Technology and Economic Development-A Historical Perspective

Introduction

There have been debates between two Ethiopian economists, the one was supporting the policies of the Meles regime, and the other was opposing it, and gave a tentative analysis, why the Ethiopian economy has not grown, as his opponent and the regime would claim. In the parliament debate, related to the present international financial crisis, and its aftermaths, Premier Meles Zenawi was boasting that the Ethiopian economy has been growing over the last 5 years by more than 10 percent, while this has not been the case in many developed capitalist economies. He claimed further that over 90% of the Ethiopian people are beneficial of the economic growth. He went even further that his concern is not that the economy has not grown, but how to stop the overheated economic growth.

Starting since 1993, after the introduction of a market oriented economic policy, and its implementation, as is prescribed by the international community, represented by IMF and the World Bank, the two sister organizations have been claiming that the Ethiopian economy is on the right path, and the Ethiopian people will see a bright future which makes them the member of the international community. Assured by these successes, which benefit the ruling class and its supporters, the EPRDF regime believed that everything works according to the economic school books, and therefore, there is no alternative road than following this golden path of economic development.

In the debates, between the two Ethiopian economists, and the claim made by the regime that the economy has grown, which was vehemently supported by the two sister organizations, there is no mention whether this growth has been a science or technology driven economic growth or not. Concerning the economic growth in many African countries, especially during the 60s and 70s, there have been debates among well educated and internationally renewed economists, like Dr. Samir Amin, that the economic growth in many African counties cannot be called development, since it does not have the necessary scientific and technological bases, which serve as the true engine of any genuine economic development. In the absence of scientific based technological development, and without continuous research and development (R&D) to create new products of various types, one could not claim that the economies of many African countries have grown. Samir Amin and others, who have a different methodological approach to investigate the development of international economies, and especially those of African economies, firmly believed that the international economy which was organized after the Second World War, had pushed many African countries towards one sided economic activity, which is the main cause of African underdevelopment after the second World War. Likewise, after the breakdown of the Bretton Woods system, and the reorganization of the international economy since 1973, and especially since 1980, many African countries south of the Sahara must implement an economic policy which has deepened underdevelopment and dependence. According to these internationally respected economists, and others, the economic development in many African countries, after the introduction of the so-called structural adjustment program (SAP), is far away from the supposed market economy; and many African economies could not become sustainable; and they are more dependent on the export of primary products than before. The rising demand of raw materials during the new millennium, and the exorbitant price rises could not alter the inherent contradiction and structural weakness of the African economies. Hence, there is a systematic blockage of economic development, and many sectors do not have the necessary linkages, and the home market cannot develop, and because of a lack of coherent social and economic policy, the direction of many African economies is unknown.

When we come back to our country, the reports and pictures which are wired to the outside world prove that the economy has not grown as the regime imagines and its supporters make us believe. Ordinary Ethiopians, when they are asked that whether the economic growth of the regime has transformed their lives, they tell us that they do not see any improvements in their lives; they convince us that their lives is worse than 15 years ago; and they do not see any improvements under this regime. The realities on the ground prove that Ethiopia is being drawn more and more into economic, social and cultural crisis which we have never seen before in her history. The disconnectedness of the many economic activities, the unplanned nature of the economic policy, and the lack of principles, from which all social, economic and cultural setups are drawn, proves that the regime does not know how it could organize the entire society. It seems that it has been manipulated by foreign forces whose purpose is to create ungovernable situation. Such a chaotically organized society will be helpless in front of this aggressively organized world capitalist structure, and our poor people must accept what the so-called international community present to them.

The intention and the message of this piece of article is not to prove that whether there has been economic growth or not in our country over the last one decade, but to show that only a science and technology driven economic policy, will free a society from the vagaries of nature, and give her a respected place in this world. Since technology is the product of historical processes, and since it must be ultimately supported by science and wide range researches, the writer tries to show that, it is practically impossible that without technology there is no genuine economic development. According to the belief of this writer, any nation will be forced to develop first of all not to be internationally competitive, but to support its growing population on the path of social, cultural and mental development. Since many development theories lack coherency, and are purely organized on the basis of empiricism, do not mention the importance of science and other related mental practices. Due to the tricky nature of Development Economics, which is formulated from the perspective of international division of labour, in order to integrate the so-called Third World Countries in the sphere of world capitalist system by fully neglecting the historical and social process of each country, many development students are confused, and become themselves obstacles to a genuine economic development. Many development economic books see every society as an arena of economic activity; and human beings have one purpose in this world; namely to produce and consume. Especially, the detachment of economic teaching from technology, and the emphasis of allocation theory in dealing with the scarce resources, has blinded many young development economic students not to focus on the fundamental nature of transforming a given society with the help of ever more sophisticated technology. Development economics as a by-product of falsely and purposefully organized micro -and macro economic theory, diverts the attention of many students not to see things from the perspective of the entire social, economic, cultural, psychological, and other human activities as an organic whole, and to use the given resources according to their own needs by developing appropriate technologies. In this case, especially many students from Africa cannot serve as true nation builders. They are being instrumentalised by the West to destroy the resources of their respective countries. The capitalist West by using its manipulating power confuses the so-called African elite, and thereby creates ungovernable situations in many African countries. Likewise, to my knowledge, there have never been genuine debates among the Ethiopian intellectuals over the importance of science and technology to develop Ethiopia as a genuine nation-state. Hence forth, this writer takes the courageous path to show that without a science driven technological development, no economic and social development is possible. He tries also to show that the one sided debate about economic development, even by critical economists, which insist the importance of a kind of technological development as is seen in

the capitalist west by neglecting the general cultural and social transformation, must be critically studied. The introduction of technology without attaching it with the necessary educational reforms does not bring the desired results. The problem of these critical minded economists that they could not take into account the important elements, like true education, which frees the minds of the African people from the so-called traditional values, cultural transformations supported by multiple instruments which ultimately bring social coherency among their respected countries, and wide range institutional reforms which support the above elements. Especially, the march of a business oriented economic policy in many African countries, has perverted the minds of millions of people not to see things far away from their daily lives, and earning small amounts of money to support daily family lives, without seeing genuine transformations in their lives and cultural activities. This writer also tries, why such a mere business oriented economic policy, on one hand, polarises the society, by canalizing resources towards certain areas which create wealth for the few, and on the other hand, reproduces poverty on higher scale, which makes the situation more complex and cannot be resolved easily.

Human being as a tool making animal

What human being separates from animal is that he can rationally think, and transforms his environment and his life from time to time. This has been the case since immemorial. In all societies, irrespective of the cultural differences, all human beings have developed a variety of instruments to cope with nature, and transform raw materials as use values. Every society has passed from stone to metallurgical stage, though there have been some differences from place to place, to sustain, expand, and settle in one area to develop further. The well known Greek myth that Prometheus had shown human being how to use fire, and with the aid of fire developed technology, proves that human being cannot live like animals by simply taking and consume what nature delivers him. For his kindness, and for he had shown the secret of technology to human being, Prometheus must be punished by the jealous Zeus. This shows that if human being wants to exist, develop and form a society, he must think further, and develop new instruments of labour to change the existing resources, and thereby transform the entire society as interconnected organism. Only with the help of ever improved instruments, he can assert himself over nature, and other competing animals, which could devastate him unless he does not think and develop new instruments. Even in the olden days of technological development, the development of technologies were not seen only as the necessary criteria to improve agriculture and produce other use values, but also to protect oneself from wild animals, which eventually endanger a given society. As societies develop, expand and interact with other communities, the development and improvement of new technologies become the necessary precondition to produce more and accumulate wealth. The production of fire arms and their improvements, and the subjugation of other communities to control them and their resources, proves that human being is in a permanent struggle with himself, and against potential enemies.

Though all societies have undergone at the beginning more or less the same technological path, expect few, some have managed to develop more and more sophisticated instruments of labour, produce more, and expand trade and develop cities which could widen their scope of thought. As cities and handicraft activities developed, and concentrated in certain areas, the cleavage between rural areas and cities became clearer, and the division of labour is more differentiated, and the exchange of goods and raw materials among the different sectors became by itself the precondition of further technological development. The exchange activities among different communities had stimulated technological diffusion, and thereby strengthened the social relationship within a given community. As time goes, the

development of new technologies, and the transformation of the existing resources could not develop in all societies with the same degree. In societies where the concentration of power in the hands of highly and powerfully organized minorities were more visible, where the social stratification, had better developed, and where the interaction with other communities became more advantageous, the development of the division of labour, and hence the progress of technology were more apparent than in other societies. Such well structured social stratification and the division of labour were more favourable in fostering technological development. State systems either in their rudimentary or developed forms become the main deriving forces of technological development, and wealth accumulation. Only so, existing power relationships could be strengthened, and the exploitation of human labour and natural resources were possible. Even at the early stages of social developments, without the intervention of the state, no technological and economic development was possible. From the very beginning, and through trial and error, it was clearly understood that the improvement of productivity, and hence economic development was only possible when some kinds of technological change could be introduced. In this case, highly organized bureaucratic states had actively organized and supported the innovation of new technologies.

The bureaucratic state structure of China as theoretically analysed by Karl Wittfogel, which was responsible for the great Chinese civilization during the Ming Dynasty and before, proves that the intervention of the state was crucial indeed in supporting technological development, in organizing human labour, and creating efficient social organization. The water management system, as was mentioned and analysed by Wittfogel, as a hydraulic society, the efficient use of water for irrigation purposes to raise agricultural productivity, and the production of ceramic products by applying sophisticated technologies, which had no parallel in other civilizations until the end of the 15th century, proves that technological progress was only possible when societies were better organized, and centralized at their early stages. This had been the case in Mesopotamian and Egyptian civilizations, to a certain extent during the Greek Civilization. As ***Professor Barry Gordon***, shows us in his brilliantly written book, ***Economic* Analysis *before Adam Smith*** that technological development and expanded economic activity as were organized in the Greek city states, were the product of rational thinking and interconnected activity. When individuals are organized under certain forms of organization, and feel that they are part of a given community, their power of thinking will grow, and could innovate better. This proves that such kinds of technological development and social organizations refute the notions of Liberalism and Neo-Liberalism, that the so-called invisible hand is the motor of technological development. On the other hand, these kinds of social organizations, as were analysed by Wittfogel, and Max Weber, though they were inevitable at the early stages of human development, they had their limitations in fostering technological development. As more and more resources were canalised to the highly organized bureaucratic state apparatus, and more and more resources were used to wage wars, the capacity of that society to innovate new technologies, and hence the organization of the society on more efficient way of division of labour, will be hampered. As individuals were more and more subsumed under bureaucratic organizations, they could not free their minds, and develop new technologies. It is therefore inevitable that such systems could be easily surpassed by other more loosely, but purposely organized social systems. This is the case in China, where until the 15th century the technological development is more advanced than in many European countries. The Chinese had monopoly in producing fire arms, ceramic products, and papers, where as European lagged in these and other agricultural activities.

As a matter of fact, the early forms of technological development were not supported by science and research. Its development was supported by mere necessity and

institution than planned activities. The absence of any formal education and due to the rudimentary nature of competition, technological development had its own limitation. Especially, the non-existence of science, or its rudimentary development, has hampered any further technological development. The dominance of Christian theology and the non differentiation of knowledge had practically blocked the development of science and technology. Only after Dark Age, and after the introduction of the Greek civilization into the European societies, European could get access to real knowledge, which helped them to shape their minds, and invent new technologies.

The Genius of the Greek Civilization

There is a certain belief and acceptance in certain circles that Europeans are endowed by nature to develop technologies and transform their lives. Some still believe that the European gene is unique, and therefore more suitable than other societies in innovating more and sophisticated technologies. Many forget that, especially after the formations of nations-states in Europe, Europeans had consistently undermined the efforts of other societies to develop by themselves. After they had enslaved Africa in the fifteenth century, and after they had colonized many African countries during the 19th century, the Europeans had relentlessly destroyed the already existing social division of labour in many African countries, and the trade activities which began slowly transforming the existing societies. One should no wonder, when over 90 Million Africans were driven like cattle and sent abroad for plantation work, the entire social organization will disappear. Since then, Europeans become not simple to wage a sophisticated war in all fronts against Africa and to destroy the basis of human creative activity. Though there had been humanist movements to setup a different system of social organization in Europe based on the respect of all human beings as the children of God, the new elite which emerged after the 16th century, and especially after the industrial revolution, had tried every thing to undermine the sovereignty of other nations. Especially, Africa become the scrambling ground of European aggression, and seen from that time on as sources of cheap labour and mineral resources for the appetite of West European industrial revolution. This intrigue and manipulation has never been changed until today. Europe begin corrupting many societies by introducing the so-called international division of labour, and by pushing them more and more to produce primary products which could be processed in European cities. What factors helped many European countries to take the path of technological development as we see them today? Though there are minor differences among many European scholars in interpreting their societies, there is a general agreement that without the introduction of the Greek mode of thought, and without the rationalization of the political system, and hence without rationalizing their minds, such kind of technological development is not possible. The concept of rationalization here has its own limitation, since the political system is organized on the principles of positive law. That means the one that has the political power decides over the fate of the entire society.

As we have seen above, more or less all societies had made some kinds of technological progress at their early stages. The various cereal products in Ethiopia and Egypt before the upsurge of European civilization were not possible without changing the technique of production systems. An other example is the distillation of Kati Kala(Araki) which is common in many societies during the middle ages. In Ethiopia too, independent of the technological development in other West European countries, our mothers and sisters had managed to develop through intuition the distillation of Kati Kala, which is a chemical and a physical process at the same time. Though the introduction of such a process of distillation of Kati Kala has been common over many centuries, the technology remained the same. Likewise, independent of the technological development in other countries, it was common to

make cloths by applying traditional techniques, which were made out of woods. That means weaving and looming was a part of technological development, which unfortunately could not be the basis of industrial revolution like in Europe, especially in England. This proves that, most societies had at the early stages of their developments more or less the same technological paths, without coming into direct trade contacts. As these early civilizations were cut from the influences of the Greek civilization, as the Greek mode of thought took the unique directions, probably because of the geographical vicinity of many European societies to Greek, many West European societies had access easily to the Greek philosophy. Until the end of the Dark Age, especially until the introduction of the feudal system into the English society, almost many European societies were backward, and could not develop technologies. The plough system was introduced in some West European countries, around the 5th century A.D by the Slaves, and helped them to change their farm activity and raise productivity. As is observed by ***Carlo M. Cipolla***, from the sixth century on wards, there was diffusion of water mill in many West European countries, from the seventh century on wards, there is diffusion of heavy plough, especially in northern Europe, there is diffusion of the three-field system from the eight century on wards, and so on. This proves that, until the 15th century many European countries were backward in technological developments; there lives could be compared with the lives of many African who live in rural areas. Thanks to the Roman Empire, many Western European societies had the unique opportunity of organizing cities, made possible for the rise of handicraft activities, and introduce new farm techniques. Without the expansion of the Roman Empire, without the authority of the Catholic Church, and without the constant struggle between the worldly and godly life as represented by the aristocrats and by the Catholic Christians respectively, and without the introduction of new techniques from other societies, there could have never been city buildings, and organizing handicraft activities. When the Greek philosophy emerges as the champion of human civilization, as more and more Christians opened their eyes to the Greek philosophy, the great men of the Church had tried to reconcile between the Christian theology and the Greek philosophy. The engagement of many priests in investigating the Greek philosophy enabled them to change their attitudes, and introduce by themselves new technologies. Many major investigations until the 15th century were made by church men or related to Christian religion. The great St. Aquinas, and St. Augustine, were philosophers, law makers, and men of theology at the same time. They did not only believe in godly life, but also believed that human being could transform nature if he finds the true source of knowledge. They believed that only when human being reconciles himself with God, and when he is governed by cosmic laws, he could build orderly world, which is harmonious and aesthetical. The great Christian leader Cusanus, was also the originator of integral mathematics, and proved the impossibility of changing a square into a circle. This is a metaphor of proving that God is existing and mysterious at the same time, which cannot be seen by human being. After the Copernican revolution, especially after renaissance we observe real social transformation in the European society. The dominance of the Catholic religion which was the supreme ideology during the Dark Age must be shattered by this new wave of thinking. The new ideas which were spread by the great philosophers and churchmen seized ultimately the minds of other people who were actively participated in trades and handicraft activities. The rationalization of social organizations, the clear division of labour, and the role of the new emerging and economically active class which began cultivating its own image, and the putting-out system which was organized by the merchant class, altered the production and consumption habit of the European society. The merchant class had controlled handicraft activities, delivered raw materials to the craftsman, ordered him to produce according to the needs of the market. The merchant class was organizer, raw material deliverer, and seller at the same time. This kind of putting-out system, and the role of the merchant class had undoubtedly great impacts in improving technologies during the late Middle Age. This could be possible, as Cipallo had

brilliantly observed, **"a creative response to history**", which is only possible when a society sets free its mind, and is driven by constant needs to transform itself and his environment. When technology is understood as the basis of this historical response to existing social and natural problems, the society in question had no option other than to concentrate its entire effort to find new means to get out of the technological impasse. Thanks to the Greek mode of thought, and its introduction into many European societies, enabled them to change their way of lives, and develop new technologies which could transform the entire society. Especially, the separation and differentiation of knowledge from philosophy, and the developments of many branches of sciences, helped some to articulate on certain things and solve problems. From this time on, scientific investigation becomes the source of technological development, finding new means of existence, and exploring new resources to feed the ever growing population. More than other societies, Western Europeans had understood the advantage of technologies, and the introduction of new technologies to produce not only more, but also qualitatively better products from time to time. The development of technology has undoubtedly opened the way for more resource use, and new resources come to the scene, which could be transformed as use values. The problem of technologies, the European mode of thought as rationales and capable of creating new technologies, and the development of IQ must bee seen from this vantage point of view. Societies which are stacked to their old ways of lives, and which could not dare to question themselves and the purpose of life in this world, will be condemned to live permanently in poverty and hunger. This is the case, especially in Ethiopia, where living in old dreams, and repeating the same old stories, becomes the norm of the society.

The Development of Capitalism

Capitalism is a unique form of social organization; and it is widely believed that since the 16th century most middle European countries have taken more or less the same path of social organization. Prior to the emergence of capitalism, in many European societies, the movement of the majority of the people was restricted by feudal norms and production systems. The strict nature of feudal system and mass exploitation had probably shaken the system. There were peasant revolts everywhere against the massive exploitation system, which did not have any parallel in other societies. The peasants had quasi the status of slaves. Their movements and marriages were heavily restricted. On the other hand, the Vassal-Lord system in many European societies were loosely organized, which gave opportunities to the various Vassals to organize their respective social systems. This enabled some feudal lords to organize the people they control, and build well structured cities, in the middle of them Churches and market places. Such kinds of city buildings could attract the majority of the people, and gave them some kinds of orientations, and felt that they belonged to the community. The favourable political system in certain countries, especially in England, and the introduction of trade activities in rural areas, had loosened the feudal peasant relationship. The introduction of new farming system, and specialization in wool industry, had enormously helped England to pave the way for the first industrial revolution. Starting the 16th century on wards, England had understood more than other countries to use the knowledge of other countries. She had opened her door for foreigners, and at the same time sent spies to Italy and elsewhere to copy some relevant technologies. From Italy and Antwerp came many well minded people and resided in England to expand their knowledge. Most of them had escaped religious massacres, they were in need of safe places, where they could live and practice their skills. Government institutions had facilitated what ever they had at their disposal to take advantage of the knowledge of these people, who came from France and else where. Government institutions in England were more liberal than in other European countries.

Especially, after the emergence of liberal ideas in the 17th century, the situation was more favourable for open discussion, though empiricism could gain grounds in the English intellectual circle. The new social structure and liberal idea began challenging the old mode of thought and way of lives.

Though the emergence of capitalistic class structures and production systems had shattered old attitudes, and the old social structure, the new social fabric was not that much promising as one could imagine. The enclosure movement in rural England, and the introduction of wool industry, and the specialization of many land lords in rearing sheep to produce more wool for the rising English industry, was not without consequence. Peasants must abandon their farm lands, and were compelled to flock to the cities in order to find new livelihood. The emergence of this new reserve army in the city was a blessing in disguise to the new capitalist class. With this new class of reserve army, a new system of social reproduction and wealth accumulation became possible. Capitalist competition and the reorganization of labour to exploit more had helped England to take the lead in the technological development. The division of labour within a given industry, as observed and studied by Adam Smith, becomes the norm in producing more to create "national wealth." The subsuming of labour force under this system of capitalist accumulation, become the main engine of capitalist growth and technological development. Only under such a system of intensive competition, the production of surplus value and investments in new technology is possible. In order to intensify the exploitation and produce more, child labour becomes a phenomenon in many European countries. As the early stages of capitalist development, and as a result of the limited technological development, it was necessary to exploit more child labour, and to compel women to work during the night time. It is not the case as school economic books make us believe that the industrial organization of the European society had taken smooth path, without mass exploitation and suppressing the resistances of the workers who fought for the improvement of work conditions and better payments. In all Western European countries, the massive application of work force, and compelling to build houses, canals and railroad systems were the order of the system. As is propagated, capitalism was not developed on the principles of the free will of the mass of the population. Only through mass organization, and systematic allocation of the workforce, it was possible to develop a production system with the sole purpose of profit maximization. As the system of production activity was more organized for the sole purpose of selling and profit maximization, it was also necessary to introduce new management techniques, how to exploit the existing work force in order to produce more. This was the norm in many major industrialized societies until the end of the 19th century.

All capitalist countries did not have the same initials. Some were awkward in many areas, and hence the pressure from England was enormous to sustain her lead and prevent other nations to follow the same path as her own. Countries like France and Germany, must take a more protracted road to introduce a manufacture based industrial activity. Highly educated men from Germany had fought vehemently against the sabotage of England to maintain her supremacy in all major areas. Friedrich List and others, who were known as Historical School, had resisted the ideology of Adam Smith and Ricardo, who had propagated the advantage of international division of labour, and the so-called comparative cost advantage. Though both Adam Smith and Ricardo believed in the necessity of technological development in creating true national wealth, they were propagating internationally the advantage of engaging in international trade by focusing more on the so-called resource endowment theory. That means it is advantageous for each nation to specialize on those products, which it posses, and could save costs. Adam Smith and Ricardo firmly believed that through such kind of international division of labour, each participating nation will get the

maximum welfare benefit for her citizen. To Friedrich List and others, this philosophy is more deceiving, and has the sole purpose of maintaining the supremacy of England. Other European nations must remain as suppliers of raw materials, while England supplies the European and the world market with her industrially produced items. Friedrich List was convinced that focusing on the production of raw materials will hold a given nation down; and ***she cannot use her natural and human resources to develop as a nation-state***. If any nation is compelled to produce raw materials and export them, the creative capacity of her people will be suppressed, and she will be the victim of foreign aggression. Just like today, as many European countries, which are the member of the EU, and America propagate the free trade theory in order to control the world market, England was using every divisive instruments to organize her vassals in many European countries. In this case, Friedrich List and other national economists who had encyclopaedic knowledge must fight against the organized forces within their own society. Certain German economists were favouring the free trade theory as was propagated by Adam Smith and David Ricardo. Thanks to the intellectual insight and strength of these patriotic forces, Germany and other late comers, like Austria, had taken the golden road of economic development. The revolution in the manufacture field had taken a full swing, which enabled Germany to create, slowly, but surly a wide home market.

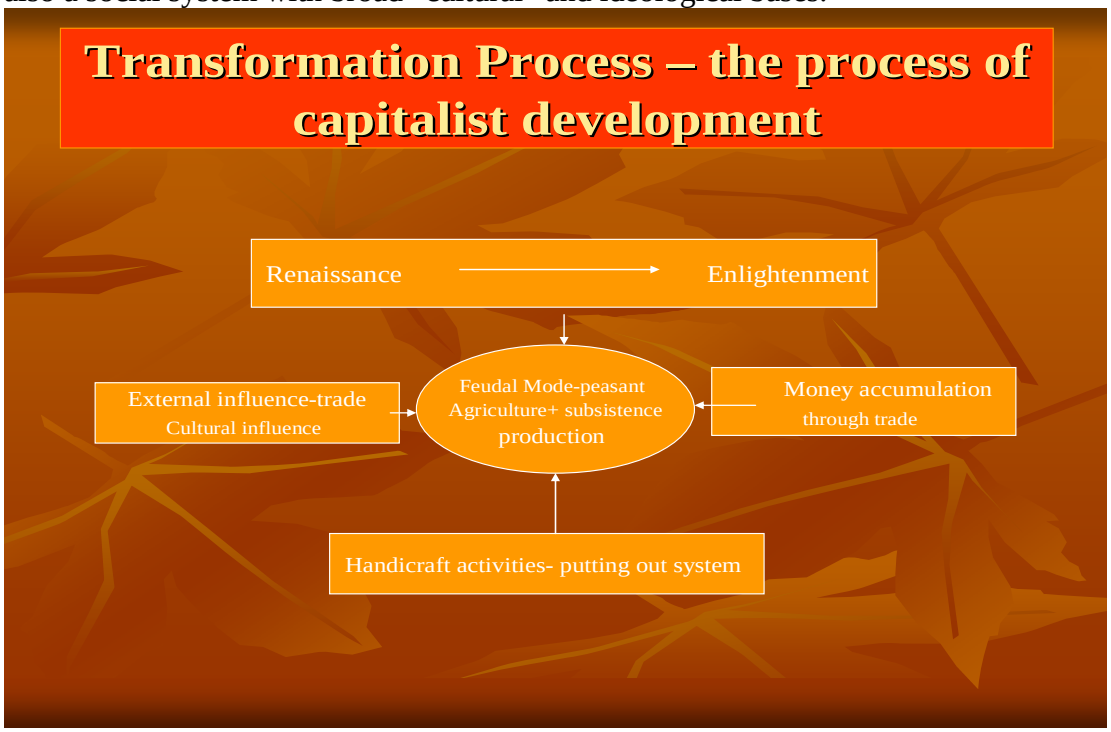
According to the belief of Friedrich List and his school of thought, a nation which is capable of introducing and systematically supporting a manufacture revolution takes the path of genuine economic development. Only through manufacture, a given nation can expand division of labour and create a well organized home market. As agriculture depends on technology, only through technological development and permanent innovation, it is possible that a given nation can assert itself nationally and internationally. Only through the application of technology, a given nation produces a variety of products, build canals and railroad systems, which are the precondition of a home market. Countries which are specialized on the extraction of raw materials, though they are rich in mineral resources, they remain poor. That is why many African and Latin American countries remain poor, though they are endowed with abundant mineral resources. Though many European countries do not possess mineral resources, by investing in human capital and exploiting the weak position of many Third World countries, they could control the world market, and through that they could manipulate the political elite in many African countries..

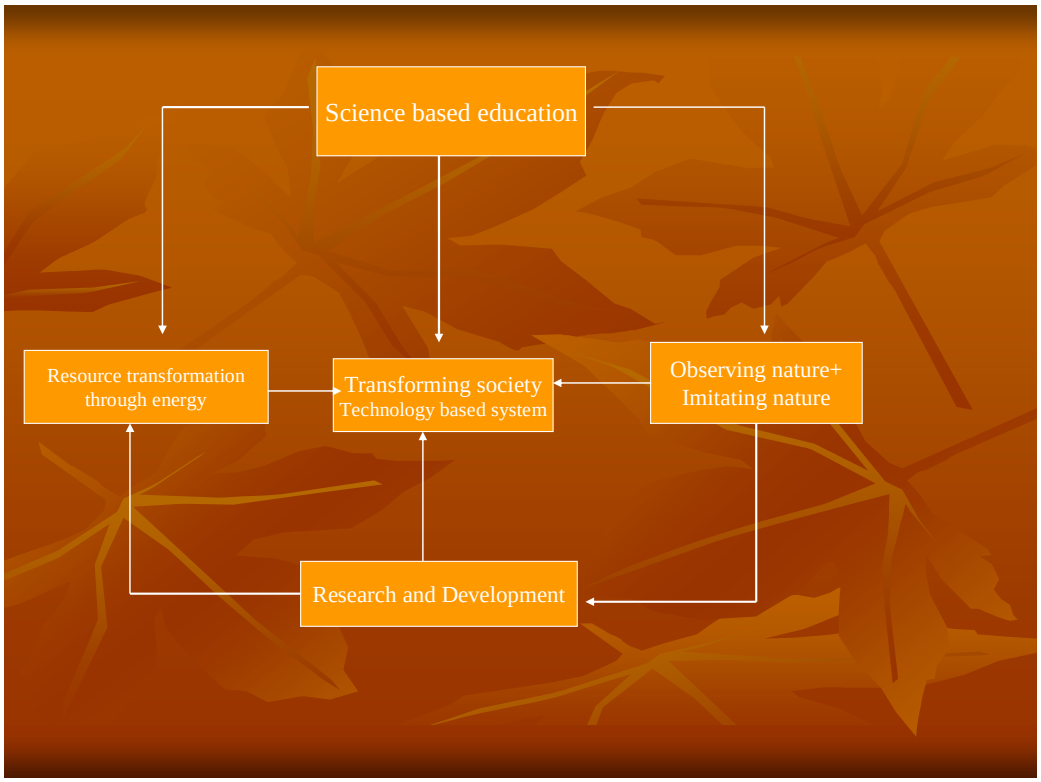
When we come to the mercantilist school of thought as is propagated by early mercantilists and later on Friedrich List, the state must take an active role in bringing a manufacture based revolution. Only through the active participation of national state, and supporting the active forces, backward countries, like Germany could easily introduce industrial revolution. By strictly following the advice of these highly cultivated economists, by developing an inward-looking strategy, Germans and other late comers could easily surpass that of England. In order to protect the infant industries, it was necessary to introduce a variety of tariff systems. The persuasion of an active balance of payment policy, in order to accumulate more Gold and Silver, the mercantilist economists believed that they could create true national wealth. The rise of nation-states opened the way for more competition among Western European countries. As different states had understood the advantage of technology, and industrially based production activity, they developed a variety of instruments how they maintain and expand the system from within, and how they protect it from foreign domination. Those countries which do not understand this strategy, and which believe with the false ideology of free trade, and the so-called international division of labour, must swallow the bitter medicine of their ignorance.

In the United States America too, there were heated debates between those free traders and patriotic forces at the end of the 18th century, and the beginning of the 19th

century. Among the most prominent one was Carry, who vehemently fought against the free trade doctrine, and propagated the path of a manufacture revolution as a genuine road to build a coherent nation-state. Benjamin Franklin, Abraham Lincoln, Hamilton and other patriotic leaders who fought against England, saw the true path of human development by introducing technology, and by making a manufactured based industrial revolution. Hamilton and others had developed a unique kind of credit system to mobilize the internal resources in order to finance industrialization, and transportation systems, like rail roads. Without massive state intervention, it could have not been possible to bring such an impressive technological development, and build a strong nation. This kind of development needs deep articulation, dedication and wide knowledge. Only the understanding of ones own role as a history maker, and relying on its own people, and the deep understanding of international politics, could enable to build a proud nation. Those countries which could not strategically think, and do not understand the purpose of a societal development as an organic hole, lead their countries into chaos. That is why we see in many African countries chaotic situations. Because, the leaders do not think strategically, and believe that the resources of their respective countries belong to them, and since they do not believe in true human liberty, they are leading their countries to an unknown destiny.

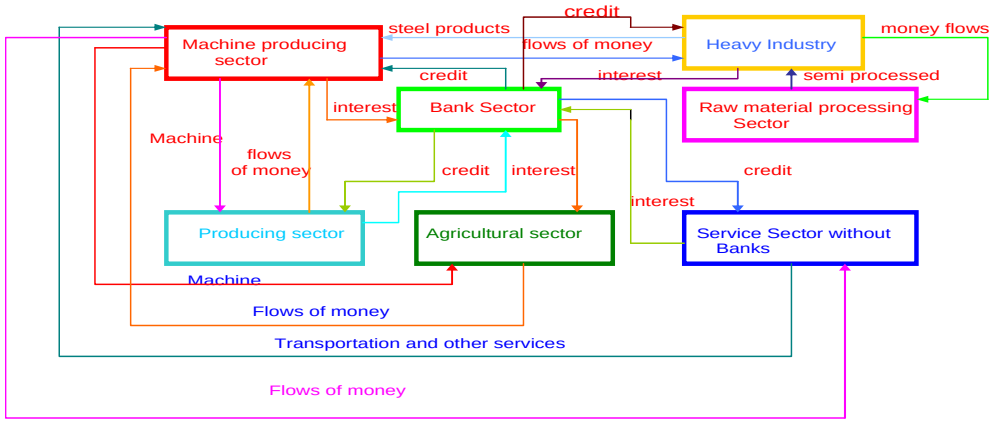
In all major industrialized countries, it is a common belief that the true source of technological progress is the introduction of a proper education system which opens the minds of millions of people. As many European countries lack resources, they believed that they could develop their society and control the world resources, when they are guided by an education system which enables them to think deeply and create new technologies. The education system is not only understood as sources of innovation, and creating new technologies; it is widely believed that only through proper education it is possible to create national identity and true patriotism. In this case the capitalist economic system is not only based on production activities to satisfy the needs of the society with consumption goods, but also a social system with broad “cultural” and ideological bases.




Science based education
Resource transformation through energy
Transforming society
Technology based system
Observing nature+ Imitating nature
Research and Development

Money and capitalist accumulation

A model of capitalist accumulation



This is a very simplified accumulation model of capitalism. The state is excluded here.
In all capitalist economies the state demands and supplies about 45% of the GDP.
In general the system works on the following conditions
-product strategy
-market strategy
-location strategy
-cost efficient strategy
-labor market strategy
-internal qualification strategy
Investment Strategy
-new investment
-maintenance investment
-widening investment
-rationalization or capital deepening investment

In general in the capitalist economy every sector is a market for the other sector. The system is chained and works like blood circulation. The above conditions are totally absent in a dependent economic model which is prevailing in Ethiopia.

The Physical Economic Principle

As a matter of fact, and in all societies it is common to produce a given product by applying three interrelated factors, namely ***power, work or labour power, and technology*** *to* ***transform a given raw material from one state to the other***. Without applying fire, one cannot convert iron ore to steel. Likewise, all raw materials can be converted only when fire is at play. Fire is the source of power which enables all human beings, irrespective of the differences in cultures to convert matter from one state to the other. This is the main precondition of physical economic principles.

Expect human labour, fire and some forms of technology are products of human imagination, without which no human civilization is possible. All human beings use wood as the source of power either at home or in industrial application. In Europe, as some economic history books prove that after the destruction of tress in many European countries during the Middle Ages, especially in England, were compelled to find other source of power. The use of pit-call came out of mere necessity and by chance, and it was not as such a pre determined invention in order to replace charcoal. The application of pit-coal which has relatively concentrated power, if one compare to that of charcoal, could easily transform a given matter to another state. That means, due to the nature of pit-coal, which is a product of millions of

years, one could gain more power by applying less pit-coal, while this is not the case when one applies charcoal. Undoubtedly, the use of pit-coal in Europe is a major step forward in the industrialization of England, and the rest of Europe.

Scientists of the 16th and 17th century had well understood the combination of these three factors as the main pillar of production activity. Any production process can be set into motion when these three factors come into play. Henceforth, it was necessary to research more, on one hand, to ease the application of human labour by introducing better technology, on the other hand to raise productivity by applying sophisticated technologies, and by using qualitatively better source of power. In this case too, the cognitive power of the human mind is the driving force behind any kind of technological change. Leibniz, the 17th century scientist was not only interested to see the development of a given society from theoretical and spiritual perspective, he was also engaged in practical exercises in order to improve a given technology, and ease the application of labour power. In this case, his experiments in developing and improving some kinds of techniques to bring up water from wells by applying certain and simple techniques, which were first neglected by ordinary people, was a major development in easing the human labour. Likewise, the combustion of iron ore by developing a furnace had also helped to use effectively pit-coal, and raise productivity. Leibniz and others followed strictly the philosophical basis of Plato, which they had understood as the major driving force in developing technologies in order to transform a given matter from one state to the other. In this case, without improving the cognitive power of the individual by introducing a suitable philosophy, there is no human and technological development. Only true philosophy which sharpens the mind of an individual, and give him certain kind of confidence that he is the master of his own destiny; no social and economic development is possible. Therefore, any major change in a given society must be supported by proper education, which must be introduced from early stage of child hood development.

From the 17th century on wards, when science becomes a separate field, the productions of technologies become the most important driving force in transforming the entire society. Hence, the machine-tool principle which is the foundation of technological development in transforming a given society is well understood from that on wards. With the help of machine-tool principle, one can produce a variety of technologies, which could be applied for various purposes. Without having a machine-tool industry, one cannot produce other machines, which can be setup as industries and could be used in the production of either consumer goods, or durable goods, like cars, or say rail road systems. Likewise, the production of agricultural machines, like tractors and other simple production factors, which can simplify the work process and raise productivity, is not possible, when a given nation does not have the necessary machine-tool industry. The creative capacity of the people of a given nation could develop when that given country has a machine-tool industry. The social wealth of a given country, and hence, genuine capital accumulation could develop, when there is real linkages among the various sectors of the economy. In the absence of machine-tool industry, it is practically impossible to bring a given nation to full swing and develop it as a viable nation-state.

The physical economic principle must not be understood as a simple economic principle to change matter from its raw state to the higher form, but also as a principle of organizing the whole social, cultural, economic and technological foundation of a given society. As Friedrich List, in his well celebrated, but systematically suppressed book teaches, the multiplier effect of a machine-tool economy is by far greater than that based on agriculture. A country can build canalisation and sanitation systems, when the machine-tool sector is well organized, and is improved from time to time. One can build bulldozers, when a

given country has the capacity of producing machines and design them. The entire hydraulic system which could be used to elevate things, and to drill oil, could be produced, when a country has improved technologies based on the machine-tool principles. It is therefore a strategic mistake to neglect this very crucial sector and to concentrate on such economic parameters which ultimately deepens dependency, and the social and economic crisis of a given nation. As Friedrich List had well demonstrated, any nation cannot be called free when she cannot rely on a machine-tool sector. ***From this perspective, the economic development of a given country must be measured in physical terms, and not in monetary terms. That means the quantitative and qualitative availability of goods, consumption, or durable, which are measured per head or per household, are the criteria of the physical economic principle. In other words, the number of schools, or hospitals, the number of doctors, or say the yearly household consumption of electricity, and water, the rail road and other transportation systems, are the basis of economic measurement of physical economic principle. If a given country cannot fulfil the above criteria, and the majority of the population is dependent on foreign aid, such a state and system must be called a failed state or system.***

As is demonstrated above, the physical economic principle as first developed by Leibniz, and later on expanded by the German Historical Schools, is derived from the cosmic order as developed by the Greek philosophers, especially, by Socrates and Plato. Both philosophers and the philosophers of Renaissance rightly believed that any society must be organized according to cosmic order of the universe. Since human being is created according to the image of God, his worldly life must be compatible with that of the cosmic order. Societies which could not follow this principle, they can be deceived by forces whose motive is profit- and utility maximization. It is therefore crucial to formulate any economic principle from this vantage point of view.

Though the above principle is well known, our leaders forget time again the importance of such kind of industrial infrastructure, and apply the same kind of wrong industrial policy which undermines the development effort of our society. In stead of concentrating on this simple and vital technology to introduce an over whole industrialization, they make again and again the same mistake, and listen to foreign advisors, which draw them to other mistakes which complicate the social fabric of our society. Because of negligence of this principle and because of relying on foreign advices and resources, the existing and easily available resources of our country could not be utilized. The wrong industrialization policy of the last 60 years has thrown our country more and more to abject poverty; and our country becomes more vulnerable than ever before for the intervention of foreign forces. Our leaders and the elite in general cannot decide any more over the fate of our society. By following a neo-liberal ideology, whose foundation is monetarism, they completely forget the principle of physical economy which is again based on human cognitive power. By that they cannot promote the interests of our people and our country.

In order to apply the principle of physical economy as a guide line of meaningful economic development, at least the following four parameters must be put into practice step by step. The first parameter is the political setup of a given country and the foundation of the state apparatus. Only when a political elite, which is cultivated according to the above principles, and which has patriotic feeling, seizes power, the strict application of the system is possible. The second and very important principle is the formulation of a broad and scientific based education system, which can raise the cognitive power of the youth. The third parameter is, to create a social atmosphere, which comprises all parts of the society. The entire society should feel that the country belongs to every individual, and every individual

must be organised in all activities to develop national feeling. Through the participation of the mass of the population and its active role in nation-building, the path of economic development is shortened. The political system must therefore avoid any discriminatory practices which is the sources of grievances and social unrest. The fourth parameter is to raise the cultural situation of the society by introducing all sorts of instruments which are vital for mental practices. In this case, the development of proper literature, music and theatre play crucial role in raising the cultural foundation of the society. If these four parameters are well understood, and if they are improved from time to time, the entire society works as an organic whole, and performs history which can be the basis of the coming generation. I think, without these parameters, any nation cannot develop as a fully matured nation-state, and cannot prevent itself from outside forces, whose motive is creating permanent chaos, in such less developed country, like Ethiopia.

Development Economics Re-examined

Development economics is derived from micro -and macro economic parameters; and hence it is based on empiricist view point. It does not pose questions, why things happen like this, and what are the causes of such and such kinds of things, but it starts from a false paradigm to analyse a given socio-economic order. When questions are posed, they do not reflect the reality of a given situation; and the policy makers are ideologically motivated than solving the social and economic crisis of the concerned country. According to micro-and macro economic theory, economic parameters, like property right, political and social systems are taken as given. The main tenet of neo-classical economic theory is scarcity of resources, and how to allocate the scarce resources on the various sectors, though many sectors in an economic structure like Ethiopia, are not developed, and do not function according to the market principles like in the capitalist economy. It is simply assumed that all nations have the same macro-economic variables; hence the only solution to tackle the problem is to apply all the necessary variables, like that of a capitalist economy.

Development economics as is formulated in the early 50s raises the problem of duality in many Third World countries. It is assumed that many developing economics are characterized by dualistic structures; the one is modern, and the other one is traditional. When the modern sector is dictated by rational elements, which are trained in the west, when governments invest in the so-called modern sector more and more, growth will trickle-down to the traditional sector. As a matter of fact, the traditional sector will slowly, but surely disappear. Thanks to the modernization of the economy, all participants behave rationally, and maximize their welfare in accordance of their contribution. In this way, due to false reading of the socio-economic formations of the Third World economies, the experts formulate policies which are completely alien to these societies, and as a matter of fact, such policies will aggravate the crises rather than solving them. When one studies the situation from a different theoretical perspective, due to such kind of policy, the so-called modern sector creates imbalances in the economy; instead of a pure market economy based on competition, and instead of science and technology, socio-economic formations whose reproduction power is very weak, emerge here and there. Resources will be absorbed, especially from the rural areas, and will be allocated in few cities. This has been the case during the 50s and the 60s, when the so-called import-substitution industrialization becomes a model in many Third World countries. Due to such kind of misconceived economic policy, resource destruction becomes the rule of the system. Third World governments and their bureaucrats, instead of concentrating to organize the economy on the principles of machine-tools, by listening to the advices of the IMF, the World Bank, and other international experts, they create an

atmosphere of non-governance, resources depletion, human and natural, and at the same time the resource base of the governments will be narrowed. Because of the non-dynamic of the economy, and because of low incomes, and the spread of informal activities whose reproduction base is very narrow, they could not collect enough tax to finance social and economic projects.

When one reads, the so-called International Economic books, as is written by Professor Paul Krugmann, and others, one sees the fallacy of such kinds of economic theory. Professor Krugmann, by strictly following the theory of international division of labour, as is first formulated by Adam Smith, and later on refined by David Ricardo, advises Third World students to focus on the production of primary products, say flower, while he emphasises that developed countries should concentrate on advanced technologies, since they have comparative cost advantage in this area. Such kind of economic teaching and the total suppression of physical economic principles become by itself the main cause of underdevelopment. If one look again at the so-called factor endowment theory as is developed by Hecksher and Ohlin, and all other international trade theories, have noting to say about genuine economic development. The sophisticated nature of the teaching, and the graphic representations, as is sketched in the ***transformation curve***, diverts the attitudes of many students, and think and believe that it is formulated from a scientific point of view, through which one could solve the problem of Third World economies. In reality, it is a divisive instrument to divert the attitudes of Third World students not to focus on the issues, which need urgent solution. ***The common belief that through trade, social transformation is possible must be planted into the minds of innocent students***. The problem of science and technology must be left to the west, where as Third World economies could import technologies from the west when they can afford to buy. That means they should no rely on their minds, resources and hard works of their people. Only through the blessing of the west, they will have access to technology.

All economic policies, beginning the fifties, and the so-called basic needs approach strategy during of the 60s, the Green Revolution of the 70s, and later on the so-called structural adjustment program (SAP) of the 80s, are formulated from this simple ideology in order to make Third World counties appendages of the west, so that each country cannot build a strong home market. We should not wonder therefore when Professors still stick to this wrongly formulated development theory, and misguide millions of Third World students, who become the victim of such kind of a false theory which destroys the minds of millions of people.

When we see the agents of the so-called development aid, which are engaged in the name of their respective governments, either governmental or non-governmental, as we observe from our country alone, the entire society becomes the victim of this aggressive strategy. The so-called development experts, while they earn 10 000.00 $ per month, without including the extra allowances, they prostitute the political elite, and destroy the mentality of the youth, by cheating with divisive instruments to sell their bodies. This is a reality in the streets of Addis, and is one of the main causes of spreading AIDS within a decade. One must unmask these smart guys, who think and believe that they could hold down a nation like Ethiopia for the coming generation. It is the duty of all patriotic forces to study the intriguing nature of these evil minded so-called experts, what ever name they have, and what ever institution they represent. ***Their mission is not development, but to introduce perverse ideas, to create permanent chaos and social unrest, and to make a given nation helpless. The realities on the ground prove that, until now they have not contributed anything for the development of our country. Some behave arrogantly, and live like princes in that poor***

country. In short their mission is anti-development. That is their secret agenda. Even the so-called Christian relief organisations, should not deserve this name. They collect hundreds of millions of Euros or Dollars from the poor people of Europe and America; and over 90% of the money is recycled here in Europe and America. How on earth one could teach economic development, and is engaged in development activities, while one distances from the true Christian values, such as ***humanity and brotherhood among nations***. ***All these practices of the aid organisations should not be understood as if they are being practiced with the knowledge of their respective governments***. Most aid organisations are out of the controls of the respective governments. Hence, any future government in our country must either control them strictly, or must try to integrate them into the national and regional planning systems.

If one sees and studies the great city buildings in Europe, and else where, and the handicraft activities, which become later on the basis of industrialization, all these are the products of human imagination. Though trade contacts and exchange of ideas among nations have contributed to economic and social developments of the various countries involved, the driving force behind any genuine economic development, as I have analysed above, is the work of a given population in that given country. In this case, all kinds of investments and aid which come from abroad, cannot serve as development engine. The realities in many Latin American countries and Africa prove that, investments from abroad, and the so-called economic aid could not bring a harmonious social order, by which the creative power of the people strengthened, and innovation is possible.

Coming back to our country, Ethiopia has all the necessary criteria to develop as a nation-state on the basis of science and technology. There is a false understanding concerning such an economy, like that of Ethiopia. Many, either economists or none, raise the question of money or capital as the main obstacle of a meaningful economic development in our country, which is completely wrong to my knowledge. Since some have fixed ideas, and false understanding about a genuine economic development, their thinking rotates around money. When a country does not have money, when she does not get aid from abroad, how can she develop her economy? Their misunderstanding of social history, and lack of understanding of the human imagination, compels them not to see things beyond certain fixed ideas. They do not want to understand that money as we see today is the product of historical processes. If we go back to human history, and study what humanity has achieved over the last three thousand years, all societies have created something out of nothing. The great pyramids of Egypt, the Greek civilizations, and the gigantic cathedrals built by Bishops in Constantinople, now Istanbul, the great architectural works of the renaissance time, all are the products of human will and imagination. The great Obelisks in Axum, and the monumental church of Lallibela, prove that if human beings will, they create miracles. Out of nothing many countries could build Palaces, theatre places, cathedrals, cities, market places, developed handicraft activities and trade. They started somewhere, and from that on the thinking capacity of their minds opened. They began exploring and imitating nature. In this case the role of money is a fallacious argument, and a scapegoat to undermine real development efforts of our people. These guys must shut their mouths before they confuse ordinary and innocent people. Over the last 18 years, over 20 billions of dollars have been poured into our country, and yet our beloved mother land remains poor. As Rom and other cities are built out of pure imagination by strictly following cosmic laws, and all European cities developed out of nothing, and are created for the habitation of millions of people, we should compromise our selves with God, and raise en masse, and lets try to build gigantic cities, beautiful villages, well structured rural areas by mobilizing the millions people we have. Only so, we can make good service to history, and to the coming generation. ***He, who follows the diabolical road of neo-liberalism and monetarism, will inevitably destroy his country***.

Fekadu Bekele, Ph D

fekadubekele@gmx.de

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P.S: **Those who are interested to read Friedrich List, please contact me. I can send you the full version per e-mail**