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## **Ecological Imperialism: A 21<sup>st</sup> Century Circuits Approach**

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**Abstract:**

I define ecological imperialism under global capitalism rigorously by following a circuit of capital approach grounded in a dialectical scientific realist epistemology and ontology. I show that a theory of imperialism and ecological imperialism can be constructed by extending the classical circuits of capital to conceptualize a set of international circuits of capital. The dynamic theory thus constructed can analyze a diverse set of social, economic and political phenomena such as the global race for resources, new social and political movements and regional and global instabilities and conflicts. The extension of this theory of ecological imperialism to encompass world systems theory gives the ontological grounds for privileging concrete studies of situations in core-periphery-semi-periphery of the world system in a coherent and consistent manner.

**Key words:** ecological imperialism, world systems theory, circuits of capital, international circuits of capital, monopoly capital, categorial dialectics, resistance

## **Introduction:**

The term ecological imperialism is being used increasingly in many quarters and not only in the critical scholarly literature. In this paper, my intention is to help clarify certain aspects of ecological imperialism from a Marxian perspective. Building on earlier work on imperialism and ecology in the Marxian critical political economy tradition, I attempt to offer a somewhat novel perspective that can clarify some theoretical issues and lead to fruitful empirical work in the future.

In my earlier work [Khan(1985)], I proposed a circuits approach to analyzing the political economy of imperialism as the highest stage of capitalism. It turns out that the framework can be extended further to include some aspects of ecological imperialism. This should be a welcome extension with the looming threats of global warming and the disasters resulting from unmitigated capitalist accumulation. In this paper, I define ecological imperialism under global capitalism rigorously by following a circuit of capital approach grounded in a dialectical scientific realist epistemology and ontology.<sup>1</sup>

The present paper has two related theoretical goals. The first is to present a theory of imperialism and ecological imperialism in the World Capitalist System(WCS) by grounding both in a rigorous circuits of capital framework.<sup>2</sup> This approach relates specifically to the imperialist or the export of finance capital phase of monopoly capitalism in which the advanced capitalist countries(ACCs) export finance capital to the less advanced countries/regions in the WCS. Of course, export of capital is not the only characteristic of the advanced countries; but in their relation with the less advanced countries(LACs) of WCS, this plays a crucial role. Among other things, this relation allows us to characterize the specificities of resource transfer between ACCs and LACs. My theoretical move is to present the structural conditions of monopoly capital that lead to ecological imperialism under rigorously identifiable theoretical premises. Thus my explanation for ecological imperialism in the WCS in its current stage relies on the structural properties and relations of monopoly capitalism via the various circuits as they have developed

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<sup>1</sup> See Khan(2008a and b) for a rigorous discussion of the ontological and epistemological issues and causality in scientific realism and historically grounded dialectics.

<sup>2</sup>As mentioned before, Khan(1985) was an early attempt to look at imperialism as the highest stage of capitalism from a circuits perspective. There I used models of Foreign Aid and econometric results from estimating these models rigorously as confirmation of the circuits theory. More recently, Harvey(2005) has presented a theory of new imperialism with spatio-temporal fixes and accumulation by dispossession. When writing my 1985 paper for the New York ASSA conference, I was unaware of Harvey's excellent earlier work on the geography of capital accumulation and the "limits of capital" which was not yet developed into a theory of imperialism. Since the early 1990s I have been following Harvey's work and have learned much from his seminal contributions. The last one-third of Zinn(1995) is also a valuable look at the political aspects of empire from below.

until now and as they might develop with capital accumulation interrupted by periodic crises that are increasingly global in nature.

The second goal of this paper is to connect this ecologically relevant theoretical development of circuits approach under monopoly capital with the idea of Center-Periphery –Semi-periphery in the World Systems Theory in such a manner that makes possible the carrying out of relevant empirical case studies for confirming the theory. In keeping with the tenets of a critical scientific realist epistemology and ontology, the deep causal explanation must be connected to verification procedures for the existence of the theoretical entities I posit. The task here is methodological. Future work will demonstrate through concrete case studies of core countries, peripheral countries and semi-peripheral countries that the theory developed here can indeed be tested in a non-positivistic realist manner so that the ontological status of the theoretical entities and the theory itself can be confirmed, at least to a first approximation. In a companion work (Khan and Piovani, 2012) we demonstrate this possibility by carrying out a preliminary study of PRC as a *semi-peripheral* country in the WCS. The relationship between PRC and Africa is specially noteworthy and requires a deep structural explanation. We point to the way such an explanation may be constructed.<sup>3</sup>

I emphasize the preliminary nature of this investigation. Many theoretical and empirical tasks remain. I suggest some avenues for further research along these lines. One intriguing possibility is to build a critique of the ideological side of standard ecological and environmental economics by developing ideas of commodity fetishism and capital fetishism within the context of a Gramscian approach to hegemony and counter-hegemony in the World Capitalist System. Although I do not develop this particular aspect in this paper, the circuits approach, particularly the money and commodity circuits embody and carry over the critique of commodity (and capital) fetishism from Marx's brilliant preliminary investigations in Capital Vol. I. Here, as in Khan(1985), I focus specifically on the extension of Marx's ideas in Capital Vol. II to the imperialist stage of capitalism; but this implicit ideological critique is also there in an even more intensified form with the development of WCS in the age of so-called globalization.

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The World Capitalist System, following the insights of WST, can be divided into Center, Periphery and Semi-periphery. China started the 20<sup>th</sup> century as a peripheral country; but went through a socialist revolution and until the mid-1980s manifested the contradictions of socialism in a peripheral country (please see my discussion of the contradictions of Chinese Socialism using a qualitative value theory in Khan 2007). Since the mid-1990s it has moved towards a semi-peripheral status where both features of state capitalism and developmental state are manifested. In its behavior towards the center (G-7 countries) it still manifests some degree of unequal resource transfer towards these countries. With regards to the resource rich peripheral countries---particularly in Africa--- China has an unequal exchange of resources that is asymmetric in the other direction. The African countries transfer more resources and energy to China than China does to them.

## **Part I: Imperialism as World Capitalism---The classical approach and the failure to conceptualize ecological imperialism**

After a relative lull of more than 50 years since the publication of Lenin's popular pamphlet on imperialism, a renewed interest in its theoretical underpinnings emerged in the late sixties. However, the advent of neoliberalism, the fall of Soviet-style socialism and the rhetoric of globalization had overshadowed this early revival. Only after the invasion of Afghanistan and Iraq did the subject of Empire and Imperialism start a limited revival. Imperialism had of course always been a political catchword in the twentieth century not only among the left but also among the nationalists. Dependency theory dominated the field of discussion for nearly three decades since the mid-fifties until recently. In contrast to the Marxist dependency and other non-Marxist theories, the new development referred to in the opening sentence actually went back to Lenin's classic work and claimed to elaborate upon and extend it in various ways. The post 9/11 work by Harvey and others also follow this trend while the pre-9/11 literature---e.g., Hardt and Negri(2000)--- follow a somewhat Foucaultian approach and give "globalization" a postmodern twist. Patnaik(2009, 1997) has offered a new theory that builds on both Lenin and Luxemburg and emphasizes the role of periphery in supplying the core as well as the role of finance capital.

The discussion in this section as well as the present undertaking as a whole are in the classical spirit with the exception that my purpose is somewhat more specific. I make an attempt to clarify certain key theoretical concepts in order to reformulate some theoretical and empirical questions so that the relevance of Lenin's theory in particular for the 21<sup>st</sup> century ecological challenges can be examined rigorously. More specifically, this paper attempts to provide a theoretical sketch of how accumulation takes place on a global level and whether energy and other natural resources are transferred in an unequal manner between the North and the South globally. Previous economic approaches (profit maximization on a global level) have often obscured the complex interaction between the politics and economics of imperialism. It can not be overemphasized that a genuine development of an appropriate theory of imperialism and its testing scientifically both require a dialectical meshing of politics and economics in a categorical reasoning framework. It will be argued later that methodologically, this requires a dialectically interpretive case study approach that pinpoints this dialectical relation between economics and politics.

Related to the above point is the issue of development of capitalism in the colonies and neo-colonies. Here, too, stray comments of Marx and isolated passages in Lenin have led to a

simplistic version of the theory, a theory that was highly schematic in Marx and not entirely developed in Lenin. Some of the subsequent efforts by the dependency school to explain features of backwardness can be understood as a response to the perceived inadequacy of classical Marxist-Leninist approaches to this problem. Empirically, the emergence of both strongly growth-oriented economies and stagnant ones in the former colonies and semi-colonies is a puzzle that requires resolution. Here the issue of the development of the 'backward' nations in the international system is examined within the theoretical context of the law of value as it operates through the circuits of capital( and a fourth circuit of 'global finance capital').<sup>4</sup> Finally, the paper breaks some new ground in disentangling the resources component from the rest of the circuit of commodity capital. Along with the circuit of finance capital, the resource component of the circuit of commodity capital allows us to pose the question of surplus value extraction and realization in these resource sectors. The analysis of realization can also be connected to some of the insights of the unequal ecological exchange literature. The remainder of the first part of this paper provides a historical perspective in terms of the classical writings on capital and accumulation. This is intended to put the problem at hand in historical perspective as well as to set the background for the formal model of the crisis-prone circuits for value creation and realization globally that follows in the second part. The model is intended to capture the key moments in the self-movement of capital in the WCS. The elaboration of this model is both necessary and possible in order to concretize the specific features of ecological imperialism and carry out consistent and concrete case studies in the future.

### **Classical 'Marxist' Approaches to the Development of Capitalism in the Backward Nations through the Self-Expansion of Value.**

Marx never made a systematic theoretical and empirical analysis of the development of capitalism in the non-capitalist parts of the world in his time. One widely quoted remark found in the preface to the first edition of *Capital* has been seized by many scholars as Marx's definitive position:

*"... the country that is more developed industrially only shows, to the less developed, the image of its own future."*

Yet Marx was aware of the complexities of the actual development of capitalism in specific countries, for he avers in the same preface that the backward country "suffers not only

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<sup>4</sup> My approach thus corresponds closely with Samir Amin's(2010,1974) approach; but I depart from him in exploring the resource linkages and transfers in the "law of worldwide value" within all( but particularly the international) circuits of capital.

from the development of capitalist production but also from the incompleteness of that development." A uniform law of development of capitalism in each country would be particularly attractive to a positivistic social science. But was Marx a positivist? On the basis of a particularly clear statement by Marx (reproduced below) and other internal theoretical evidence in Marx's writing, Miller (1984) pronounces Marx to be a non-positivist. According to Miller, in the following passage Marx "emphasizes two features of his theory of history that would rule it out as unscientific if the positivist account is right."

*"In several parts of Capital I allude to the fate which overtook the plebians of ancient Rome. They were originally free peasants, each cultivating his own piece of land on his own account. In the course of Roman history they were expropriated. The same movement which divorced them from their means of production and subsistence involved the formation not only of big landed property but also a big money capital. And so one fine morning there were to be found on the one hand free men, stripped of everything except their labor power, and on the other, in order to exploit this labor, those who held all the acquired wealth in their possession. What happened? The Roman proletarians became not wage laborers but a mob of do-nothings; more abject than the former "poor whites" in the South of the United States, and alongside of them there developed a mode of production which was not capitalist but based on slavery. Thus events strikingly analogous but taking place in different historical surroundings led to totally different results. By studying each of these forms of evolution separately and then comparing them, one can easily find the clue to this phenomenon, but one will never get there by using as one's master key a general historical-philosophical theory, the supreme virtue of which consists in being super-historical"*

Furthermore in *Capital* Marx also argues that the development of capitalism or any economic structure for that matter may show "infinite variations and gradations in appearance which can be ascertained only by an analysis of empirically given circumstances."

If Miller's interpretation of Marx's historical method and Marx's own statements are taken *prima facie*, then Marx's view of the development of capitalism in previously non-capitalist parts of the world after the first flowering of capital as a social relation in England, must be seen as fairly complex, in principle. What Marx discovered were some crucial (and, true) general tendencies of the development of capitalism. However, he had no theory of imperialism in the Leninist sense. It is the task of this paper to articulate aspects of Lenin's theory of imperialism with the help of Marx's concept of the circuits of capital, and then extend this to the unequal exchange of resources leading to a full theory of ecological imperialism grounded in the circuits framework. Here I can only offer a preliminary sketch of such a theory. But before taking that step, we need to first understand the genealogy of this theory. Therefore, I now move on to a discussion of Lenin's ideas on imperialism and underdevelopment.



In Lenin's *Development of Capitalism in Russia* (1899) one already finds a superb analysis of capitalism in a backward country. Some dependency theorists (Cardoso, 1974) have actually sought the authority of this book to give a 'Leninist' flavor to their views.

In arguing against the Narodniks' position of instant socialism in Russia, Lenin presented a two-sided argument in 'the Development.' On the one hand, he seems to take a position contrary to the Narodniks' by claiming that capitalism was developing in Russia. At the same time and largely because of this development of capitalism, the possibilities for development of proletarian politics and transition to socialism under concrete conditions were also there. This view, quite plausible within the then existent Marxist tradition, is not without a certain internal tension.<sup>5</sup> For the moment, however, let us note the special features of capitalism in Russia, which Lenin discovered. The data showed the capitalist development of Russia to be real. Nevertheless, the rate of this development was extremely slow and the extent was quite uneven. The latter feature was not surprising in itself, since the development of capitalism in Western Europe was marked by unevenness. The tardiness of the development and the persistence of traditional, seemingly pre-capitalist forms (another discovery of Lenin), needed explanation. Here Lenin relied on both an analysis of the internal development of class structure in Russia and the external factor of competition from Western European capitalism. The striking feature of this early analysis is the way Lenin combines the external with the internal. The capital from Western Europe accelerated the industrialization and helped the emergence of a bourgeoisie in Russia. At the same time, the weak and dependent nature of the Russian bourgeoisie, partly a result of its domination by foreign capitalists, prevented the development from being rapid and widespread. As Palma correctly points out, Lenin actually gave a great deal of weight to the survival of traditional structures in Russia in his explanatory scheme. Quoting Marx's earlier remark regarding the incompleteness of capitalist development in a backward country, Lenin refers to the 'abundant survival of ancient institutions that are incompatible with capitalism'. At the same time, Lenin notes the linkages, at least in production, between the factory and the handicraft industry or more generally the traditional, pre-capitalist and the modern, capitalist organizations of production.

In summary, Lenin in 1899 saw the development of capitalism in Russia as a slow motion replay of the development of capitalism in Western Europe. At the same time, there is recognition of a complex interaction between the external and internal factors. The political conclusions drawn by Lenin from 'the Development, as well as his subsequent studies including the "Imperialism..." piece are not pursued here. Rather, these will be investigated concretely through historically engaged dialectical case studies. Here the burden is to establish the

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<sup>5</sup> Lenin had a different strategy of democratic revolution in 1905 where he did not see an immediate transition to socialism. In April, 1917, however, he was arguing for a telescoping of the bourgeois democratic revolution into a proletarian socialist revolution.

theoretical and methodological validity of such a dialectical approach. With this end in mind, I turn now to the next and decisive stage in Lenin's thinking during the First World War and the collapse of the Second International.

Writing in exile amidst the horrifying carnage, Lenin identified both the aforementioned events with a new qualitative development in capitalism. Put in a nutshell, his five-point definition of this new stage called *imperialism* consisted of:

1. The transformation of a primarily competitive capitalism in advanced countries to the development of monopolies with a decisive role to play in economic and political life
2. The merger of banking capital with industrial capital and the creation of finance capital (Hilferding). Furthermore, finance capital, as Marx might have put it, is personified in a financial oligarchy.
3. Export of capital as opposed to the previous export of commodity assumes decisive importance.
4. International cartels are formed which share the world economy among themselves.
5. The territorial division of the whole world is completed. Only re-divisions are possible from this point onwards.

Economistic interpretations usually miss the profound dialectics of Lenin's formulation. First of all, imperialism is a stage, a qualitatively different stage of capitalism. It leads to the formation of a new stratum among the capitalist class (and a new stratum among the working class in the imperialist countries -- the labor aristocracy) with sway over the economy and the state apparatus. However, a qualification in light of today's export of industrial capital as well as financial capital to the periphery must be made. Because of FDI-led creation of supply chains and the delivery of service through the use of ICTs from the periphery and semi-periphery, the unskilled workers' wages in the North are either stagnant or falling in real terms.

Secondly, the rise of monopolies modifies the domestic tendencies towards the falling rate of profit, but only by displacing this tendency towards the international arena. Accumulation, in the age of imperialism, then becomes a global process. Here, too, it must be emphasized that Lenin did not depart from Marx's dialectical concept of competition which is the rivalry of multiple capitals with tendencies towards concentration and centralization of capital. However, capitalist classes within largely antagonistic imperial nation states are still appropriators of the surplus value and they compete globally to extract this surplus value through super exploitation of the

colonial (and now neo-colonial) laboring masses. In this, sometimes the capitalists of different nations can cooperate. However, since the development of these capitalist economies and polities is uneven and dialectically competition and cooperation form a unity of opposites in their international behavior, there are strong tensions in the system. Given appropriate conditions (severe economic/political crisis or the development of a powerful rival) competition becomes primary and violent conflict, even world wars may break out. Thus imperialism is not a "policy of conquest which financial capital pursues as Bukharin and Preobrazhensky once thought, but rather a long-term "policy" that finance capital can not avoid pursuing. Hence it is an abuse of the word *policy* to use such locutions. Imperialism, economically, politically and ideologically is a contradictory system in motion. In this global system, the advanced capitalist countries constantly jockey for power and influence in order to dominate an ever-larger part of the world; but as Lenin so succinctly put it, only a re-division is possible. Hence, the system is extremely unstable in a historical sense.

With this thumbnail sketch of the key concepts and implications of Lenin's imperialism, let us now turn to a formal way to integrate this within a description of the three circuits of capital. I emphasize within each circuit the issue of ecological imperialism. Lenin or his followers could not have grasped the issues of ecological imperialism that emerged only with the further development of global capital.<sup>6</sup> But the export of capital and the formation of global commodity chains which gained momentum after the 1950s can be explained within an ecological circuits of capital framework.

## PART II

### **A Circuits Theory of Ecological Imperialism:**

In this part, the basic political economy of ecological imperialism as a global accumulation process is explained in the context of a simple theoretical model of international circuits. The model has its origins directly in Marx's schema of expanded reproduction and the circuits of capital from Vol.2 of Marx's *Capital*. Marx's discussion of the circuits of capital can be summarized as a continuous and sequential flow of money and commodities (including labor power) Interrupted only by the production process and periodic crises. Abstracting from the

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<sup>6</sup> Although Marx had a good understanding of the metabolic rift and problems of agricultural sustainability (Foster xxxx; Martinez-Alier xxxx), he could not have foreseen the global ecological crisis, climate change etc.

crises temporarily for the sake of isolating an abstract moment of theoretical analysis, the circuits can be expressed as:

1. Money Capital
 

$M_1 - C_1$

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MP

....P....  $C_2 - M_2$

LP
  
2. Productive Capital
 

$P \dots C_2 - M_2 - C_3$

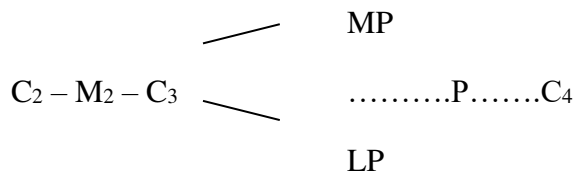
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MP

.....P

LP
  
3. Commodity Capital



Here M, C, MP, LP and P stand for money, commodity, means of production, labor power and the production process itself respectively.

As in Marx's Capital Vol. II, . . . indicates a lapse of time equal to the period of production. Expanded rather than simple reproduction is indicated by the three formulas, since the commodities produced at the end of each circuits embody economic growth at a positive rate and an increasing social productivity of labor.<sup>7</sup>

The significance of Lenin's work, in the present framework, is actually the extension of this value creation (or accumulation) process to global level. For simplicity we can postulate a number 'm' (greater than or equal to 2) aggregate imperialist capitals based in nation states and another number 'n' (>0) non-imperialist but capitalist countries integrated into the world capitalist system through trade and financial flows. Since the accumulation process is uneven, expectations-driven and crisis-laden there are alternately periods of euphoria and despair. But ultimately, any capitalist nation state by itself is too small to support the expansion of finance capital within its own borders alone. Consequently, there is an over accumulation of capital within the imperial nation states, which has to be exported to either the (m-1) imperialist countries, or the "n" non-imperialist countries. In reality both tendencies will be present. In fact, for historical reasons related to the development of trade, the quantitative volume of capital export of the imperialist countries to each other is likely to be greater. The political economy of the development of imperialist countries themselves is a fascinating topic, but outside the scope of the present paper. Here I wish to explore the consequence of export of capital to the non-imperialist, 'backward' countries and nature of ecological exploitation by the core and semi-periphery in the LACs in the age of imperialism as the highest stage of capitalism.

Finally, consistent with the World Systems Theory(WST), over time, the export of capital to non-imperialist countries can result in some of these peripheral countries to become semi-peripheral. This happened historically to late industrializers. More recently, the East Asian economies including China have followed this path. Khan and Piovani(2012) discuss China's emergence as a semi-peripheral country and its implications for ecological imperialism in a separate paper. For now I will pursue the task of characterizing the global circuits of both financial and industrial capital and their merger leading to finance capital. Next step will be to use this dialectical moment of the ascendance of finance capital to explain the domination of LACs among other things. For both these purposes it is important to characterize theoretically what I will call from here on the International Circuits of Capital(ICC). How can we build a theory of ICC which can then serve as a foundation for a theory of ecological imperialism?

<sup>7</sup> Of course, introducing the possibility of crisis as will be done soon, complicates the picture considerably.

First of all the export of capital even when it is in the form of means of production has to be in the form of money capital. This is true because the receiving country must either have credit or pay for the capital received out of its own foreign exchange reserves. In the first case, the credit advanced will insure a flow of foreign exchange to the receiving country which will promptly reverse the flow, by its obligation to pay for the purchase. So money capital is advanced (even though it is borrowed) by the receiving country through its credit. In the second case, money capital is advanced directly by the receiving country. It is important to note that without the receipt of the money capital it would be impossible to begin a genuine regime of capital accumulation, that is to say  $M—C—M'$ .

The next step is the use of the money capital as productive capital in different parts of the world. Here, within the closed domestic economy model, Marx was careful to point out both the logical and historical importance of this step. But in the age of ecological imperialism, the extension of this step to global production and global commodity chains (GCCs) is a fundamental theoretical move.

"By means of,  
 $M - C$      $\diagup$  LP  
                $\diagdown$  MP,

the transformation of money capital into productive capital, the capitalist effects the combination of the objective and personal factors of production so far as they consist of commodities."

What is necessary, logically and historically, for the development of the productive circuit of capital is the existence of markets for labor power and of production facilities to combine this with the means of production. It is also important to know that without this move logically and historically money can not really qualify as capital either. History here compels logic. Unless in reality a class of expropriated, property-less workers confronts a class of moneyed entrepreneurs the circuit can hardly begin. In the Marxist conception of history this can only be the result of historically specific and contextual class-struggles involving the coercive powers of a bourgeois state in formation and in the process continuously generates further class-struggle even as the state consolidates its hold and helps create labor and capital markets in particular.

In Marx's words:

"Money can be expanded in this form only because labor-power finds itself in a state of separation from its means of production (including the means of subsistence as means of production of the labor power itself) and because this separation can be overcome only by the sale of the labor power to the owner of the means of production."

Even more explicitly:

"The capital-relation during the process of production arises only because it is inherent in the act of circulation, in the different fundamental economic conditions in which the buyer and the seller confront each other, in their class relation (emphasis mine)".

Marx is clear on the primacy of the historical social relations when he points out:

"The purchase and sale of slaves is formally also a purchase and sale of commodities. But money cannot perform this function without the existence of slavery. If slavery exists, then money can be invested in the purchase of slaves. On the other hand the mere possession of money cannot make slavery possible."

One could add that likewise, without a certain coercive class politics historically the rise of commodity-based capitalism would not have been possible. Further export of capital abroad at a later stage has to be conceived in this light as a definite historical process in definite historically specific cases of center-semi-periphery-periphery of the WCS.

Here the export of money capital has to be combined with the development of the productive capital as a social capital. Of necessity, a number of political factors enter the analysis in a complex way. Fundamentally all these revolve around class relations. For simplicity I assume the following class schema:

Imperialist country:

Monopoly capitalists  
 Other capitalists  
 Labor Aristocracy  
 Differentiated working class according to wage, race, ethnicity, sex and petit bourgeoisie

Dominated country:

Export-import capitalists  
 Productive capitalists (in both domestic and export sectors)  
 Landlords  
 Differentiated peasantry according to landholdings, race, ethnicity, etc Land-less peasants  
 Urban proletariat  
 Petty commodity producers

*Semi-peripheral* countries have a *dual* character. They are dominated in crucial technological and financial<sup>8</sup> aspects by the imperialist countries, and thus are forced to transfer ecological

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<sup>8</sup> Although finance, too, is complicated as the Chinese case illustrates. China receives capital and creates capital-labor social relations through its external dependence. At the same time, it has used its balance of trade surplus of hard currencies to finance the deficits of the US in particular.

resources through “free” trade. At the same time, they are able to dominate to various degrees the peripheral economies. It can be argued that this is the status of countries like China today (Khan and Piovani, 2012).

It is not possible to develop the political aspect of this analysis here. We will have to be content with looking at the further economic aspects of this. One crucial internal problem related to the circuit of productive capital in developing countries is the capitalist development of agriculture. The nature of land reform associated with this has not always been cosmetic, and precisely those countries which opened up the avenues for a capitalist agriculture such as Korea, Taiwan, etc. are the ones that were developing the fastest in the last quarter of the 20<sup>th</sup> century (Khan 1997a, b, 2004a). The problem of what happens in any one country in terms of economic policies is therefore a function of both the international context and the class struggles within the nation. In the economic development of these countries, the following factors are relevant:

1. The initial level of development of productive forces
2. Indigenous class formation
3. Linkages with the international finance capital
4. Internal class struggles as they link up with the policies of International finance capital.

Within the present confines of a discussion of global self-expansion of value, the circuits approach to ecological imperialism points to the following general theoretical schema for analyzing the nature of the system and conducting case studies:

1. Contradictions in the accumulation process in the form of competition and cooperation between the imperialist nations---moves towards technological fix, class-struggles and compromises as well as possible conflicts not resolvable through negotiations. A complex global ecological politics.
2. Contradictions in the accumulation process in the form of domination of the less developed countries and struggles against imperialism---complex global coalition formation, treaties, interventions, regional wars etc.
3. The contradictions between capital and nature under this uneven development of global capital and class struggles---the impossibility of solving this contradiction globally under the WCS economics and politics.
4. Resolution of these contradictions through a people-centered politics and internationalism from below.

An analysis of the above features in the context of the the dialectics of global accumulation process will reveal not only the central role ecological imperialism plays in the world economy today, but also the complex network of relationships among classes within and outside the borders of a particular nation state. Ultimately, this will help determine the contours of the tumultuous events such as global prosperity or depression, development or underdevelopment, war or peace, and transition to deeply democratic forms of local and global governance, or alternatively, to forms of state capitalism for both the advanced and the



developing countries. Therefore, research on ecological imperialism should receive serious attention from both radical scholars and political activists of the twenty first century. Here I try to develop further the third and fourth aspects of global capitalist system listed above. In the late 1970s and 1980s, James O'Connor was one of the first Marxists to construct a systematic theoretical framework linking the relation between ecological crises and crises accumulation. He also launched a journal to build awareness and deepen our understanding of ecology from a radical angle. He posited a deep contradiction between capital and nature. O'Connor's second contradiction of capital has come under attack by ecological Marxists such as Foster and Burkett. However, combining his pioneering effort with more recent work of Burkett, Foster and others *within a rigorous circuits approach* can go a long way towards undermining the ideology of capitalist growth and resisting the global reach of capitalist states and corporations. In this way, this circuits-grounded theory of ecological imperialism can illuminate the potential for overcoming the capitalist hegemony in not only the center and periphery but also in the semi-periphery of the Global Capitalist Economy.<sup>9</sup>

I argue that within each circuit of capital globally there is a contradiction between capital and nature along with the classical capital-labor contradiction. The proposition is not just a theoretical assumption made for theoretical neatness and convenience. In earlier analytical and empirical work on ecology, energy, growth and distribution in Khan(1983), Khan(1997a,b,;2004a) and Khan and Lippit(1993),Khan and Sonko(1997) there was ample evidence pointing towards this theoretical abstraction.

In the ecological imperialist stage of global capital accumulation,through the scale effects and horizontal global expansion through the ICC, this overstretching reaches global limits. The increased exploitation of nature takes place increasingly in the peripheral countries, The export of capital globally leads to the formation of global commodity chains<sup>10</sup> in major areas of production in the periphery. The control of finance capital gives the core countries enormous leverage over the periphery. Adding this finding to Lenin's observation that many pre-capitalist forms persist even as capital as a social relation gets to be a dominant structure, should alert us from falling prey to romanticizing pre-capitalist structures and relations. What is crucial in the circuits approach to the stage of ecological imperialism, is that with GCCs and the enormous

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<sup>9</sup> In my current work with Prof. Piovani, a preliminary case study of a semi-peripheral economy, namely China is carried out.

<sup>10</sup> Earlier, following Prof. Imai of Kyoto university who was a pioneer of GCC work, I called them globally integrated networks or GIN. I even gave an address at a conference at Santa Fe, New Mexico in 1993, on Technology in East Asia, coining an acronym, GIN and TONIC--- globally integrated networks, and technological opportunities for newly industrialized countries.

scale of production and global marketing, the ecological damage done to the periphery is colossal by historical standards. It may soon become irreversible.<sup>11</sup>

Therefore, ecological imperialism is an integral aspect of monopoly capital and finance capital globally. Ecological imperialism is a particular global social-political-economic relation of dominance-subservience-resistance. Under dominance relation, ecological imperialism results in a specific kind of asymmetrical transfer of natural resources and sink-capacity from the peripheral to core countries. From an international circuits of capital (ICC) point of view, these well-known ecological economics findings about such transfers can be interpreted more deeply as the dialectics of dominance-subservience-resistance. The central aspect of this Marxian view of ecological imperialism is that under the theoretical perspective of an ICC-based global use value-exchange value conflict and global asymmetry of power under finance capital, the problem is not just the unequal distribution of ecological burdens as many ecological scholars observe; but more fundamentally, the major insight of an international circuits of capital (ICC) point of view is the prevalence and persistence of the dominance-subservience-resistance dialectic globally, manifesting itself in both exploitation and the possibilities of resistance. Through political and economic dominance, the burdens borne by the periphery 'normally' take the form of an unequal transfer of productive capacity of land, energy, sink capacity, raw materials etc. The burden on the periphery is bio-physical and the consequences are the accelerated exploitation of both nature and labor in the periphery. However, the last category of the dominance-subservience-resistance dialectic of the circuits approach to ecological imperialism is important precisely because it forces us to think about the theoretical challenges presented by defining ecological imperialism as an aspect of the highest stage of capitalism with the potential to overcome capital globally as a set of oppressive socio-economic-military and political relations of dominance-subservience-resistance. Under specific types of theoretical understanding and organizational structures deeply democratic resistance movements can grow. It can be argued that such a categorial analysis of ecological imperialism can help accelerate the building and consolidation of the incipient ecological movements in every part of the planet Earth.

### **Conclusions:**

This paper has focused on some specific methodological and theoretical aspects of ecological imperialism by grounding these in the Circuits of Capital Approach. The main advantage of this approach theoretically is the clarity with which many disparate phenomenon--- such as state activities, transnational corporations, GCCs, political and social movements--- can be viewed as

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<sup>11</sup> See Khan(1997a,b;1998, 2004a,b;2005;2006;2007; 2010;2011 a,b; Khan and Lippit 1993; Khan and Sonko 1997) for further discussion and evidence.

parts of a dominance-subservience-resistance dialectic. The dynamic categorial thinking of processes that is the hallmark of dialectics leads to not just understanding the unity and conflict of opposites within each category, but also finding the means for transforming dominant aspects of deeply unjust and exploitative relations in our unhappy planet into their opposites by deepening democratic aspects of the resistance struggles.<sup>12</sup>Methodologically, this approach also leads to recognizing the importance of case studies of both exploitation and resistance in all parts of the world capitalist system---core, periphery and semi-periphery.

In the theory developed here, everywhere on this planet--- core, periphery and semi-periphery--- historically the rise of commodity-based capitalism would not have been possible without a certain coercive class politics. I have argued that further export of capital abroad at a later ecological imperialist stage has to be conceived in this light as a definite historical process in definite historically specific cases of center-semi-periphery-periphery of the WCS. This also argues for historically based dialectical case studies in center-semi-periphery-periphery of the WCS.

Particularly in semi-periphery and periphery of the WCS the export of money and finance capital has to be combined with the development of the productive capital as a set of coercive socio-economic—political relations. Of necessity, a number of political factors enter the analysis in a complex way. Fundamentally all these revolve around class relations but extend far beyond just classical capital-labor relations. This has profound implications for analyzing phenomena such as new social movements. Future work will need to address these real world complexities adequately. Likewise, the role of ideology in maintaining capitalist hegemony needs elaboration within the ICC theory of ecological imperialism. Combining Gramsci’s important insights with those of Foucault and other analysts of commodity and capital fetishism could be a promising road to follow for this research agenda.

#### References:

Amin, Samir. *The Law of Worldwide Value*, New York: The Monthly Review Press, 2010

Amin, Samir. *Accumulation on a world scale; a critique of the theory of underdevelopment*. London: Monthly Review Press, 1974.

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<sup>12</sup> On this, see Khan(2006;2009;2012 a,b) connecting value theory and deepening of democracy. Gilbert(1990) is a profound treatise on democratic individuality. Miller(2010) argues for a global social democracy in order to “hem in” the empire.

Baran, Paul A. and Paul M. Sweezy. *Monopoly capital; an essay on the American economic and social order* New York : Modern Reader Paperbacks, 1968

Boussebaa, Mehdi., & Brown, Andrew D. (January, 2017). "Englishization, Identity Regulation and Imperialism." *Organization Studies*, Vol. 38, No 1.

Bunker, Stephen G., and Paul S. Ciccantell. *Globalization and the race for resources*. Baltimore, Md.: Johns Hopkins University Press, 2005.

Burkett, Paul. *Marxism and ecological economics: toward a red and green political economy*. Leiden:

BRILL, 2006.

Capan, Zeynep Gulsah. (January, 2017). "Decolonising International Relations?" *Third World Quarterly*, Vol. 38, No 1.

Ciccantell, Paul, and David A. Smith. "Rethinking Global Commodity Chains: Integrating Extraction, Transport, and Manufacturing." *International Journal of Sociology* 50.3-4 (2009): 361-384. int.

Clark, Brett, and Richard York. "Carbon metabolism: Global capitalism, climate change, and the biospheric rift." *Theory and Society* 34 (2005): 391-428.

Clark, Brett, and John Bellamy Foster. "Ecological Imperialism and the Global Metabolic Rift: Unequal Exchange and the Guano/Nitrates Trade." *International Journal of Comparative Sociology* 50.3-4 (2009): 311-334.

Daly, Herman E., and Joshua C. Farley. *Ecological economics: principles and applications*. Washington, DC: Island Press, 2004.

Desch, Michael C. (2011). "Benevolent Cant? Kant's Liberal Imperialism." *The Review of Politics*, Vol.73, No 4.

Dicken, Peter. *Global shift: reshaping the global economic map in the 21st century*. 4th ed. New York: Guilford Press, 2003.

Emmanuel, Arghiri. *Unequal exchange; a study of the imperialism of trade..* New York: [Monthly

Review Press, 1972.

Fang, Hui, Gary Feinman, and Linda Nicholas. (July, 2015). "Imperial Expansion, Public Investment, and the Long Path of History: China's Initial Political Unification and Its Aftermath." *Proceedings of the National Academy of Sciences of the United States of America*, Vol. 112, No 30.

Fletcher, Robert., Rosaldo, Renato., & Taussig, Michael. (April, 2012). "The Art of Forgetting: Imperialist Amnesia and Public Secrecy." *Third World Quarterly*, Vol. 33, No 3.

Fuchs, Christian. (November, 2010). "Critical Globalization Studies: An Empirical and Theoretical Analysis of the New Imperialism." *Science & Society*, Vol. 74, No 2.

Foster, John Bellamy. *Ecology against capitalism*. London: Monthly Review Press, 2002.

----- The ecological revolution : making peace with the planet, New York: Monthly Review Press, 2009.

Frame, Mariko. *Ecological Imperialism, Development and the Capitalist World-System: Cases from Africa and Asia*, Routledge 2022a

Mariko Frame. "Ecological Imperialism: A World-Systems Approach." *American Journal of Economics and Sociology*, Volume 81, Issue 3. 2022b

Galeano, Eduardo H.. *Open veins of Latin America: five centuries of the pillage of a continent*. 25th anniversary ed. London: Monthly Review Press, 1997.

Galtung, Johan. "A Structural Theory of Imperialism." *Journal of Peace Research* 8.2 (1971): 81-117.

Print.

Gartzke, Erik., & Rohner, Dominic. (2011). "The Political Economy of Imperialism, Decolonization and Development." *British Journal of Political Science*, Vol. 41, No 3.

Gereffi, Gary, and Miguel Korzeniewicz. *Commodity chains and global capitalism*. New York:

Greenwood Press, 1994.

Gilbert, Alan. *Democratic Individuality*, Cambridge: Cambridge University Press, 1990.

Giljum, Stefan , and Nina Eisenmenger. "North-South Trade and the Distribution of Environmental Goods and Burdens: A Biophysical Perspective." *Journal of Environment and Development* 13.1 (2004): 73-100. .

Giljum, Stefan. "Trade, Material Flows, and Economic Development in the South." *Journal of Industrial Ecology* 8.1-2 (2004): 241-261.

Girvan, Norman. *Corporate imperialism: conflict and expropriation : transnational corporations and economic nationalism in the Third World*. Armonk, New York: M.E. Sharpe, 1976.

Goldfrank, Walter L., David Goodman, and Andrew Szasz. *Ecology and the world-system*. New York: Greenwood Press, 1999.

Harvey, David, *The enigma of capital : and the crises of capitalism*, Oxford: Oxford University Press, 2010.

-----, *The New Imperialism*, , Oxford: Oxford University Press, 2003.

Heintz, James. "Low-wage manufacturing and global commodity chains: a model in the unequal exchange tradition." *Cambridge Journal of Economics* 30 (2006): 507-520.

Hom, Stephanie Malia. (2013). "Simulated Imperialism." *Traditional Dwellings and Settlements Review*, Vol. 25, No 1.

Hornborg, Alf, Brett Clark and Kenneth Hermele. Eds., *Ecology and power : struggles over land and material resources in the past, present and future* , London: Routledge, 2012

Hornborg, Alf. *Global ecology and unequal exchange : fetishism in a zero-sum world* , London: Routledge, 2011.

Hornborg, Alf, John Robert McNeill, and Juan Alier Martinez. *Rethinking environmental history: world-system history and global environmental change*. Walnut Creek, CA: AltaMira Press, 2007.

Hornborg, Alf. *The power of the machine: global inequalities of economy, technology, and environment*. Walnut Creek, CA: AltaMira Press, 2001.

Hornborg, Alf. "Ecosystems and World Systems: Accumulation as an Ecological Process." *Journal of World-Systems Research* 4.2 (1998): 169-177.

Hubacek, Klaus, and Stefan Giljum. "Applying physical input-output analysis to estimate land appropriation (ecological footprints) of international trade activities." *Ecological Economics* 44 (2003):

137-151.

Iverson, Duncan. (February, 2011). "Another World Is Actual": Between Imperialism and Freedom." *Political Theory*, Vol. 39, No 1.

Jenkins, Rhys Owen. *Transnational corporations and uneven development: the internationalization of capital and the Third World*. London: Methuen, 1987.

Johansen, Jorgen., Martin, Brian., & Meyer, Matt. (September, 2012). "Non-violence versus US Imperialism." *Economic and Political Weekly*, Vol. 47, No 38.

Jorgenson, Andrew , and Brett Clark. "Societies consuming nature: A panel study of the ecological footprints of nations, 1960-2003." *Social Science Research* 40 (2011): 226-244.

Kelly, M.G.E. (June, 2010). "International Biopolitics: Foucault, Globalisation and Imperialism." *Theoria: A Journal of Social and Political Theory*, Vol. 57, No 123.

Kentor, Jeffrey. "The Growth of Transnational Corporate Networks: 1962-1998." *Journal of World-Systems Research* XI.2 (2005): 263-286.

Khan, Haider A. Technology, Energy, Distribution and Balance of Payments, unpublished Ph. D. dissertation, Ithaca. NY: Cornell University, 1983

Khan, Haider A. Imperialism as World Capitalism: the global self-expansion of value, paper presented at the ASSA conference, New York, 1985

Khan, H. A. and Victor Lippit, The Surplus Approach and the Environment, *Review of Radical Political Economics*, 1993

Khan, H. A. "Ecology, Inequality and Poverty", *Asian Development Review*, 1997a

Khan, Haider A. Technology, Energy and Development, Cheltenham, Edward Elgar, 1997b

Khan, Haider A. Technology, Development and Democracy, Cheltenham, Edward Elgar, 1998



Khan, Haider A. *Innovation and Growth in East Asian Economies: the future of miracles*, London:

Palgrave, 2004a

Khan, H. A., *Global Markets and Financial Crises in Asia*, London: Palgrave, 2004b

Khan, H. A., "A Theory of Deep Democracy in the Age of Postmodernism" (2009), in *Readings in Law and Society Journal*, 1. (1).

Khan,H.A. "China's Development Strategy and Energy Security", WIDER research Paper

[http://www.wider.unu.edu/publications/working-papers/research-papers/2008/en\\_GB/research\\_papers\\_2008/](http://www.wider.unu.edu/publications/working-papers/research-papers/2008/en_GB/research_papers_2008/)

Khan, Haider A. Analyzing the implications of international financial reform for developing economies, UNDP, NY 2011a

Khan ,H. A.2005, "*Governance,African Debt and Sustainable Development*"

<http://www.e.u-tokyo.ac.jp/cirje/research/dp/2005/2005cf334.pdf>

----- 2011 a. Bangladesh: National Political Economy in Perilous Times, Economic Papers, IDEAS, <http://econpapers.repec.org/paper/pramprapa/40121.htm>

----- 2011 b.Lessons from Korean Development Experience, Prepared for the 2011 United Nations Academic Impact Forum and the Secretary General, Seoul Aug. 9-12

-----2008a. "Causal Depth contra Humean Empiricism: Aspects of a Scientific Realist Approach to Explanation", <http://econpapers.repec.org/paper/pramprapa/8297.html>

-----2008b, "Hermeneutics and Dialectics: (Hegel, Husserl, Heidegger and) Hans-Georg Gadamer"<http://ideas.repec.org/p/pramprapa/8429.html>

----- 2006. "Value, Social Capabilities, Alienation:The Right to Revolt", <http://ideas.repec.org/p/ky/fseries/2006cf410.html>

-----2010. "China's Development Strategy and Energy Security", in Amelia Santos-Paulino and Guanghua Wan ed. *The Rise of China and India: Development Strategies and Lessons*, Palgrave/Macmillan,

----- Enhancing Economic Integration in the Asia-Pacific through the Strengthening of National Innovation Systems - Challenges and Strategies, *Asia-Pacific Technology Monitor*, March-April, 2012a

----- Deepening Democracy During Crisis: considerations from a Deleuzian ontology of difference, *Cosmopolis*, Summer, 2012b

Khan, H. A. and C. Piovani.2012. Ecological Imperialism and the World Capitalist System: The Semi-peripheral Case of China , Paper presented at the ASSA conference, San Diego

Khan, H. A. and Karamo Sonko,1997. "Ecology, Structural Adjustment, and Distribution" (1997), *African Economic and Social Review*, Vol. 1

Klare, Michael T.. *Resource wars: the new landscape of global conflict*. New York: Metropolitan Books, 2001.

Kroes, R. (October, 2014). "The Paradox of American Global Power." *Society*, Vol. 51, No 5.

Lawrence, Kirk . "The Thermodynamics of Unequal Exchange: Energy Use, CO2 Emissions and GDP in the World-System, 1975-2005." *International Journal of Comparative Sociology* 50.3-4 (2009): 335-359.

Lenin, V. I. *Imperialism, the highest stage of capitalism : a popular outline*, New York:

International Publishers,1939 edition.

Lenin, V. I. *The Development of Capitalism in Russia*, Moscow: Progress Publishers, 1976

edition

Lippit, Victor. *Capitalism*. London: Routledge, 2005.

Machado, Giovani, Roberto Schaeffer, and Ernst Worrell. "Energy and carbon embodied in the

international trade of Brazil: an input-output approach." *Ecological Economics* 39 (2001): 409-424.

Mahajan, Sneh. (June, 2011). "Reflections on `Normalisation' of Imperialism." *Economic and Political Weekly*, Vol. 46, No 26/27.

Martinez-Alier, Joan . "Distributional Issues in Ecological Economics." *Review of Social Economy* LIII.4 (1995): 511-528.

----- *Marxism and ecological economics: toward a red and green political economy*. Leiden: BRILL, 2006. .

Marx, Karl, *Capital: Vols I, II and III*, New York, International Publishers, 1967.

Miller, R. W. *Analyzing Marx : morality, power, and history*, Princeton: Princeton University Press, 1984

Miller, R. W. *Globalizing Justice*, Oxford University Press, 2010

Mubarak Altwaiji. (2014). "Neo-Orientalism and the Neo-Imperialism Thesis: Post-9/11 US and Arab World Relationship." *Arab Studies Quarterly*, Vol. 36, No 4.

Muradian, Roldan , Martin O'Connor, and Joan Martinez-Alier. "Embodied pollution in trade: estimating the environmental load displacement of industrialised countries." *Ecological Economics* 41

(2002): 51-67.

Panitch, Leo. (May, 2014). "Rethinking Marxism and Imperialism for the Twenty-first Century." *New Labor Forum*, Vol. 23, No 2.

Patnaik, Prabhat. 2009. *The value of money*. New York: Columbia University Press.

----- 1997. *Accumulation and stability under capitalism*, Oxford: Clarendon Press

. Perez-Rincon, Mario Alejandro. "Colombian international trade from a physical perspective: Towards an ecological Prebisch thesis." *Ecological Economics* 59 (2006): 519-529.

Phillips, Richard. (September, 2011). "Vernacular Anti-Imperialism." *Annals of the Association of American Geographers*, Vol. 101, No 5.

Raffer, Kunibert. "Unfavorable Specialization and Dependence: The Case of Peripheral Raw Material

Exporters ." *World Development* 15.5 (1987): 701-712.

Reeves, Jeffrey. (May, 2018). "Imperialism and the Middle Kingdom: The Xi Jinping Administration's Peripheral Diplomacy with Developing States." *Third World Quarterly* Vol. 39, No 5.

Rice, James. "The Transnationalization of Production and Uneven Environmental Degradation and Change in the World Economy." *International Journal of Comparative Sociology* 50.3-4 (2009):

Roberts, J. Timmons, and Bradley C. Parks. *A climate of injustice: global inequality, North-South politics, and climate policy*. Michigan: MIT Press, 2007.

Roberts, J. Timmons, and Bradley C. Parks. "Fueling Injustice: Globalization, Ecologically Unequal Exchange, and Climate Change." *Globalizations* 4.2 (2007): 193-210.

Robinson, William I.. *Latin America and Global Capitalism*. Baltimore: The John Hopkins University Press, 2008.

Saull, Richard. (June, 2012). "Rethinking Hegemony: Uneven Development, Historical Blocs, and the World Economic Crisis1: Rethinking Hegemony." *International Studies Quarterly*, Vol. 56, No 2.

Shandra, John M., Eran Shor, Gary Maynard, and Bruce London. "Debt, Structural Adjustment, and Deforestation: A Cross-National Study." *Journal of World-Systems Research* XIV (2008): 1-21.

Talbot, John. "Where Does Your Coffee Dollar Go?: The Division of Income and Surplus along the

Coffee Commodity Chain." *Studies in Comparative Development* 32 (1997): 56-91.

Tandon, Yash. (2015). "Development Is Resistance." *Africa Development / Afrique Et Développement*, Vol. 40, No 3.

Taylor, Ian. (August, 2011). "South African 'Imperialism' in a Region Lacking Regionalism: A Critique." *Third World Quarterly*, Vol. 32, No 7.

United Nations Conference on Trade and Development. *World investment report 2007 transnational corporations, extractive industries and development*. Geneva: United nations conference on trade and development (UNCTAD), 2007..

United Nations Conference on Trade and Development. *World investment report 2009: transnational corporations, agricultural production and development*. Geneva: United nations conference on trade and development (UNCTAD), 2009.

Vallejo, Maria Cristina. "Biophysical structure of the Ecuadorian economy, foreign trade, and policy implication." *Ecological Economics* 70 (2010): 159-169.

Virdee, Satnam. (November, 2017). "The Second Sight of Racialised Outsiders in the Imperialist Core." *Third World Quarterly*, Vol. 38, No 11.

Wallerstein, Immanuel. *The capitalist world-economy: essays*. New York: Cambridge University Press,

1979.

Weisz, Helga, and Heinz Schandl. "Materials Use Across World Regions." *Journal of Industrial Ecology* 12.5/6 (2008): 629-634. .

World Bank. *The changing wealth of nations: measuring sustainable development in the new millennium..* Washington, DC: World Bank, 2011.

Zinn, Howard. *A people's history of the United States : 1492-present*,New York: Harper Perrenial, 1995.