social process and ecological destruction: capitalist production of nature as anti-nature and unecological

The production of nature is universal but the internal contradictions in this process are made equally universal. Today crisis does not spring from the interface between society and an external nature but from the contradictions at the heart of the social process itself (Neil Smith, "Uneven Development: Nature, Capital and the Production of Space").

3.1 introduction

In this chapter, we are going to see in some detail how conscious life-activity or production in general always takes place within given socio-economic conditions that determine the specific mode in which nature gets internalized in the social process of production. In particular, it will be seen that under capitalism the internalization of nature takes place as no more than just the repository of value, hence shorn of its use value. This means two things. One is the culmination of the process of the separation of society from the inorganic conditions of production, a process we discussed in the last chapter. And second, this reveals how the practice and conditions of capitalist production engender the human-nature dichotomy at the conceptual level.

More importantly we are going to examine the process of the social production of nature in this chapter. We will see that under commodity production in pre-capitalist societies the separation of use value from exchange value is accompanied by the increasing dominance of exchange value as the driving force for production. Finally under capitalism this separation is complete so that now it is only abstract value whose expansion is the sole driving force for production. The internalization of nature in the social process of production as just an internal factor is thereby possible since nature, no longer counted upon as use-value, is regarded and accessed as just a repository of abstract value. Nature is valued and transformed only to the extent that it represents value. Nature is in this sense denaturalized. The process of
the flow of value produces its own nature. This is our thesis of the production of nature which will be discussed in this chapter.

It will be seen that the thesis of the production of nature allows us to guard ourselves from claiming that capitalism is always and everywhere ecologically destructive. Of course this also follows from the distinction between production in general and specific production which we had drawn in the last chapter. For then we know that ecological destruction can result from unintended consequences of human productive activity as such. Or that as we will see below the flow of value might form a socio-ecological relation with its ecosystem. The point however is that the logic of self-expansion of capital does not take account of the sustainability of any particular production process and hence it is often ecologically destructive. Capitalist production is therefore extremely destructive of nature as nature itself is rid of its natural use value and treated as just an internal moment in the process of the generation of value.

The production of nature under capitalism however makes it possible to avoid the debate centred around the protection of some original nature. We are no longer caught between the radical ecology proposition of going back to nature and the reform environmentalist proposition to reform the functioning of certain sectors of the capitalist economy. Rather we can here talk about producing our own nature, an ecological production of nature. This is possible also because capitalist production creates the conditions where humans can in fact talk about rationally controlling our metabolism with nature. This follows from the fact that capitalist production itself came about after a long process of the dissolution of all natural relations and the freeing of the individual from all primordial relations.

This freeing of the individual was however accompanied by the separation of the producer from the means of subsistence and of production, which eventually gave rise to the complete dichotomy between humans and nature under capitalism. As we pointed out in the last chapter this led to the overburdening of the human subject. This freeing of the individual and the subsequent over-burdening of the subject meant, in other words, that humans could now abstract themselves from and reflect on society's ongoing metabolism with nature. We could now think of
rendering the process of our metabolism with nature autonomous, free from the independent reified logic of the social process. If society can freely organize its metabolism with nature we can then start thinking about doing so in an ecological manner. From the capitalist production of nature we can then conceive of an ecological production of nature which is what we are going to explore in this chapter.

We start the first section by pointing out how it is only with the emergence of a social logic that nature becomes an element in the process.

**3.2 nature as an element in the social process**

Any society functions. In this there are several moments in the social process that are related in definite ways of causality and other relations. But however they may be related and no matter which factor dominates, the society must reproduce the material conditions of production if it is not to collapse. This is the rationality of all societies. Society as it were facilitates its own reproduction. This is so because, after all, the edifice of society grew out of the conditions and possibilities opened up by this reproduction. But what thus derives its origins to the conditions of the reproduction of material life soon losses any obvious and directly apparent one-to-one linkage or correspondence with the latter. Social relations are fetishized and reflect reality in the most round about manner. But even these fetishized relations might ultimately act as relations of production for they in implicit ways (must) facilitate the reproduction of material life. Thus even the world of representations and of faith facilitate the process of reproduction of society. That is why Godelier argues that "these representations and religious observances draw their content, the very weight and the efficacy of their presence from the central join, from the hidden articulation of their mode of production and the instances corresponding to it." ¹

In that case these fetishized relations will have a role to play in shaping human relation to nature. This means that our relation to nature is always mediated through

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¹ M. Godelier, "Perspectives in Marxist Anthropology", Cambridge, 1977, p. 61. And further, "religious activity therefore is a form of genuine labour involving contradictions determined by the structure of the mode of production and other social relations, such labour constituting one of the essential conditions for the reproduction of these relations - the relations of production as well as other instances" (Ibid., p. 60).
society. But since these relations themselves derive their rationality ultimately from the reproduction of the material conditions of life, it is the social relations of production engendered in and through this reproduction that are ultimately determining of the social process and our relation with nature has therefore to be tackled at this level first. The point however is that the reproduction of the material conditions is also an instance which articulates the effects of all other instances of the social process. But as the instance which is determining of the rest we must, to start with, examine the conditions of the reproduction of material life. It is here that we hope to find the manner in which our relationship with nature is determined even if it were to be at some moment influenced by other moments in the social process. That is why we start our examination of human relation to nature with respect to the social relations of production. We examine this question in this chapter under the title of the socio-ecological dialectic.

Our task in this chapter is to show that the transformation and production of nature is a function of the social relations of production. There is nothing called a pure interaction between humans and nature (cf. Marx's notion of production in general). This interaction is changing and historical like the rest of society and hence each particular relations of production gives rise to its own particular transformation and production of nature. For example, as Marx points out, exchange of commodities is a manner of the exchange of matter in society. Here we will see that these social relations correspond to definite and palpable relations between humans and the rest of nature. We are however not arguing here that the exploitative relations between humans leads to an exploitative relation towards nature as well.

The relations of production, then, provide the inner logic of society according to which human relationship with nature is determined. We will see that this inner logic is not simply one of survival and adaptation to the natural surroundings, as the

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2 "In so far as exchange is a process, by which commodities are transferred from hands in which they are non-use-values, to hands in which they become use-values, it is a social circulation of matter. The product of one form of useful labour replaces that of another" (Marx, "Capital", Vol. 1, Moscow, 1986, p. 106).

3 Cf.: "the exploitation of nature precedes the exploitation of labour. This sort of sequencing, however, rests upon an artificial opposition between nature and society. The point is that each mode of production organizes the forces of production - nature, labour, technology, knowledge - to assemble its own space" (Ralph H. Saunders and Sallie A. Marston, "Review of William Cronon's 'Nature's Metropolis'", Antipode, Vol. 26, no. 2, 1994, p. 128).
cultural ecologists would have us believe. In that case the problem is not what we have done to nature outside us but what is the kind of nature that we are producing as second nature which is internal to and generated by the social process. The question to be asked is then not the extent and scale of the damage humans have inflicted on nature or our intervention in or destruction of nature's cycles but whether the nature we have produced or transformed as second nature is ecological or not?

Whether any particular transformation of nature is ecological or not depends on the specific instances and no general answer valid everywhere can be given for it. This is so because we believe that nature is historical and the social process itself eventuates corresponding nature/s which might support a different set of plant and animal species. There is no one, set or given nature whose transformation has to be necessarily ecologically destructive. The other significant point is that the social relations and the manner of organizing of production reflect already existing natural ecosystemic relations that are in so many ways instantiated by and conditions the established social relations of production. But this does not mean that we cannot say whether a particular transformation of nature is ecological or not. We must then discuss what is it to be ecological or unecological, which means the sources of ecological destruction must be examined.

3.3 sources of ecological destruction

There are, broadly speaking, two sources of ecological imbalance arising from human action on nature. The first arises from lack of a complete knowledge of the consequences of human impact on nature; for example, for a long time shifting cultivation was not known to destroy the fertility of the soil, etc. Usually these are long-term effects that take time to unfold, for example the hole in the ozone layer or global warming. In earlier societies this was reflected in the consequences of overgrazing, of the use of fire to trap animals while hunting or to clear forest for agriculture. Such ecological destruction can take place in spite of the best intentions to preserve the ecosystem. In that case highly localized, small-scale production units proposed by lot of radical ecologists might turn out to be not so benign in the long run when we take its consequences on the ecosystem at a more macro or global level.
into account. Thus on this front any and every society can potentially be ecologically destructive in the long run. The problem here is one of a lack of correspondence between society's intention and nature's extremely complex and intricate mechanisms, something akin to the cunning of nature.

The major part of the ecological destruction which is rampant in today's world is however not because of the cunning of nature getting the better of human intention. The problem is, as it were, the cunning of the functioning of a society which does not take cognizance of our absolute dependence on nature, a society whose inner logic and internal constitution does not allow for an ecological transformation or production of nature. Thus here we are no longer talking about the impact of our actions on an undifferentiated nature, hence nature as such which exists in pure form, but nature which has already undergone the impact of human activities, which is embedded in the complex called society even as society cannot be what it is without including this nature. The point is that, under capitalism, society takes its energy from nature as though nature were outside of us, whereas in fact the nature from which we acquire energy is so transformed and shaped by human activity, past human labour, that its own present form cannot be sustained without the continued functioning of the social process. While then it is true that society is dependent on nature it also true that the particular nature in front of today is dependent on us, on the way we have organized our production and consumption patterns, etc.

Thus the nature which is thereby engendered by the social process can very well be unecological, a consequence then of the inner logic and dynamic of the particular society and of the type of nature it generates. This is the second source of ecological destruction, which is much more basic and primarily responsible for most of what is happening today. The problem is not what society is doing to nature but what kind of transformation of nature we are bringing about or the kind of nature we are producing. And hence, here it is that the question of our knowledge of the consequences of this social transformation of nature becomes extremely important. It is not merely the question of our knowledge of the operation of the laws of nature
but of the social form in which it operates. Thus the nature whose knowledge we seek is not insulated from society's impact on it though of course we can conceive of nature without human beings as something non-existent in front of us today, but yet possible. But the nature in front of us today is the result of human transformation over a long period of time according to the conditions given by the existing social relations of production.

3.4 ecological destruction and the social process

We are not going to examine how the form and character of our knowledge about nature is given by the particular relationship we have with nature and its role in further influencing our relationship with nature. Instead we will here examine how the social relations of production specific to any society give rise to its own inner logic according to which nature is internalized as a moment in the social process through human activity which transforms and produces its own nature. This human activity is of course human-nature metabolism effected through human labour.

Thus the nature which humans bring about can be ecological depending on the place of nature within the internal structure and functioning of society, a place which is generated spontaneously by the existing mode of production. The question to be asked is then not what we do to nature as something outside and apart from us. This is because the place of everything within the social process depends on its place in the overall scheme of things; for example, the place of labour-power as a commodity within capitalist society depends on the background structure against which it is operating.

But ultimately for an ecological society one cannot bank on a society which is unconscious about its short-term and long-run effects on the nature which it

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4 As Marx has written, "no natural laws can be done away with. What can change, in changing historical circumstances, is the form in which they operate" (in Marx-Engels, "Selected Correspondence", London, 1934, p. 246).

5 Godelier points out how if one were to proceed simply "from empirical 'facts' and spontaneous representations of social relations in the minds of agents who intervene in production" we could never see what Marx showed: "that labour in itself has no price; manpower alone has a price, equivalent to the cost of all that is socially necessary for its reproduction". Thus "we shall look for – beyond the apparent, visible logic – an invisible underlying logic" (Maurice Godelier, "Perspectives in Marxist Anthropology", pp. 22 – 23).
Chapter 3: Capital's logic of metabolism with nature: the capitalist production of nature as anti-
nature and unecological

spontaneously generates and which has a hidden logic not only over and above the
intentions of human actors but which in fact alienates them. One of my principal
claims, then, is that an ecological society has to be one which is rationally organized
according to a democratically decided overall plan regarding society's interchange
with nature. We will discuss this point in some detail in the next and final chapter.

Human agency as the expression of our capacity to use our autonomous powers can
really come to fruition in such a society. Or else the use of human autonomy will
always remain an illusion so long as societies operate according to some logic which
does not allow the free play of human autonomy at the societal level.

An ecological society can usher in only if society is rationally organized and
planned so that we emerge out of our prehistory and for the first time try to fashion
our history ourselves. Of course as pointed out earlier we will still be unable to
completely do away with the first source of ecological imbalances which results
from unforeseen and unintended consequences of our activities though, in course of
time, this problem will become lesser and lesser as our knowledge and experience
about nature improves. Human autonomy is ultimately indispensable for the creation
of an ecological society but the manner in which this autonomy is exercised again
ultimately depends on the social relations of production. We will examine below the
socioecological dialectic, which is where we can locate the source of the second
cause of ecological destruction we have outlined above

3.5 the production of nature

The thesis of the production makes a much stronger claim than just saying that
nature is transformed under capitalism. For all societies transform nature and its
surroundings. But, under the rule of capital, this process of transformation is
determined by an abstract logic, the logic of the self-expansion of value. Nature as
nature is a mere foil for the inexorable movement of capital; the transformation of
nature is in fact no longer the transformation of nature as such but a manifestation of
the dynamic of capital. Capital is however not the repressed unconscious of the
transformation of nature. Instead it is the unconscious taking over our conscious

Marx writes that the circulation of capital "presents itself as an independent substance, endowed
with a motion of its own, passing through a life-process of its own, in which money and commodities
are mere forms which it assumes and casts off in turn" ("Capital", Vol. 1. n. 152).
existence, so that in the course of the transformation of nature, nature as the repository of use value, nature as having its processes and cycles, in short nature as nature does not count at all – the entire process is determined by an abstract logic far from anything which has to do with nature as such.

It is of course true that as in previous modes of production our relation with nature is socially mediated under capitalism. “But it differs markedly in the substance of this social mediation and in the complexity of the relation with nature. The logic of social mediation is not the simple rationale that springs immediately from the need to produce and consume use values, nor even the rationale of production for exchange.” Then what is it that determines the our relation with nature under capitalism? Smith writes that “it is the abstract logic that attaches to the creation and accumulation of social value which determines the relation with nature under capitalism”. This means that the transformation of nature under capitalism is itself an epi-phenomenon of the abstract movement of capital. That is, “abstract determinations at the level of value are continually translated into concrete social activity in the relation with nature” leading thereby to the production of nature under capitalism.

The point of the thesis of the production of nature is not that we actually produce our own nature, a position that can involve some human arrogance about our capacities and transformative abilities. Rather it is to emphasize that there is no dichotomy but only a distinction between nature and society. The constant transference and exchange of energy between humans and nature means that it is in fact quite impossible to view nature and society as though they are separate and not interconnected. Society is not a given set of humans with a given fixed organization that is fixed and stable. But it is precisely such a notion which is used to then juxtapose such a static society against nature which is assumed to be equally static. Society in our view is best conceived as a flow and its relationship with nature as one of flows in several directions. It is this interspersing flow which gives sense to the production of nature as diluting the distinction between nature and society. But

8 Ibid., p. 49.
so far as the creation of nature involving major changes in actual physical terms is concerned that is a question of scale.

The thesis of the production of nature derives from the notion of human society as an underlying structure, which gives coherence and a unifying logic to the innumerable activities of humans in the ordinary business of life, in their day to day activities. Such a notion of society means that society is more than a huge agglomeration of disparate humans whose activities are supposed to derive from nothing other than their own individual motivations and inherently competitive behaviour to outdo all others in the race. Society is not just the sum total or consequence of all such otherwise disparate individual activities. A society does not function that way. Rather society is the product of all such seemingly disparate individual activities bound together in an underlying unconscious structure. This structure has a logic effected and sustained by the fact that these individual activities do in fact take place but it is a logic, which cannot be exhausted by them.

Now the fact that society is more than the sum of its parts and has a logic and structure which transcends the given, the innumerable individual activities in their unconscious disparateness, does not of course mean that it acquires a power and independence regardless of these activities. Rather society has autonomy over and above the otherwise scattered and seemingly unrelated human activities precisely because it is backed up and supported by these activities. Society derives its power and independence from these activities themselves. It internalizes what the sum total of these activities gives rise to. This is so, of course, because society is not constituted of given static blocks that interact with each other only externally, without being internally related and being internally heterogeneous. Rather society is a flow in which all its constitutive moments are as internally related as they are internally heterogeneous so that society becomes the product of the mutual internalization of the effects of the different moments on each other. 'Nature' is one such moment in society so it as much internalizes the effects of other moments as the other moments internalize its powers and effects.

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9 It is essentially such a notion of society that most reform environmentalists subscribe to. For example, John Barry, "Rethinking Green Politics", London, 1999 as we shall in Chapter 4.
The consequence of such an organization of society is that humans transform nature and this transformation takes place according to a logic and dynamic which is purely social in character. Thus, for example, the prevalence of capitalist social relations means that a corresponding environmental transformation has taken place, which is sustaining those relations in the first place. Similarly the prevailing environment is possible only if the corresponding social relations persist. This is one sense in which humans can be said to produce nature. The other is the fact that under capitalist society nature becomes a mere carrier of value, a repository of exchange value.

It would be wrong to assume that all capital-nature relations at all times and places are anti-ecological. For otherwise one slips to the same dualism which holds that there is a nature which always stands opposed to society, something which the eco-Marxists are accused of doing. The point is that if capital and nature are internally related then one cannot assume such society-nature relation will lead to an inherently anti-ecological society. It would then be wrong argue that "to start with" or "right at the outset" capitalism is anti-ecological – thus there is no room for absolutes here.

How does the thesis of the production of nature square up with our argument about human-nature metabolism, its mediation through human labour and the determination of this mediation by the social relations of production? The production of nature is the consequence of the human-nature metabolism taking place under capitalist relations of production that reproduces itself, given the particular ecosystem that the flow of capital has brought about. While the metabolism takes place under the given relations of production the relations in turn are sustained by the particular ecosystem that has been produced. Thus it is that

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10 David Harvey writes that “one path towards the consolidation of a particular set of social relations, therefore, is to undertake an ecological transformation which requires the reproduction of those social relations in order to sustain it” (David Harvey, "Justice, Nature and the Geography of Difference", Cambridge, 1996, p. 184).

11 Noel Castree writes that ecoMarxism “shares something with the bourgeois and green views of nature which it otherwise opposes: namely, an ontological, theoretical and normative separation of the social and the natural realms” (Noel Castree, "Marxism and the Production of Nature", Capital and Class, Issue 72, Autumn 2000, p. 21).

different forms of property give rise to different forms of and transformation of the eco-system.

Under capitalism, "different processes attach to different kinds of capital, such as industrial, money (finance), merchant, landed and even state capital (borrowings and taxation)"\textsuperscript{13}. Given that capital is a flow, wherein human energy as abstract labour and energy from nature are resourced in order to reproduce the existing relations of production, it is clear that "one path towards consolidation of a particular set of social relations, therefore, is to undertake an ecological transformation which requires the reproduction of those social relations in order to sustain it."\textsuperscript{14}

At what stage of development of society does the production of nature start? Neil Smith seems to identify the process of production of nature with the emergence of abstract labour, that is the transformation of labour power into abstract labour.\textsuperscript{15} Smith is against the treatment of nature as external to society, as something abstract and free of human impact and to which humans should merely adapt without disturbing it. At the same time, he is against presenting nature as an ‘other’ with which humans can only have a relationship of domination. We will come back to Smith below.

\textbf{3.6 the socio-ecological dialectic}

We have discussed the question of the relationship between humans and nature under conditions of adaptation to nature in the last chapter. Here we examine it under conditions of exchange and commodity production. The socio-ecological dialectic or how society relates to nature is a function of nature's place in the social process -- how and in what form is nature located in the overall structure and process called society. This position of nature in turn depends on the way people have organized themselves, because people's relations among themselves are determined by their respective relation to nature, to the means of production and subsistence. The way people are related to nature, questions of ownership, for

\textsuperscript{13} David Harvey, "Justice, Nature and the Geography of Difference", p. 65.
\textsuperscript{14} Ibid., p. 184.
\textsuperscript{15} Neil Smith, "Uneven Development: Nature, Capital and the Production of Space", Chapters 1-2.
example, results in a society that then has a logic and notions of value according to which nature is then categorized and accordingly valorized or devalued.

Here there are two related things. The manner in which people have organized among themselves depends on the way they are related to nature. This particular organization of people in turn determines the way nature is valued or located in the social process. The way nature is valued, however, goes on to reinforce the existing organization of people vis-à-vis nature. This is of course because, as we stated above, the social relations of production are not only determining of the other moments in the social process but the other moments are related in such a chain of causality and mutual influence that the reproduction of the material conditions of production continues to take place.

In the last chapter we have already seen how humans came to distinguish themselves from nature through their activity. In transforming nature through this activity, labour, humans transformed themselves. What happened then is that humans who were earlier a part of nature came to distinguish themselves from nature. In other words, it is human activity which created this differentiation in nature giving rise to the distinction between humans and nature.

But soon humans start interacting with nature not as individual natural beings but as a collective, as social beings, which means that they no longer face nature as a force completely external to them but which is now internal, social material as well. That is to say, nature has already got internalized as a factor in the social process while, on the other hand, the organization of society is still embedded within and shaped by natural relations. Nature no longer is nature as such but something which is understood in terms of the social embeddedness and the meaning it thereby derives. We are now going to see how this internalization of nature as a factor in the social process comes about.

We will analyze two instances of this process of the internalization of nature. One is the internalization of nature as second nature which has a social as well as a natural component, given the fact that humans no longer interact with nature as individuals but as socially constituted beings valuing nature in social terms. At this level, society's metabolism with nature is not completely detached from its use
value, for example under pre-capitalist commodity production where the main objective of the circulation of commodities is the satisfaction of wants and not of begetting more and more of abstract value. Second is the level at which nature is no longer the repository of exchange value but of value as such, of abstract labour so that it is just a moment in the social process. At this level humans produce their own nature. At the first level humans are taken to merely transform nature; it is only at the second level that they actually start producing their own nature.

Our discussion here will proceed at these two levels. In order to do this we proceed with the following framework emanating from the Marxist approach to the study of societies. We will now try to examine the changing status of nature given the changes in the social process in which it is located. We have four elements in this analysis, the fourth being the combined result of the first three.

One is the manner in which people are organized for the purpose of production, that is the social relations of production, for example production organized on the basis of division of labour and the character and extent of it. Second is the process of human-nature metabolism as expressed in human labour but whose character and specific articulation depends on the specific mode of production, for example whether labour expended is for immediate consumption of the product or for exchange. Third is the way nature is then valued arising from the particular relations of production. Labour expended only for consumption and not for profit through exchange would possibly lead to a positive valuation of nature in terms of its use value. Under the logic of capital nature would be valued only as the purveyor of abstract value. The fourth is the particular transformation or production of nature that is thereby brought about, given the character of human labour expended and the resultant manner in which nature is valued. The first three elements of the social process together go to determine the character of the transformation of nature brought about by society: questions about ecological or unecological production or transformation of nature will be addressed at this level.

The first three levels together constitute the social logic which would bring about the particular social transformation of nature outlined under the fourth heading. The way in which nature as social material gets internalized in the social
process and the extent to which, in that internalization, nature's life-sustaining mechanisms and processes also get internalized or rather embedded in the resultant social and spatial relations ultimately goes to decide the social factors responsible for the creation or production of an ecological or unecological nature. This has to be handled at a separate level, that of human autonomy and conscious choices. From these four levels of analysis we are going to examine the changing equation of the relation between humans and nature.

The first element represents the social relations of production and that is primary. With the two different social relations of production we are going to present how and in what manner does our relationship with nature change. Our primary emphasis here is however on the second section that is on the capitalist relations of production where we will be dealing with the question of the production of nature and not merely the transformation of nature. Our main task in this chapter is to show how the dichotomy between humans and nature is fallacious and the human-nature unity we are here suggesting is more than saying that humans and nature are interconnected and interact with each other. For what we are claiming here is that nature gets internalized in society even as society itself is a manifestation of the internalization of natural relations (which is not just nature's laws but natural life cycles as well) or else society itself cannot survive.

The root cause of the ecological destruction rampant today under capitalist society is then that this internalization of natural relations in society has not taken place in full measure owing to the anti-nature functioning of capital: the landscape of production stands in violation of natural processes and life-cycles. Thus, for example, as Marx had noted, capitalist agriculture violates the natural cycles.¹⁶ This happens in capitalist society because nature is internalized as abstract value in society and not as nature on which we are ontologically and absolutely dependent, nature as the source of energy for society. Nature which is taken in that manner as

¹⁶ Writes Marx, "The way that the cultivation of particular crops depends on fluctuations in market prices and the constant change in cultivation with these prices – the entire spirit of capitalist production, which is oriented towards the most immediate monetary profits – stands in contradiction to agriculture, which has to concern itself with the whole gamut of permanent conditions of life required by the chain of successive generations" (Quoted in John Bellamy Foster, "Marx’s Theory of Metabolic Rift: Classical Foundations for Environmental Sociology", American Journal of Sociology, Vol. 105, no. 2, September 1999, p. 384).
the repository of abstract value is not nature given originally but nature worked on by human labour. Since this labour under capitalist society is abstract labour the nature we see in front of us is therefore seen as no more than value in the abstract. Nature shorn of its cycles and sustenance systems, which is no nature at all, therefore gets internalized, and therefore produced, in society as merely value, as dead *abstract* labour. Hence the inner logic of society, its organization of production and consumption looses all connection with and in fact violates nature's own cycles leading in all possibility to ecological destruction.

The point then is that the character of human labour which brings about the transformation of nature is fundamental in deciding the process of the internalization of nature in the social process. Once nature becomes social matter its character and also the mode of its internalization in the social process is a function of the character of human labour. What then determines the specific character of human labour? The social relations of production. Thus we see that the first three headings are ultimately decisive about the conditions of production and hence determine the type of nature we engender, something we consider under the fourth heading.

We will examine nature as social matter under capitalist production in terms of the two stages and phases of the internalization of nature as value in the social process and the concomitant process of the internalization of natural relations (this time not as value but as 'nature') in society. The character of internalization of nature in society as follows from the given existing social relations of production, determines the extent of internalization of natural relations (nature's cycles, etc.) in society and hence the possibility of an ecological society. A society which internalizes nature as the source of energy for humans fully recognising our absolute dependence on it, would in all possibility internalize it not as anything abstract but by taking full cognisance of the natural cycles and life sustaining mechanisms. But this is not possible under the rein of capital.
In general, the greater the control and mastery over nature by humans the more difficult it is to sustain the idea of the nature-society dichotomy. This is so because humans gain mastery over nature not by working individually but by coming together in a collective, a society thereby giving rise to a social logic, a social process. Humans harness and control nature only through cooperative social activity which leads to a social process. This social process or formation invariably develops a dynamic and inner logic of its own which then internalizes nature in its logic.

In a sense, society is no more than the flow of the social process captured at a particular point in time. Nature can no longer remain external to this process. It is internalized as one of the moments in this flow. At the same time, the more abstract the level at which nature is internalized the lesser the possibilities for the natural relations to be internalized in the organization of production and consumption in society and hence the greater the possibility of an unecological society. It is such an abstract internalization of nature which capitalism represents leading thereby to extremely unecological outcomes.

The internalization of nature as social material presupposes the emergence of a social process whose operation places all social factors including nature as different instances of its own functioning. The internalization of nature is the process of gaining control and mastery over nature. But the attempts at gaining mastery over nature is not driven by the urge to gain mastery over nature as nature but over nature as socially defined or incorporated in the social process. Here lies the key to not just ecological destruction properly speaking but to society’s alienation from and distance from nature. The mastery over nature is therefore the result of the social process and is not the consequence of the attempts to gain over nature in itself. That is why not all societies have tried to or been able to control and harness nature at the

\[17\] One should make the distinction between the claim that society treats nature as if it were external and hence dispensable to society and the claim that nature is an external factor to the operation and internal functioning of society. We are arguing against the latter claim and for the first one. For in spite of the fact that nature is not external to society the logic of capital leads society to treat nature as such. This mechanism of capital can be explored very well through Marx’s concept of abstract labour, which we have been trying to do here as well.
same levels or scale nor has any past society achieved the scale and scope of control of nature of present-day capitalist society.

### 3.7 Production Under Exchange and Second Nature

Human-nature metabolism is socially mediated once humans start cooperating in productive activity, for after all cooperative productive activity lies at the basis of the formation of a society. This means humans thereby enter into definite relations with one another and depending on the amount of produce and its distribution along with the overall necessity of reproduction of the material conditions of production, hierarchies emerge in society. No longer is production done only for personal consumption for the producer but also for paying taxes to the state or one's share to the community or for the purpose of exchange. The emergence of a society and a social process therefore influences human-nature metabolism in definite ways.

The fundamental point is that, with production for exchange and distinction between labourers and non-labourers, we already have a society based on the existence of a surplus produce which after a point becomes a necessity for society. This introduces major dislocations in the human-nature metabolism. The producer produces more than what is needed for his immediate consumption partly because in an exchange economy the fulfilment of his overall needs through exchange requires surplus produce and partly because of taxes and dues to be paid to the state or the landlord. This means that production is not just for the survival of humans as a natural being but as a **social** being. The demands being made on nature are not just about reproducing humans as a being of nature but humans along with their social institutions and social necessities.

Thus production already has a social logic. Nature soon gets incorporated in the social process. Of course so long as the immediate producers are dependent directly on nature it is still looked at as the repository of use value along with exchange value. Under capitalism however nature becomes the repository of pure value because anyway there are no producers who are directly dependent on nature from which they are dispossessed. Thus nature under capitalism is pure value and looses all nature-given qualities. So long as people are directly dependent on land for their consumption and for paying other social taxes, etc. the incorporation of nature (land)
is as use value and the social logic itself does not inherently stand opposed to nature-given production cycles.

However, under capitalism a large majority of the people are not dependent on working directly on nature for their sustenance but on the sale of their labour power. This labour power then works on nature in the interests of and according to the dictates of capital. Hence, nature is transformed, produced and incorporated in the social process as pure value. Since the transformation of nature takes place under capitalism with nature taken as the repository of pure value, an analysis of the transformation of nature obviously takes us to the thesis of the production of nature. We also see that the social form in which labour(activity), which is otherwise the general condition for human-nature metabolism, takes place is determining of the way nature is treated in the production process.

The process of internalization of nature in society then takes place along with the emergence of humans out of nature as a socially determined being. The end of the natural status of humans is accompanied by the end of the natural status of nature, for the same force, society, which absorbs humans and their labour power also absorbs nature into its dynamic. And it is precisely through the work of humans on nature that society derives the energy to sustain itself. The individual no longer relies directly on nature for the fulfillment of his needs and wants but, in order to do this, has to enter into definite relations with fellow humans. The fulfillment of his basic needs and wants takes place in the course of the functioning of society and he no longer opposes himself to or confronts nature directly for the purpose.

This is because in trying to access nature for the fulfilment of their needs humans enter into definite relations with each other so that what would be at the outset only an agglomeration of disparate humans gets slowly differentiated and integrated into special parts on the basis of their relationship with nature. Here we consider the type of nature as social material engendered by the emergence of an

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18 Refer, in Chapter 2 above, Marx's notion of conscious life-activity in *EPM* in which humans already transform nature to make it their inorganic body.

19 We are however not trying to suggest that the domination of humans leads to a domination of nature. Instead both the domination of humans and nature takes place as the articulation of the one
There are clearly two related aspects to the matter at hand. One is related to the conditions that lead to the kind of relationship between humans and nature corresponding to the form of economy based on exchange of commodities, which is the topic of this section. The other is an analysis of the characteristic features of this exchange itself which facilitates and reinforces such relations of production.

The point is that exchange came about as the form in which the relations between humans got organized in a particular way. This organisation itself was of course an expression of the conditions of their material reproduction. That is, humans organized on the basis of division of labour, the emergence of a social surplus, that were made possible by the breakup of primitive communities and the end of relations of personal dependence on each other. This meant that their relationship in the production process would be one of exchange of commodities that are owned by each of them separately. What would otherwise be a purely private activity in the production of commodities acquires a social character through the act of exchange.

An exchange economy was however not possible without division of labour. But this division of labour had to come about along with the break up of traditional communities and of production based on common property. That is to say, the type of division of labour found, for example, in the self sufficient Indian communities based on common property was not going to lead to any degree of exchange and the production of commodities. So for exchange to take place, the manner in which humans related themselves to nature itself had to change. After all, the emerging exchange economy would require a new basis on which humans would interact with nature, a basis which would, as we pointed out above, for the first time lead to the mode of production, as the manifestation of as it were of the same state of affairs (see footnote 3 above).

20 See the section on socio-ecological dialectic above.
formation of a social process independent of the desires and actions of individual producers.

As Marx has pointed out, one of the first conditions for the exchange of commodities is that the producers should own them as alienable property and this right should be mutually recognized in each other by the producers. That is, the producers should "treat each other as private owners of those alienable objects, and by implication as independent individuals. But such a state of reciprocal independence has no existence in a primitive society based on property in common, whether such a society takes the form of a patriarchal family, an ancient Indian community, or a Peruvian Inca State." These independent producers put up for exchange the portion of their produce which they do not need for their own consumption. Slowly, therefore, as no single producer produces all that he needs and instead relies on other producers for their fulfilment, production gets structured by division of labour and exchange in society.

Producers are therefore no longer only producing what they want for their immediate consumption but what has exchange value in the market. The process of exchange leads to the integration of hitherto isolated producers and communities and the expansion of trade. Further, the exchange and introduction of new products across communities leads to the creation of new needs among the people. Along with this, the emergence of money as the universal equivalent of value, thus allowing for exchange in a large number of commodities and across larger territories, meant that human productive activity on nature would now be guided by the functioning of the market. Humans' dependence on and access to nature is no longer directly based on consumption needs. It is not just being socially mediated but driven by the force of the market which exists independently of the individual actions and motives of the producers.

Thus, with the emergence of exchange economy and the breakup of traditional communities, human productive activity on nature underwent a change. For now "the activity... is exchange value, i.e. something in which all individuality, all particularity, is negated and extinguished." There is a sharp break from the earlier

\[21\] Marx, "Capital", Vol. 1, p. 91.
manner of relating to nature. Marx writes that "this is indeed a condition very
different from that in which the individual, or the individual extended by a natural or
historical process into a family and a tribe (later community), directly reproduces
himself from nature, or in which his productive activity and his share in production
are dependent on a particular form of labour and of the product, and his relationship
to others is determined in this particular way." Exchange creates a world which
looms large over all the individual producers existing independently of them and in
turn controlling their lives. Subsistence itself depends on the ability to exchange
one's product for the other needed products of other producers. We have a society of
producers whose dependence on each other is through the abstract operation of the
market.

"The dissolution of all products and activities into exchange values presupposes
both the dissolution of all established personal (historical) relations of dependence in
production, and the all-round dependence of producers upon each another." This
dependence constitutes the social connection of the producers. This connection is in
fact nothing more than the connection of so many different exchange values. The
relation between individual producers is therefore determined by the social process
of the exchange of commodities between them. Apart from what they produce for
their direct consumption, which in an exchange economy is anyway not much,
their entire activity is determined by the logic of the social process.

The emergence of a social process which subsumes the individual activity of the
producers means that they are alienated from this process itself. The other source of
the individual's alienation is the emergence of classes and the state. The exchange
economy stands in between humans and nature for their activity is now entirely
regulated by the operation of exchange values thus alienating humans from each
other and from the social process. As Marx writes, "the social character of the
activity, as also the social form of the product and the share of the individual in
production, appear here as something alien to and existing outside the individuals;
not as their relationship to each other, but as their subordination to relationships

22 Marx, Marx-Engels, Collected Works, Vol.28 (Grundisse), Moscow, 1986, p. 94.
21 Ibid., p. 93.
existing independently of them and arising from the collision between indifferent individuals." 24

Already here therefore it is not the natural individual who engages in activity in nature but a socially determined and alienated individual whose relation with nature is dictated by the social process of the movement of exchange value. 25 Nature no longer exists as pure nature but as something which is valued and accessed according to the exchange value determinations apart from what the producer produces for his own direct consumption without entering into exchange. The social process of exchange and the consequent productive activity cannot be understood if we choose to view things from the standpoint of nature as such, of nature as use value, keeping in mind natural process and cycles, for, in that case, we cannot understand why nature is accessed at the scale and the manner in which it is done under exchange.

The point then is to consider the social process itself in such a way that nature as modified and transformed by human labour is seen as getting internalized into it, as an instance of the overall process. We discussed this in the sections above but will come back to it below when we discuss the character of labour and value under an exchange economy.

The problem is that the emergence of a social process which internalizes nature as social material is accompanied by the alienation of the individual from the production process, something which Marx took account of as we just pointed out. This alienation from the social process meant that nature is internalized not as the source of energy (that is, use-value) for society but merely as the source of exchange value, as, in other words, social material. This process of the internalization of nature as social material and not as use value or the source of energy for society will be complete with the emergence of the capitalist mode of production where nature is pure value, as the direct producers or labourers no longer own the material needed for their own survival and for which they have to depend on the

24 Ibid., p. 94.
25 Refer in Chapter 2 above our discussion of EPM, where Marx's discusses the individual as human only as part of his species-being.
sale of their labour power as a commodity. With these changes, however, society starts producing its own nature: that is, capital produces its own nature.

We have so far restricted our description of the exchange economy to what is called simple commodity production, that is to exchange corresponding not to the production of nature but only to its social transformation. Simple commodity production in its pure form does not have much historical relevance as it has only existed side by side other social forms of organization. According to Samir Amin, "no society has ever been based on the predominance of this mode of production". Instead it has frequently existed in limited spheres of all precapitalist societies, "in particular, the sphere of handicraft production, when this has been sufficiently dissociated from agricultural production". Hence we must now proceed to show how the division of society along class lines with a ruling class controlling and using the state in its favour impacts upon society's metabolism with nature.

The emergence of a social process of production however should not be viewed as solely the result of the logic of simple commodity production. For simple commodity production was preceded by a surplus generating society already divided between the labourers and the non-labourers. That is, even without simple commodity production human-nature metabolism under conditions of class division in society meant that a social logic of production delinking production from the direct consumption needs of the people was emerging. Historically therefore it is seen that the development of a social process of human-nature metabolism in society progressively opened up a dichotomy between humans and nature.

But what is to noted is that it is not just the objective economic working of commodity production which provided the basis for the human-nature dichotomy; other more political divisions, hierarchies and classes in society provided as much ground for the human-nature dichotomy which would have serious and adverse implications for human-nature metabolism. Most plausibly, it can be argued that commodity production has come to exist side by side the emergence of classes and the state in society. For, surplus production is as much a prerequisite for exchange as for the emergence of classes and the state. But it seems possible that surplus produce

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25 Samir Amin, "Unequal Development", Delhi, 1979, p. 15.
generated classes and incipient forms of the state earlier than it gave rise to exchange, for after all exchange of commodities is supposed to have first started between communities that were in all probability already divided along class and other hierarchical lines before exchange of commodities took place.

The exchange of commodities in these communities that were otherwise, in spite of classes and the state, relating to nature without internalizing it into the social logic meant that now, side by side, a different social economy, in contrast to and challenging the natural economy, was developing. So long as exchange was carried out with the producer owning the means of production and subsistence the natural economy was preserved in spite of the emergence of money and the increasing discrepancy between use value and exchange value. The same held true in the case of a ruling class in precapitalist societies appropriating the surplus product with or without owning the means of production: that is the natural economy was preserved.

The point to be noted is that so long as the direct producers were in possession of their means of subsistence, nature would be treated as use value or, exchange value only to the extent it fetches use value in the market. That is to say, the transformation of nature takes place in the course of human activity trying to derive use value, which is naturally given in nature from before and whose derivation for humans, needs only the change of form in matter. This also means that natural relations get internalized in the social process or rather society is still organized basically along natural lines.

Since, as we noted above, simple commodity production was never dominant in any society it is extremely important to examine in what ways producers have been subjected to regimes of private property, classes and the state and how this has affected society's metabolism with nature. For as Neil Smith argues, the emergence of classes based on private property and the state led to differential access to nature...

27 Marx describes the alteration brought about by nature thus: "In the labour process, therefore, man's activity, with the help of the instruments of labour, effects an alteration, designed from the commencement, in the material worked upon. The process disappears in the product; the latter is a use-value, Nature's material adapted by a change of form to the wants of man" (Marx, "Capital", Vol.1, p. 176).
for different sections of the population and to the alienation of the workers from their product and from the transformation of nature they brought about.\textsuperscript{28}

Pre-capitalist societies that preceded capitalism were invariably dominated by a ruling class, which appropriated the surplus product. This was true for both feudal mode of production (European societies) and for the Asiatic mode of production, that is, irrespective of whether property was privately or communally owned.\textsuperscript{29} Writes Smith, "the ruling class, whether or not it directly controls the social means of production, certainly controls the surplus appropriated from nature through the human labour of others, while the labouring class works the means of production".\textsuperscript{30}

Smith points out some essential features of a precapitalist exchange society marked by the extraction of surplus produce by the ruling class.\textsuperscript{31} These features clearly demonstrate the emergence of human-nature dichotomy which springs from not just commodity production and exchange but from the division of society into classes.

i. Unequal access to nature: both for the labouring classes and for the ruling classes who lose proximity with nature. Also emergence of a section in society for whom nature is something abstract.

ii. Alienation of the worker from the product and hence from the transformation of nature.\textsuperscript{32}

iii. Internal differentiation of society leading to spatial differentiation of nature. Division of labour between agriculture and industry, hence between town and country; sexual division of labour in reproduction and then in production radically changes with division of labour and production of exchange; and finally division between trades leading to specialization in work leads to fragmented experience of nature.

\textsuperscript{28} Neil Smith, Uneven Development: Nature, Capital and the Production of Space".
\textsuperscript{29} On this see, Ferenc Tokei, "Essays on the Asiatic Mode of Production", Budapest, 1979.
\textsuperscript{31} Ibid., pp. 40 – 47.
\textsuperscript{32} As Smith writes, "with production for exchange rather than for direct use, there arises first the possibility and then the necessity for alienation of the individual... Now the worker's alienation is not simply alienation from the product but, due to the increased specialization of labour, it is also alienation from one's fellow workers and oneself" (Ibid., p. 43).
These features go to show that human relation with nature is no longer direct but is mediated by social structures and processes that open a gap between humans and nature. This means that, in a pre-capitalist society, where production for exchange is carried out by producers who directly produce their means of subsistence, but whose surplus produce is, regardless of the form of property ownership (private or communal), appropriated by the ruling class, production entails the reproduction of the entire complex of social relationships created around this process of metabolism with nature. As Smith writes, "in an exchange economy, the appropriation of nature is increasingly regulated by social forms and institutions, and in this way, human beings begin to produce more than just the immediate nature of their existence." They produce a second nature, which in turn includes what we have called surface nature in the earlier chapters.

Nature in such a society becomes social material without however becoming pure value, as under capitalist production. The labourers work on land in order to derive use value and, exchange value to the extent that it can be exchanged for use value. Production is for consumption and exchange, but exchange is also for consumption. Nature therefore in such a society is not pure social value but is valued for what it is: as say, land that can be cultivated for crops, or rivers whose water can be used for irrigation or mines that can give us minerals, etc. This is of course nature as a wealth of use values. The exchange value of products is determined largely by their use value.

Thus nature is internalized in the social process as the repository of exchange value to the extent that it can fetch use value. Under precapitalist exchange society, Smith writes, "the relation with nature is mediated by exchange value as well as use value determinations". Nature here still remains nature-as-use-value to a large extent, as matter whose transformation takes place primarily for the satisfaction of human wants. In course of time, however, as production for exchange expands and

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33 Joel Kovel argues that the human-nature gap inaugurated in pre-capitalist society reaches its culmination under capitalism. He writes that "capital stands at the end of a whole set of estrangements from nature and integrates them into itself. Far from being a merely economic arrangement, then, capital is the culmination of an ancient lesion between humanity and nature, expressed in the notion of the 'domination of nature'" (Joel Kovel, "The Enemy of Nature: The End of Capitalism or the End of the World", London and New York, 2002, pp. 8 – 9).


35 Ibid., p. 46.
the division of labour intensifies, the transformation of nature no longer remains at the level of simple change of form of matter in order to exchange it for use. Increasingly, as society progressed towards the logic of capitalist production, nature started getting internalized as pure value with natural relations (use value) being quite incidental to the production process as production now takes place for the sake of production, for begetting value.

According to Marx, "exchange does not create the differences between the spheres of production, but brings what are already different into relation, and thus converts them into more or less inter-dependent branches of the collective production of an enlarged society." 36 However once the process of exchange starts it leads to an increasing social division of labour in society even as this social division of labour in turn leads to intensification of exchange.

Thus the structure of production and consumption is based on social relations where, the possibility or impossibility of exchange for value, determines the fruitfulness of human productive activity on nature. Consequently, human activity thereafter is not a function of our immediate needs and their satisfaction through work on nature but of the possibility of procuring and enhancing value. Now, exchange in itself does not totally sever the link between human needs and human activity in nature. For at least so long as exchange takes place through direct barter the connection between use value and exchange is maintained. For a commodity would then be useful only if it is of direct use to another person. But with the emergence of money as the universal standard of value the divergence between use value and exchange value widens further.

But even when exchange gets universalized and a universal standard of value emerges, so long as exchange is, in the final analysis, related to consumption the inner logic of society still can internalize nature in a way which allows scope for the natural relations to get internalized in the way society establishes its productive

activity with nature.\textsuperscript{37} We will examine how such changes led to the emergence of a social process which gradually incorporated nature as social material, as the repository of exchange and not just use value. We will see that an economy based on exchange creates conditions for the emergence of individuals who are no longer individuals determined by given natural relations in society. With the advent of money, under precapitalist exchange economy, the direct link between use value and exchange value is going to be broken but still the ultimate motive for production is consumption though it is of course consumption through exchange. The motive for production is either for personal consumption, for the payment of rent or taxes, or for exchange of surplus produce etc. Under capitalist production however production is for the sake of production or rather accumulation of value.

Besides lack of correspondence between production and consumption brought about by the divergence between use value and exchange value, the social institutions and hierarchical structures, which emerge with the development of an exchange economy based on division of labour and commodity production mean that the reproduction of these institutions imposes its own demands on production. It is not only reproduction of the immediate nature of ones existence, which is necessary, but also the reproduction of the social conditions of existence. And yet the human-nature dichotomy in precapitalist exchange societies is not complete as under the rule of capital. Let us explore the latter now.

3.8 capitalist production and the production of nature

Thus far, we have treated nature as the repository of exchange value. But as we saw the true nature of exchange value can be understood only if we take account of the overall process from which it derives its meaning. For it is this overall process which undergoes a change when we enter into the capitalist mode of production. Capitalism, or for that matter any mode of production, involves a (re)organization of the forces of production in its own manner - its own mode of production. Social factors and forces operative in earlier modes of production are, to be sure, found

\textsuperscript{37} Marx seems to have been aware how natural cycles still exercise a determining influence on production. John Bellamy Foster, for example, points out that "for Marx, 'the excrement produced by man's natural metabolism', along with the waste of industrial production and consumption, needed to be recycled back into the production, as part of a complete metabolic cycle" (John Bellamy Foster, "Marx's Theory of Metabolic Rift: Classical Foundations for Environmental Sociology", p. 384).
Chapter J: Capital's logic of metabolism with nature: the capitalist production of nature as anti-nature and unecological

here also but their meaning undergoes a transformation, which can only be captured by examining the concrete conditions of their emergence, functioning and articulation. This is, of course, part of Marx's method of analyzing the concrete as part of, yet distinct from, the abstract. 38

The capitalist mode of production brings about an unprecedented restructuring of our relationship with nature accruing from the effects of the process of self-expanding abstract value. The social logic now is purely abstract and has very little to do with the real consumption needs of society. Its driving force is value and more value. The reorganization and further development of the productive forces, including nature and human labour, is brought about not only through the working out of the process of capitalist commodity exchange but, at some point, through the political overthrow of the decadent feudal classes holding on to "so many fetters" that the old property relations become and the setting up of new, capitalist relations of production. That is, new social relations of production corresponding to the new productive forces are established.

The social logic of capitalist production internalizes nature primarily as a commodity (rather than its money-equivalent) that possesses exchange value. But since value under capitalism changes form between money and commodities, in the course of exchange, nature can very well be at any point in time an embodiment of pure value in the form of its money-equivalent. 39 Nature (as use value), in the form of a commodity, is capital, which, however, is another form of value. Hence, nature is internalized in the production process under capitalism as a commodity, which will be used for begetting more value through the use of another commodity, labour-power.

Capitalist production organizes nature in such a way as to put human labour to work on it to derive value out of it. Nature is just a foil against which value is to be derived by its transformation through human labour. At this level, as capital, in the actual process of production, nature has a use value component so that natural relations might get embedded in the way nature is internalized in the social process.

38 See the section on The Method of Political Economy in Marx's Grundisse.
39 See Marx's discussion on capital as its money-equivalent and as commodity in "Capital", Vol. I, Part II, Chapter IV called “The General Formula For Capital”.
But that is entirely incidental to the main process of value expansion under capitalist production wherein nature is just a commodity. Unlike in precapitalist commodity production, under capitalist production, the objective social process is such that natural relations get completely overlooked by the process of social production that is now driven solely by the logic of self-expanding value. This condition is brought about above all by the emergence of the 'free' labourer under capitalism.

The internalization of nature as capital is brought about by the reorganization of nature as a commodity in the process of value-expansion -- such a condition have been brought about by the one new distinguishing historical feature of the capitalist mode of production, which is the dispossession of the producer from the means of production and subsistence. No section of society is any longer directly dependent on nature as nature or its cycles. The metabolism between society and nature now takes place as a process internal to the system of capitalist production.40

Under simple commodity production, a large part of what was consumed was directly produced and consumed without putting it through the market. And what was put in the market, that is, exchange, was ultimately motivated by consumption needs and not the drive for some abstract value as under capitalism.41 Thus, all the changes that are brought about in nature are the result of the active factor in such a process: self-expanding value. In fact, this inexorable process of the movement of value streamlines all the social factors, like labour and nature, into its vortex and fashions them after its image. In short, capitalism produces its own nature.42

In order to understand the specificity of the capitalist mode of production we must be able to say what is different in it in spite of the fact that some of its key features, such as exchange, money and commodities were found in the precapitalist modes of production as well. The next question that needs to be asked is then what is it that makes the production of nature possible under capitalism? How is it possible that nature gets internalized into the capitalist production process as a mere commodity, a factor of production? Does this mean that capitalist production

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40 It is this process which is internal to the logic of capital which provides the basis for what we called the overburdening of human subject in the last two chapters.
41 This is to say that simple commodity production exchange is expressed by Marx's C-M-C while the movement of capital is given by M-C-M'.
relations are always everywhere unecological or do they sometimes take account of natural relations in the way production is organized?

We will examine the production of nature under capitalism at three levels. Marx has shown that the capitalist mode of production emerged through "a process that transforms, on the one hand, the social means of subsistence and of production into capital, on the other, the immediate producers into wage-labourers". With this came about the transformation of the character of labour power for it was no longer expended on working the producers' own means of subsistence and production, for the production of use value but on working the capitalist's means of production.

The emergence of abstract labour that is the source of value under capitalism meant that nature would also feed into the process of the self-expansion of value. Capitalism would fashion nature, differentiate or homogenize it, according as the process of value-expansion takes place. This also means that nature so produced would not only be a consequence of but would also instantiate the existing relations of production. For, after all, the flow of value in its different forms gives rise to a corresponding reorganization of the forces of production, including nature. The debatable point to be raised here is, however, whether nature's use value is at all important in the capitalist mode, for Marx pointed out that value in the form of commodity is capital which however cannot be conceptualized if its use value is excluded.

Thus, the relations of production, character of human labour and value-basis of production under the capitalist mode are the three points around which we can consider the process of production of nature under capitalism. What we will see is that the logic of capitalist production subsumes human autonomy in its fold as a result of which the ecological or unecological production of nature is a question left to the vagaries of the operation of the law of value. The production of nature fails to be in harmony with the life-sustaining capacities of nature and, increasingly, a more and more dead nature is produced. The production of nature which ignores the fact

42 There is a wealth of literature examining the production, remaking or refashioning of nature. See Neil Smith, Donna Haraway, Bruce Braun, Noel Castree, Kate Soper in the Bibliography.
44 "(But the) money itself is only one of the two forms of value. Unless it takes the form of some commodity, it does not become capital" (Marx, "Capital", Vol. I, p. 152).
of our ontological dependence on nature and the continued sustenance of society through exchange of energy with nature is responsible for the ecological destruction that we see around us today. Only to a very little extent is lack of complete knowledge of the functioning of nature, of its fabled secrets, responsible for this ecological destruction. The logic of ecological destruction is therefore not very different from the logic of the social production of nature, the logic through which nature gets internalized in society. And here Marx's analysis of capitalist production is quite helpful in understanding the process.

We will see that the change in the social relations of production gives rise to a system of producing commodities where the use value component sort of goes to the background. We saw in the previous section that, for Marx, the simple (pre-capitalist) exchange of commodities was based on the contradictory quality of a commodity and the conditions created by the social division of labour where the relation among private producers is manifest only through the exchange of commodities. But there is no general notion of value yet. For, at every moment, there is the constant reference to use value. All transaction is an exchange of commodities and the need for and realization of use value propel each transaction. Exchange value and the money-value of a commodity appear as no more than a displacement of use value which is the final goal of all transactions. Of course, there is already a notion of social labour, of the general circulation of the products of private labour through exchange. And there is an anticipation of the notion of abstract labour under capitalism when we find that under exchange the ideal value expressed in money is the reflection of a socially recognized quantity of labour in a commodity. Marx writes, "when they assume this money-shape, commodities strip off every trace of their natural use value, and of the particular kind of labour to which they owe their creation, in order to transform themselves into the uniform, socially recognized incarnation of homogeneous human labour".45

But in spite of this, under simple exchange of commodities, labour expended to make a product is always private concrete labour even though exchange brings out the common homogeneous labour-content in them. This is where we need to take account of the mode of production in which exchange is taking place, that is, the

overall social process and specific articulation of the different social factors and forces need to be taken into account.\footnote{See our discussion in the second section of this chapter above.} For so long as the producers own the means of production, production, consumption and the processes of exchange can be understood as ultimately the circulation of use values (note the emphasis on the overall social and historical conditions that give a particular articulation to features that were otherwise to be found in earlier societies as well.) No wonder that Marx considers money, which is the carrier of ideal value, to be no more than one other form of the commodity under simple commodity production. For him, the starting-point and end-point in a transaction under simple exchange is always the commodity or the use value engrained in it. Marx writes, "in the circulation C-M-C, the money is in the end converted into a commodity, that serves as a use-value; it is spent once for all".\footnote{"Capital", Vol. 1, p. 147.}

The circulation and exchange of commodities takes place, under simple exchange, for consumption and not for the sake of circulation itself. That is why, commodities fall out of circulation in order to realize their use values: "the circuit C-M-C starts with one commodity, and finishes with another, which falls out of circulation and into consumption. Consumption, the satisfaction of wants, in one word, use-value, is its end and aim. The circuit M-C-M, on the contrary, commences with money and ends with money. Its motive, and the goal that attracts it, is therefore mere exchange-value."\footnote{Ibid., p. 148.}

In the case of simple exchange, commodities are, of course, the starting-point as well as the end-point. But with capitalism, it is not commodities but money, which forms the starting and end points. That is to say, use value is no longer important as it is not the search for use value that drives exchange. It is an abstract process that has nothing as such to do with consumption. However, the historical conditions for value to be self-expanding and for its own sake, "are by no means given with the mere circulation and exchange of commodities. It can spring into life, only when the owner of the means of production and subsistence meets in the market with the free
labourer selling his labour power. And this one historical condition comprises a world's history."

The dispossession of the producers from the means of production and subsistence gives rise to a cleavage between nature's cycles and the human production systems for now not only is no section of society directly dependent on nature for their consumption needs but there is an enormous army of the unemployed ready to offer their abstract labour services in the interests of self expanding value. This provides the conditions for self expanding value to refashion nature according to its own requirements, leading thereby to the production of nature. Unlike all previous modes of production this happens now at a global scale transcending all regional and national boundaries. Neil Smith writes, "under capitalism the appropriation of nature and its transformation into means of production occur for the first time at a world scale. The search for raw materials, the reproduction of labour power, the sexual division of labour, and the wage-labour relation, the production of commodities and of bourgeois consciousness, are all generalized under the capitalist mode of production." Smith points out the role of the capitalist state in creating conditions for the unchallenged expansion of capitalism to all parts of the globe bringing precapitalist societies in its fold as an appendage to metropolitan capital. The flexibility of capital means that it coexists with and sometimes reinforces older precapitalist exploitative formations. Accumulation takes on a world scale resulting in "the generalization of the capitalist relation with nature, and the practical unification of all nature in the production process." Quite reminiscent of the dumping of ecologically hazardous production systems in the underdeveloped societies, we see that the global differentiation of nature follows the global economic patterns of production and the distribution of resources.

Smith shows how the process of capital accumulation and the production of nature gives rise to a society marked by the alienation of the worker from his work, where the nature produced appears as something alien and confronting the worker as

49 Ibid., p. 167.
51 Ibid., p. 50.
independent of his labour. "The social division of labour and the advance of the productive forces develop apace -- the second nature experiences continuous internal differentiation". 52 The division of labour and production across space, the need to connect them up through modern means of transport and communication necessitates "the parallel growth of social cooperation between them if the mode of production is to function as a whole." 53 Though the way production is organized does take account of the prevailing natural conditions, the capitalist mode of production nevertheless determines the manner in which nature will henceforth be transformed, manipulated and organized.

The rise of the single family as the economic unit of society came about with the development of the commodity economy. With capitalism, "a number of functions connected with the reproduction of labour power are privatized in the nuclear family." 54 From raising members of the work force by the women-members of the family to ideologizing them into accepting the market as something 'natural', the family plays a crucial role in the reproduction of the capitalist production system. The organization of society along capitalist lines is accompanied by the rise of forms of consciousness based on bourgeois notions of formal equality before the law. For capitalist production takes place behind an outward garb of equality of exchange, where everything is exchanged at their true values. Bourgeois consciousness always hovers around the exchange relations and fails to capture the mechanism of the extraction of surplus value in the realm of production.

The enormous organization of society on this new capitalist foundation could be possible only with a corresponding production of nature. Nature's incorporation into the social process, therefore, reflects the class, gender and racial hierarchies along which society is organized -- it is truly a social production of nature. But the social does not represent the collective will of the members of society nor therefore of human autonomy. It instead refers to the working of the capitalist production system which is independent of the wishes of individual producers and is propelled by nothing other than the drive for more and more value.

52 Ibid., p. 50.
53 Ibid., p. 50.
54 Ibid., p. 52.
Thus the production of nature under capitalism is not just the quantitative expansion of control over nature. It is not in that the sense the mere result of human struggle with nature for deriving a greater amount of use value with less effort. It is not that we struggle with and try to domesticate nature in order to derive maximum use value from it, use value which is primarily given to us by nature. Rather, it is the result of trying to derive value produced by human abstract labour and in which process nature gets internalized as raw material. The production of nature is entirely the consequence of the inner functioning of capitalist society. As Smith writes, "with the production of nature at a world scale, nature is progressively produced from within and as part of so-called second nature".

There is a danger in viewing nature purely in terms of use value and not recognizing the exchange value component. This in turn usually goes along with the treatment of production or rather the social relation to nature as universal and it "treats certain social relations with nature as natural relations, in the sense that they are deemed eternal and inevitable. The treatment of technology provides the best illustration of this unintentional fetishism." There are of course pitfalls in viewing nature only in terms of exchange value as people like Schmidt has pointed out in trying to argue that Marx had only a social notion of nature.

The thesis of the social production of nature has fundamental implications on the question of ecological politics. Since under capitalist society this production does not take place according to the exercise of human autonomy and is in turn dictated by the movement of capital in its insatiable thirst for value, one must then examine how the flow of value goes to constitute the particular natures that we see around us. For as David Harvey points out if particular relations of production are based on a definite organization of nature, the latter cannot be done with without

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55 This inner functioning of capital, does not mean that it is an 'objective' process which functions without the element of human subjectivity. See Samuel Knafo, "The Fetishizing Subject in Marx's Capital", Capital and Class, Issue 76, Spring 2002 and our reference to this article in the Introduction.

56 Smith, "Uneven Development: Nature, Capital and the Production of Space"p. 54.

57 Ibid., p. 28.

major dislocations and disruption in society.\textsuperscript{59} Our analysis here helps to get a rather clear view of the vacuousness of the deep ecology call for going back to a pristine nature, for as we saw, human history has left us with no pristine nature to go back to. We have in front of us a historical nature fashioned by humans for their needs but, given the major distortions introduced by capitalist society, we have ended up producing an unecological nature.

Secondly, the production of an ecological nature can definitively come about only by ending the rule of the law of value, wherein individuals are alienated from the production process which internalizes everything, including nature into its mad rush for value. It just indicates that only a society, which possesses the autonomy to rationally organize its metabolism with nature and knows nature for what it is, the indispensable condition for our survival and the source of our energy, can usher in an ecological production of nature.

As must be clear by now we are here tying to find out ways in which an ecological nature can be possibly produced and what are the conditions needed for it to take place. How is it then, we must here ask, certain production processes give rise to a corresponding organization and production of nature. After all if the advances made in science and technology are to be made use of in producing an ecological nature we must see if they in themselves lead to the destruction of nature or whether it is rather the larger perpetuation of the existing class and gender relations within which the particular technologies operate that lead to the production of unecological natures.

\textbf{3.9 conclusion}

What we saw in this chapter is that the process of the production of nature is itself dependent on the process of the logic of capital, the process of the self-

\textsuperscript{59} Harvey thus cautions against the rush to abandon modern existing ecosystems: "It is pure idealism, for example, to suggest that we can somehow abandon in a relatively costless way the immense existing ecosystemic structures of, say, contemporary capitalistic urbanization in order to 'get back to nature'. Such systems are a re-worked form of 'second nature' that cannot be allowed to deteriorate or collapse without courting ecological disaster for our own species" ("The Nature of Environment: The Dialectics of Social and Environmental Change", \textit{The Socialist Register 1993}, London, 1993, p.}
expansion of value. The logic of capital, however, as we have argued so far, marks the complete dichotomy between humans and nature. This dichotomy is marked by nature being valued only to the extent that it represents abstract value; on the other hand, human labour gets articulated only as abstract labour. Nature is internalized in the social process as non-nature, as everything but nature, bereft of its use value. Nature is therefore not just transformed and changed in shape and terrain but it is in the first place treated qualitatively as not-nature. It is then no more than one of the factors in the social process of production, of the process of value. The movement of capital, the flow of value etches out its own nature. Nature is more than merely transformed: capitalism produces its own nature.

The anti-nature character of capitalism is inherent in the very logic of capital. But for all this, as we say above, we cannot declare that capitalism is universally unecological. A fit between an ecological transformation of nature in certain places and the interests of capital cannot be ruled out. In fact certain particular transformations of nature might turn out to be ecological. Capitalist transformation of nature may turn out to be ecological through sheer chance or because of capital's far-sightedness in understanding that long-term profitability depends on being ecological. We are not ruling out that. What we here find is that there is nothing in the logic of capital which can ensure the ecological production of nature.

On the contrary, capitalist production creates a serious dichotomy between society and nature and rids society of its ability to decide its metabolism with nature. Our dependence on nature is veiled by the working of the reified structures of the market and economy. The market and economy assume a force and independence of second nature so that we seem dependent on them and not on nature as such. The exchange of energy between society and nature therefore does not in the first place appear to be between society and nature (that is, nature as transformed by humans). Instead, this exchange is merely the exchange of a plethora of commodities. The production of nature under capitalism is a function of the production of commodities. Society's autonomy in producing an ecological nature is therefore completely lost.
The process of interspersal between society and nature has meant under capitalism the decimating of nature as nature. What is needed is a restoration of nature for what it is, that is, as nature so that this interspersal takes place on completely different conditions, on the basis of society's democratic and rational control and plan about its metabolism with nature. We will have more on this in the next chapter. Interestingly, it will be seen that the production of nature under capitalism itself opens up possibilities for an ecological production of nature.

The internalization of nature as pure value arising from the basic condition of the appropriation of the means of production and subsistence from the direct producers means, as we saw, that the produced nature debases the life-sustaining capacity of much of the natural world. The capitalist mode of production engenders eco-systems that are destructive of the natural powers of the soil, so that natural cycles tend to be universally replaced by capital's anarchic movements. The problem is not the changes brought about at the level of surface nature. It arises when capitalism makes use its knowledge of nature's laws for the purpose of piping nature into the production process, for ever-increasing accumulation. Thus, countering Bacon's comment that "nature is only overcome by obeying her", which was of course only a recipe for the subjugation of nature, Marx wrote that for capitalism the theoretical discovery of nature's "autonomous laws appears merely as a ruse so as to subjugate it under human needs, whether as an object of consumption or a means of production."

60 Nature, under capitalism, is no longer a force, with its inner dynamism and vitality and which needs to be explored and respected for the production of ecological natures. Instead it is internalized as a mere appendage of capital, as Cronon has shown in the case of the transformation of the American West during the nineteenth century.

We therefore see that the capitalist production process generates unsustainable natures that can amount to a threat to the very continued existence of life on earth. It upsets and destroys the possibility of a creative relationship between humans and nature which we examined in the previous chapter. We however started the
discussion of this chapter with a description of how all societies have an inner logic of their own that must be unravelled to be able to make sense of the transformations that nature is subjected to. We were following Marx's method of going beneath the surface of things and looking at embedded structures that condition the functioning of society. These structures derive from the manner in which the reproduction of the material conditions of production takes place in any society. It is this which provides each society with a logic and dynamic of its own. The internalization of nature in society takes place according to this logic. We saw this in the case of simple commodity production and, more importantly, in the case of capitalist commodity production.

The functioning of society according to a heteronomous inner logic like that of capital means however that human autonomy understood as society's ability or right to decide the course and manner of its metabolism with nature is definitively put overboard. Human autonomy, or more precisely, society's ability to decide and plan its production and consumption needs and priorities is sacrificed at the Juggernaut of capitalist production. Production and consumption are taking place at levels that are by all accounts not only unevenly distributed over different parts of the globe but can produce extremely harmful effects if carried on in the way it is presently done.

In the next chapter we are going to argue that for an ecological society to be in place the logic of capital must go. Only then can society decide its autonomous metabolism with nature, in the most democratic manner. In our discussion above the need to put the exchange of commodities in the context of the over social process was pointed out. The specific significance of exchange depends on the specific articulation of the different social factors and instances, the manner in which they are interrelated or connected thereby forming the social process. It was seen that exchange, or the specifically economic logic is itself objective but not autonomous of the larger production process.

That is there are definite political conditions that make the logic of capital to function. Thus as we pointed out above while simple commodity exchange has taken place in pre-capitalist societies under capitalism it takes a different form. According to Marx the one historical condition which brought this about is the appropriation of
the means of production and subsistence from the producers and the sale of their labour power as a commodity to the owner of the means of production. Hence we see that the so-called economy is not really autonomous of the political and social conditions in which it functions. Rather it is the later which makes it what it is.

Capitalism however perpetually creates the illusion of the autonomy of the economy, as though there are no socio-political conditions that facilitate it. This is the political-economic dichotomy engendered under capitalism alongside the human-nature dichotomy. It is then the task of ecological politics to expose the falsity of this political-economic dichotomy. The political conditions that enable such a free rein to the economy have to be revealed. Reining in the economy however can never be complete without abandoning logic of capital. Only with the logic of capital gone can we then have a society which freely decides and controls its metabolism with nature. The next chapter tries to show how society's autonomous metabolism with nature can be achieved through what we call the expansion of the political. Society's realisation of ecological rationality through democratic means such that this rationality is vested in the majority of people would lead to greater freedom. Politically speaking, enhancement of freedom justifies an ecological society based on ecological rationality. The search for freedom through the expansion of the political, leading to the abandonment of the logic of capital, such that an ecological society is formed where ecological rationality is democratically accepted by the people: this is what we are going to explore in the next chapter.