (politics, ideology etc) is accepted, then one can interpret the political developments32.

An equivalent alteration took place as far as subjects of study are concerned. The educational systems of all countries aim towards the “production” of graduates of the third sector while the classical studies (Physics, Mathematics, etc.) tend to be marginalized. Curricula are modified accordingly. Those changes will be made clearer in the third cycle of educational evolution.

The third cycle that begins in the 1980, but becomes distinct after 1990, is related to the end of the welfare state and the prevalence of globalization. During the period 1960-1980 the public sector undergoes great pressure. The oil crises of 1973 and 1979, ammunition programs and the extended social policy (furthermore the pressure by the shine of the Second World to part of the population of the West) resulted to the expansion of public debt in the developed countries. Moreover, tax coefficients had exceeded 60 per cent and that gradually became intolerant from the middle class that had to bear a similar burden.

Likewise, assisted by the stagnation of the countries of existing socialism, politicians that supported less taxes and less state (that had as a result less social benefits) came into government in Britain and the U.S.A. Ideas, in the beginning of the era, gradually changed, but after the fall of socialism more deeply. Education as well as health began to be considered as a non-public good. The expenditures restricted strongly. More dramatical were the changes in curricula. After the introduction of information technology in services that is globally dominant – over 66 per cent of the GDP is related to the tertiary sector – manual work become simpler. Therefore the duration of studies drops down to three years (Bologna Declaration) and it is possible, in the future, to be further compressed to two.

While during the 19th century and the first half of the 20th, “traditional” studies prevailed and homo universalis followed the positions of the people of Humanism and the Renaissance (endogenous conditions) during this wave the content of studies becomes disintegrated (Papaelias 2005b). The scientist with a variety of “subjects” is substituted by the single dimension technocrat (according to the logic of Taylor and Ford production model).

Despite the fact that these changes are quite obvious during 1950 then only prevail during the third cycle. So University turns to a Training Centre that aims at the provision of as much specialized knowledge as needed for the function of the company (Papaelias 2005a).

Therefore, during the third wave the role of education is downgraded; from an education provision system having as a principle the Greek-Roman culture, as this was transformed during the Renaissance and the Enlightenment, the English political thought of the 18th century and finalized by the German Philosophy of the 19th, it transforms into a standardized system of executive training (a kind of a fast-food).

This trend seems to be invincible since the role of the national state that missed its identity is now replaced by the global united production system. The role of the bourgeoisie or even the role of the labour class has been undermined. As much capital as well as the labour force move according to what the market mechanism (Adam Smith has argued on this), and not the state, dictates on a global scale. Migration does not solely refer to capital (brain-train of the in-between and post war period) or the specialized labour force but to simple or unskilled labour as well.

Furthermore, knowledge is transferred though the internet shaking the essence of university as a place of learning and creation education. Simplification of jobs (because of the technology) and the gradual transformation of the worker to clerk transforms the type (and the subjects) of studies (from industrial planning to services). Therefore a new initial accumulation is presented. Capital is no longer related to a single place or a country (and hence to a national-bourgeoisie-class). Equivalently citizen form the idea that they belong to a wider “nation”. So the social changes bring about a political decomposition and a cultural uniformity (Papaelias 2005c).

The role of higher education, under these circumstances is transformed. The width and depth of studies is substituted by the specialized knowledge of a specific subject. Thus, the necessity for Universities now turns to a necessity for Training Centers.

31 In this article Schultz (1962) estimate the benefits of the economy based on the improvements of the educational level of the labour force (more extensive: Becker (1962), (1964).

32 Behind this development lie the changes in the positions of the labour class that create many questions to researchers and historians.
Conclusions

The industrialization at the period 1770-1880 in Western and Central Europe has a long-term “incubation” (period 1450-1750), within which the development of science (mostly through Universities) and the simultaneous advancement of technique through empirical (outside educational system) improvements gave an extreme boost in technology. This evolution created new social forces that demanded access to education. The motto of equal chances (“education for all”) due to French Revolution and Anglo-Saxon Liberalism has prevailed. This rapid expansion of educational system, particularly after 1880, was reason for a further development of economic system. It appeared that the concept of progress, which had been reinforced during the epoch of Enlightenment, is confirmed. The illiteracy at the end of twentieth century has been almost disappeared and the percentage of those who studied post-secondary level exceeded the 70%. The single European area in education (Bologna Declaration) was based on the ample experiences of countries and the convergence attempt of educational systems, which had not yet deviate from the long-term goals.

However, after 1950 and particularly after 1980, with the gradual establishment of globalization, the principles of educational system started to differentiated. Tertiary Sector domains and so do the occupations that are connected to it. Post-industrial society is a fact. Classical studies decline and curricula are transformed. Therefore, the main guidelines in the European area emphasize not only to theory, but application and particularly training, as well. An endogenous trend emerges according to which the range of studies, as well as their duration, is shrinking (from four to three years). Homo Universalis is being replaced by the person of one dimension and University is being converted to Training Center.

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