

## CHAPTER FOUR *THE CONCEPTUALISATION OF WASTE IN CRITICAL ECONOMIC THEORY*

### *DISCOURSE ON NON-COMMODITY WASTE AND ON WASTE IN A SOCIAL SENSE*

#### **1. Introduction**

The topic to be addressed in this Chapter is the conceptualisation of waste in critical economic theory. Unlike the question of negative use-value discussed previously, the issue of waste is not a novel issue in critical economic theory, for it has been well addressed by members of the American Marxist School, in particular by its most prominent representatives, i.e. Paul Sweezy and Paul Baran (1). Studying the laws of development of the US-economy in the twentieth century, Baran and Sweezy laid bare the phenomenon of a *rising surplus*, and analysed how monopoly corporations and the US state allocated a major part of the surplus towards investments which *from a social standpoint* should be designated as waste. The authors, for instance, noted that corporations make large outlays for advertising purposes and for other sales' efforts, and that planned obsolescence is built into production plans for automobiles and for other key commodities (2). Both authors were keenly aware of the fact that state-expenditures on the military establishment were a central, of not *the main* channel for re-investment of the rising economic surplus in the US (3).

This Chapter follows Baran and Sweezy in arguing that the issue of waste is crucial towards our understanding of the monopoly phase of capitalism. Still, I do take a somewhat different approach for elaboration of the topic. First, whereas I agree that military expenditures made under monopoly capitalism should be termed a form of *social waste*, since those expenditures even while resulting in corporate profits, by and large do not serve to enlarge human welfare, - I believe that the issue of waste should be addressed in broader terms than was done by Sweezy and Baran. For aside from, or even alongside, the commodities and services identified as *social waste*, corporations operating in the military, the chemical and other industrial sectors often produce *non-commodity waste*. Hence, in this Chapter I will *juxtapose* social waste and non-commodity waste as two subcategories of waste. I will argue that *both* need to be discussed systematically in order to comprehensively assess the extent to which waste is generated under the contemporary system of monopoly capitalism.

Further, I will follow Marx's procedure in addressing the issue of waste first in the context of the *individual* circuit of capital, i.e. before discussing the same issue at the level of the *social* accumulation of capital. Moreover I will once again start from the nuclear sector, and this not because I believe that our debate should be limited to this particular industrial sector alone, but since both subcategories of waste, non-commodity waste *and* social waste, are thrown up by production facilities in this sector, and since the elucidation of the issue is much facilitated by a focus on the nuclear sector. Here it is not just a question of *juxtaposing* the two subcategories of waste as being generated by

different units in the same sector. As to be explained below, - military-nuclear reprocessing factories and other military-nuclear production sites in fact impose two forms of waste upon society *simultaneously*. The discussion on nuclear commodities and nuclear waste helps illustrate that non-commodity waste and social waste share common characteristics and at times typify the same material substance.

In spite of my distinct approach to the analysis of waste, however, I have drawn much inspiration from the theoretical work of Paul Sweezy, Paul Baran and other members of the American Marxist School. To my knowledge, this current as no other current within twentieth century Marxism, has openly posed the need for an *extension* of critical economic theory, an extension necessitated by the new conditions of accumulation existing under monopoly capitalism. Baran's and Sweezy's analysis of waste can be further refined, strengthened, such as by juxtaposing non-commodity waste and social waste. Still, it is *their* creative work, *their* current within international Marxism, that has done path-breaking work in exposing the degree to which resources are squandered under the monopoly capitalist system, in order to allow this irrational economic system to continue functioning. Hence, I devote this Chapter to the achievements of the American Marxist School.

## **2. Nuclear Waste: Instance of Non-Commodity Waste**

Let's then start by elaborating the concept of non-commodity waste. Here, we may structure our discussion around nuclear waste, for nuclear waste indeed is a typical instance of non-commodity waste. First, nuclear waste with a varying degree of ionising radiation emerges at each link in the nuclear production chain, and this independent from the character of the commodity that results from the manufacturing process at any given link in the chain. Whether the commodity manufactured be a raw material for production of nuclear energy, or a raw material for the manufacturing of nuclear arms, - invariably commodity production is accompanied by the generation of a by-product, i.e. nuclear waste. This waste is an instance of non-commodity waste, for contrary to the civilian or military commodity of which it is the by-product, the nuclear waste in principle is no marketable good. It cannot be sold on the capitalist market. Instead, it has to be transported, stored, possibly processed and/or monitored, in view of the harmful properties which it contains.

Further, nuclear waste does contain negative properties which I have already termed *negative use-values* or *disvalues* ( **wu** ), for the given properties hamper the fulfilment of human needs and are damaging also to other forms of life on earth. Precisely how damaging nuclear waste is depends amongst others on the intensity of ionising radiation of the given nuclear material, and on the amount of time the radiation lasts. The *period* of radiation is expressed in the '*half-life*' of the nuclear material, - a term which signals the amount of days, months or years which it takes for half of the ionising radiation to 'wear out' (4). The *intensity* of radiation is expressed in the language of low-, middle- and high-level waste, - categories which however are not employed in a uniform manner by nuclear policy-makers of different capitalist countries (5). In general, the nuclear waste cannot be put aside or recycled as scrap, in view of the cancer risks and of other health and environmental hazards connected to this waste.

That means, nuclear waste *should* necessarily result in expenditures which may be characterised as negative *exchange-values* ( **we** ). These expenditures are not always incurred by the owners of the nuclear facilities themselves, for the owners may well choose to ditch their responsibility for the health- and environmental hazards of nuclear waste. For instance, they may decide to recycle waste containing ionising radiation, as has happened with tailings from uranium mines (6). Or they may decide to flush effluents into lakes or into the sea, as has for years been the practice of the operators of the Sellafield reprocessing plant in the United Kingdom (7). In other cases, such as when the waste is high-level waste, nuclear policy makers cannot evade the issue and have to bear concrete financial expenditures. These costs in a way resemble the costs incurred by capitalists for the circulation phase of commodities, - costs which were well discussed by Marx in Part One of *Capital II* (8). However, the storage costs and other costs made to take care of nuclear waste evidently are associated not with the existence of commodities themselves, but with the existence of non-commodity waste.

In a previous Chapter I have already proposed that the nuclear waste emanating from the manufacturing phase ... **P** ... of the circuit of nuclear capital, be designated with a distinct letter code (9). Marx's basic letter codes used to identify the outcome of manufacturing, to recall, were **C'** and **M'**, codes referring to commodity capital and money capital respectively, but having a different value from **C** and **M**. Both **C'** and **M'** contain surplus value, - they represent a larger value than the money capital available at the start of the process, i.e. a larger value than the commodities bought to initiating the process of manufacturing. Though Marx nowhere employed any code to designate non-commodity waste, we decidedly need to use the code (– **W**) to make explicit the fact that a by-product accompanies the emergence of **C'** and **M'** from the manufacturing phase ... **P** ... of the capital circuit. Only thus can we ensure that the consequences of the existence of nuclear and other non-commodity waste be discussed systematically in the context of critical economic theory. The use of the letter code (– **W**), in my view, is a must!

### **3. Military Commodities: Exemplifying Waste in the Social Sense**

Contrary to nuclear waste and to other non-commodity waste, weapons and armament systems manufactured in capitalist factories are *commodities*. Since the bulk of modern weaponry is not sold to private entrepreneurs or consumers, they do not belong to the economic category of market commodities in the most literal sense. The arms' *bazaar* is a special type of market, indeed, for most customers purchasing military goods are representatives of capitalist *states*. Nevertheless, weapons and armament systems contain exchange-values. Like other commodities, they are exchanged for money, held by their purchasers. Weapons and armament systems thus can 'only' be termed waste products *in a social sense*, i.e. in the sense that their manufacturing involves the squandering of huge natural and human resources, - resources which are wasted from the perspective of humanity's fundamental interests. Just as nuclear waste belongs to the broader economic category of non-commodity waste, weaponry too falls under a broader category of waste, being '*social*' waste.

Secondly, as noted in my Chapter on negative use-value (10), - military commodities share this feature with the by-products of nuclear manufacturing, that they

too contain *negative use-values* ( **wu** ). Just like nuclear waste, - all weaponry holds a property that is damaging to the health of human beings and of non-human forms of life. This property is their explosive potential, their hitting power, incendiary effect and/or other damaging properties, which is/are contained in *a part* of the given weaponry. The damaging properties vary greatly in their destructive impact, but constitute the negative use-values of the arms nonetheless. The nature of weaponry at first sight represents a paradox for economic theory, much more so than the nature of nuclear waste. Whereas the latter waste *cannot* be sold in view of its damaging properties, weaponry *can* be sold as market commodities in spite of the fact that their properties impede the fulfilment of human needs. Stated via the letter codes mentioned/introduced previously, weapons manufactured under capitalism are commodities which contain exchangeable values, **C'**, but hold negative use-values, **wu** , at the very same time.

Further, whereas military commodities as stated represent exchange values, their employment in the course of wars and other military conflicts also results in the *destruction of exchange values*. This is particularly true of the armament systems which have been and are being designed in the era of monopoly capitalism. Ammunition fired from tanks, bombs dropped from fighter planes, missiles launched to hit targets at great distance, all do not only come in the place of useful commodities that could be manufactured with the same capital resources, but can result in the destruction of factory-buildings, of machinery and other commodity capital, and of consumer goods. Thus, whereas the *production* of military commodities emanates in the accretion of commodity capital and money capital, their *consumption* in war emanates in the destruction of capital (11). This, along with the contradiction between the exchange value and the negative use-values simultaneously contained in weaponry, is the second paradox military commodities pose to economic theory.

While critical economic theory in the past has refrained from designating weaponry and other 'social' waste with a specific letter code, there is sufficient ground to do so, in view of the above-summarised characteristics. The letter code which I propose to employ for this purpose is the letter code (= **W**). Thus, to indicate that arms are both commodities and constitute waste in the social sense, we may use the combined letter code **C'** (= **W**). Here we will have to keep in mind that (= **W**) does **not** stand on a par with (- **W**), for the latter refers to non-commodity waste, whereas the former patently does not. Nevertheless, the letter code (= **W**) too helps to encourage a more systematic discussion of the wasteful consequences of capitalist manufacturing. It helps to quantify, both at the level of the accumulation of individual capital, and, ultimately, at the level of the capital accumulation as a whole, how much '*social*' waste and how much *overall* waste are produced under capitalist conditions, and hence how detrimental existing processes of manufacturing are to the fulfilment of the individual and collective needs of society's citizens.

#### **4. Production of Military Plutonium: Generating Twofold Waste**

We should now consider the case where a manufacturing process results in both forms of waste, i.e. both in '*social*' waste (= **W**) and in non-commodity waste (- **W**). To this end, I will focus on the production of military plutonium, more particularly on the chemical separation of plutonium in nuclear reprocessing facilities, which chemical

separation is a manufacturing process located towards the tail-end of the nuclear production chain. Reprocessing factories have for long been questioned by opponents of nuclear energy because of the fact that they generate large quantities of waste with a radioactive content (12). Yet if we focus only on the non-commodity waste (- **W**) emanating from these factories, we are still led to underestimate the negative implications of this capitalist production process. Reprocessing factories historically were founded not as civilian production sites, but to service the military 'needs' of the US and other Northern states. Hence, the commodity manufactured here originally was exclusively military plutonium, i.e. a commodity belonging to the category of 'social' waste (**C'** (= **W**)).

Now, let's look first at the meaning of this special military commodity. Military plutonium is bought, for instance, by enterprises which insert it as a raw material in the nuclear pits of atomic bombs. As a raw material for atomic bombs, military plutonium possesses two properties which are valued by its purchasers: its explosive potential and its radioactive content. As well known, the explosive potential of atomic bombs is a multiple of that of conventional bombs; its frightful capacity to destroy human life was illustrated by the example of the plutonium bomb dropped on Nagasaki (13). Yet military plutonium's capacity to destroy human life also derives from its ionising radioactivity, for a minuscule quantity of plutonium is already cancerous for humans. Hence, military plutonium is a form of 'social' waste with a double disvalue, i.e. with a *twofold negative value* (**wu**). Clearly, this raw material stands out as specially destructive amongst the whole range of raw materials purchased by the manufacturers of 'social' waste (**C'** = **W**), of arms.

However, the special 'contribution' of nuclear reprocessing facilities towards the creation of waste does not end here, because the same manufacturing process, as already indicated, also results in non-commodity waste (- **W**), and this in extraordinarily large quantities. Some sources speak of a *hundred-fold* increase in the generation of nuclear waste, as a consequence of all the high-level waste and waste with a lower radiation intensity that is churned out by reprocessing factories. The waste includes, for instance, radioactively polluted water flushed into the sea, and it also includes high-level fluid waste that needs to be stored in perpetuity. Whereas reprocessing has for long been advocated by proponents of nuclear production as a form of 'recycling' of dangerous waste (i.e. of the fuel elements from nuclear reactors), military and other reprocessing facilities achieve the very opposite of the elimination of waste! And given the permanent costs associated with the storage and monitoring of the high-level waste, the manufacturing process of reprocessing factories indeed cannot be properly depicted without identifying its result as **C'** (- **W**).

The capitalist circuit for the chemical separation of military plutonium, in short, well exemplifies my point that a part of production in the nuclear production chain results in both basic categories of waste, i.e. both in 'social' waste and in non-commodity waste. Hence, neither solely the letter code for non-commodity waste (- **W**), nor solely that for 'social' waste (= **W**) suffices to depict the outcome of military reprocessing, but only a combination of *both* letter codes. The manufacturing phase ... **P** ... of the capital circuit of a military reprocessing facility emanates in **C'** (= **W**) (- **W**). Again, both the commodity military plutonium, and high-level waste and other by-products emerging alongside the

military plutonium contain *negative use-values* ( **wu** ) in the form of ionising radiation. Needless to say, this outcome is the diametrically opposite result of the results that human labour and human production had originally aimed at, namely the fulfilment of individual and collective human needs. And it is the *parallel* conceptualisation of non-commodity waste and ‘social’ waste which effectively helps expose this reality within the context of critical economic theory.

## 5. Interconnections

### Between *Non-Commodity Waste* and ‘*Social*’ *Waste*

Above I have analysed non-commodity waste and ‘social’ waste as two distinct *subcategories* of waste, to be designated with two separate letter codes, (- **W**) and (= **W**), and have explained how both forms of waste can emerge simultaneously from the same manufacturing process. Yet it would be wrong to see the two as unrelated, opposite categories. Here, I wish to elaborate briefly on commonalities, on shared characteristics between the two types of waste, and on the possibility that the one subcategory gets transformed into the other. This possibility evidently exists in the nuclear sector, where non-commodity waste and social waste both emit ionising radiation, creating the possibility that a given material changes its outward economic appearance. Hence, a brief elaboration of the interconnections between non-commodity waste (- **W**), and waste in the ‘social’ sense (= **W**) is in place, to round up our discussion on waste-production at the level of the individual circuit of capital.

First – both non-commodity waste and social waste share this characteristic, that both contain *negative use-value*. These disvalues, as explained previously, are not entirely equivalent. In the case of non-commodity waste, such as nuclear waste, the damaging properties reside in the whole by-product, whereas in the case of social waste, i.e. in weaponry, the damaging properties reside in the component which contains the explosive potential, the hitting power or other damaging property of the military commodity. Nevertheless, the damaging properties of the two may pose the same danger to human and non-human life on earth. Thus, ionising radiation poses the risk of cancer, and this independent from the question as to whether the radioactive material be a commodity or not. Again, the toxic qualities of chemicals may qualify them for employment as a raw material for chemical arms, *or* may make it necessary that they be disposed of as hazardous waste. Given this fact that non-commodity waste and social waste both contain *disvalues*, they should be understood as *subcategories* of the economic category of waste.

Further, the interconnection between non-commodity waste and social waste at times is expressed in the transformation, or rather the *transition* of the one subcategory into the other. Weapons-grade plutonium comes into existence as a military commodity which is employed in the nuclear pits of bombs, missiles, etc. At this point, and for as long as the nuclear arms remain stored and destined for potential ‘consumption’ in war, the military plutonium for economic theory is waste in the social sense, (= **W**). At the moment when the non-used nuclear weaponry needs to be dismantled, however, the military plutonium cannot be disposed of as scrap, but remains in existence as nuclear waste, (- **W**). Again, there exists the case of a *reverse transition*, from nuclear waste into social waste, i.e. from (- **W**) into (= **W**). This is exemplified by depleted uranium, which

as stated previously emerges as a by-product from nuclear enrichment, i.e. originally was known as non-commodity nuclear waste (- **W**). Yet stocks of depleted uranium have meanwhile been used to manufacture ammunition, and have served as social waste (= **W**) in the course of war.

The above discussion on social waste and non-commodity waste may be summarized as follows. First, we have seen how the two subcategories can be juxtaposed, as distinct forms of waste which emerge from various industrial sectors, - i.e. from some sectors where production emanates in social waste (= **W**), while production in other sectors emanates in by-products (- **W**). Subsequently, we noted that the two subcategories may also form the outcome of the very same manufacturing process, which patently occurs via production in military-nuclear factories, which results in both (= **W**) and (- **W**). Lastly, non-commodity waste and social waste can *pass over* into each other. As explained above, in practice both (= **W**) may 'end up' as (- **W**), and (- **W**) may be transformed into (= **W**). Nevertheless, for the purpose of constructing a general theory of waste, it is crucial to distinguish the two subcategories of waste, for only thus, by differentiating non-commodity waste and social waste, can we bring out the degree to which production under monopoly capitalism has become *irrational*, even as large corporations reap rich profits from the production of waste.

## **6. The Production of Social Waste Exposed Via the Concept of the 'Potential Surplus'**

Whereas I initiated my discussion on waste above at the level of the individual accumulation of capital from the vantage point of non-commodity waste, I propose to initiate the analysis of waste at the level of social accumulation from the vantage point of 'social' waste. The reason is, as stated, that convincing theoretical work at this level of analysis has previously been undertaken by the American Marxist School. Whereas Paul Sweezy's innovative study, *The Theory of Capitalist Development*, published originally in the 1940s, is to my knowledge the trendsetting work, giving direction to the theoretical endeavours of the different members of the School, the perhaps most decisive concept was contributed by Paul Baran, when he suggested that the variety of waste generated under monopoly capitalism be laid bare by use of the concept of the '*potential surplus*' (14). Criticising bourgeois economists for creating the false impression that 'any spending promotes prosperity', Baran argued that 'waste and irrationality' relate to the 'very essence' of contemporary capitalism, in particular as it functions in the hegemonic US economy (15).

The concept of the '*potential surplus*', however, formed a departure from classical Marxism. Contrary to Marx's concept of surplus value, it according to Baran excludes any essential consumption by members of the entrepreneurial class, and also excludes all essential outlays on government administration. On the other hand, '*it comprises what it not covered by the concept of surplus value – the output lost in view of unemployment or misemployment of resources*' (16). Thus, through the concept of the '*potential surplus*', Baran intended to lay bare what expenditures and investments made by corporations and individual capitalists are non-productive, wasteful, from a social point of view, as well as what outlays in the government budget have this detrimental social effect. Whereas his exposition, in '*The Political Economy of Growth*', was mainly conceptual in nature, in a subsequent essay jointly drafted by Sweezy and

Baran, the two authors sought to illustrate the extent of waste taking place in the twentieth century US economy. To this end the authors quoted extensive empirical and statistical data (17).

Baran classified the '*potential surplus*' under four distinct headings. In brief, these were: excess consumption, predominantly by upper income groups; output lost through the existence of 'unproductive workers', such as labourers engaged in the manufacturing of armaments and members of the military establishment; output lost through the wasteful organisation of the production apparatus, amongst which the 'crippling exposure' of humans to corporate sales' efforts; and output foregone owing to unemployment, caused by the anarchy of the capitalist system (18). This classification has been criticised, there being overlap between the various criteria to measure the '*potential surplus*'. Nevertheless, both the concept of the '*potential surplus*' itself, and the subheadings for wasted surplus were timely propositions. Baran's efforts were consciously targeted at *Keynesianism*, the school of bourgeois economists which after World War 'Two' gained ascendancy in much of the Western world, but which school according to Baran justified a huge waste of human and material resources in name of the creation of 'effective demand' (19).

The concept of the '*potential surplus*', moreover, formed a departure from orthodox Marxist formulations. After all, Marx, in seeking to scientifically analyse the laws of operation of capitalism, had termed any use of human and material resources that resulted in additional value, in enlarged money capital **M'** for the entrepreneurs, as 'productive consumption' of capital (20). Baran did not follow Marx strictly in his employment of concepts. Nevertheless, Baran's propositions were entirely in line with the spirit of critical economic theory. Like Marx, he and other members of the American School sought to question the logic of accumulation for accumulation's sake. Like Marx, he believed that a planned allocation of resources such as to serve the interests of the whole of humanity, is only possible under socialism. Through the novel concepts he and Sweezy put forward, the two critical economists intended '*to extend the Marxist cognitive perspective* in accordance with what they perceived as important historical changes' that had taken place since competitive capitalism had been transformed into monopoly capitalism (21).

## **7. The Nature of Monopoly Capitalism Theorised by the American Marxist School**

I will now proceed to summarize the explanation which Baran and Sweezy provided for the fact that '*social*' waste in the form of armaments' production and financial allocations for the military became a central form of waste production and consumption in the world economy of the twentieth century. A part of the explanation according to both authors resided in the need of US-imperialism to protect the investments of US-corporations and of other Northern corporations in the rest of the world. Yet a crucial factor put forward also was the very mode of operation of monopoly capitalism. As Sweezy had already argued with force in his book *The Theory of Capitalist Development*, the functioning of the capitalist system in the era of monopoly capital could no longer be fully understood in terms of the analysis which Marx had put forward for the era of competitive capitalism. The system's mode of operation had

changed, and monopoly capitalism had to be understood in terms of its own distinct internal dynamic (22).

First, in the era of monopoly capitalism, the law of the tendency towards the equalisation of profit was modified. Marx in *Capital III* had put forward the proposition of an 'average rate of profit'. Throughout the capitalist economy, entrepreneurs received the same profit rate. The amount of profit they reaped was the 'aliquot part' which they controlled of society's total capital. This law, according to Sweezy and other members of the American Marxist School, however, only applied to capitalism in its competitive phase, where individual capital could freely move from one product or sector to another. In the era of monopoly capitalism, instead, the given tendency was 'doubly disrupted': 'the profits of some are raised, while the profits of others are reduced.' (23). Thus, the selected number of large corporations dominating any given sector reap a portion of the total profit that is larger than their proportionate share of the social capital. Under monopoly capitalism we see the formation of 'a hierarchy of profit rates' (24)!

The analysis of this novel phenomenon, moreover, was subsequently related by Baran and Sweezy to their analysis of the 'rising surplus' (25). Whereas the two authors at times seemed to use the term 'surplus' as an equivalent for Marx's original term of surplus value, Baran and Sweezy in putting forward the term of 'economic surplus' intended to bring out that the total surplus under monopoly capitalism does not merely consist in profit, interest and rent, - the three categories of surplus value which Marx had pinpointed in *Capital III*, but in further categories, most notably: \* the allocations of giant corporations towards their sales efforts; and \* government expenditures, i.e. the part of the economic surplus which is controlled by the state (26). According to the authors, there was sufficient evidence to prove that the US economy's 'economic surplus' had shown a steadily increasing tendency to rise over several decades in the twentieth century. In the appendix to their work 'Monopoly Capital', figures were quoted indicating that the total surplus in the US equalled 56.1 percent of GNP in 1963 (27).

In any case, what is decisive for our discussion on military allocations as a form of 'social' waste, is that the authors saw a close correlation between the growing size in the US state's military budget on the one hand, and the incapacity of large American corporations to find outlets for investment of their surplus capital. Although the state originally had sought to stimulate effective demand by channelling a part of the total surplus into public investments in the civilian economy, - expansion of the military budget ultimately was the only option left to a US government seeking to serve the interests of the country's large corporations. Hence, Baran and Sweezy sought to provide a further empirical-historical base for their intellectual understanding expressed in writings previously, that the huge production of 'social' waste in the form of armaments was intimately related to the structure of monopoly capitalism in the hegemonic US-economy.

## **8. Monopoly Capitalism: Production of Non-Commodity Waste**

Like 'social' waste, the issue of non-commodity waste has become a particularly urgent issue for debate in the era of monopoly capitalism. Surely, such waste has been

generated by industrial enterprises from the very onset of the Industrial Revolution onwards, and all through capitalism's competitive phase. Thus, in the second half of the 19<sup>th</sup> century Marx noted that 'waste plays an important role in almost every industry'. The chemical industry, which he cited as most prominent instance, 'utilises not only its own waste, for which it finds new uses, but also that of many other industries' (28). Yet there is no doubt that the issue of non-commodity waste has become a far more ponderous issue in the course of the monopoly phase of the capitalist system. Ever new technologies and products are invented that result in quick profits for corporate enterprise. Those same corporations, however, frequently tend to 'overlook' both the negative environmental and health implications of the commodities they sell, and the damaging consequences of the by-products, the waste.

Now, the expansion in the generation of non-commodity waste can quite well be related to basic features of monopoly capitalism, as analysed by Sweezy and Baran. Whereas enterprises under competitive capitalism had to be on guard, since they operated under conditions where profits were equalised, - the hierarchy in profit levels existing under 20<sup>th</sup> century monopoly capitalism and henceforth, enables corporations to behave in a particularly wasteful manner, to close their eyes to the consequences of the production of non-commodity waste. Given their access to above-average profits, they hardly need to be concerned as to whether their profits are affected by the costs which they *may* incur on account of the by-products of their manufacturing. For whenever they are challenged and forced to bear the costs for the processing and storage, and other expenditures on account of the existence and circulation of non-commodity waste, they do possess an extra/reserve capital, so that the surplus they obtain need not be unduly affected.

Further, the accumulation of non-commodity waste is also facilitated by the enhanced role which has been assigned to the state under 20<sup>th</sup> century monopoly capitalism. This is especially true for the accumulation of *nuclear* waste, the ultimate form of non-commodity waste. First, monopoly corporations, as stated above, have been rather at ease with the fact that the state appropriates a major share of the '*rising surplus*', and allocates it to the military and military-nuclear sector. The same process of appropriation helps to create a fund for the management of non-commodity waste under the aegis of the state. Further, no private company's profit levels are negatively affected by the costs the state incurs on account of the disposal of nuclear waste from the military-nuclear production facilities it owns. Those companies entrusted with processing tasks, in fact benefit. Moreover, manufacturing companies in the nuclear sector regularly appeal to the state to take over responsibility for the nuclear waste they generate. In consequence, the costs for research into disposal methods, for storage and for monitoring, are readily *transferred* to the state as the institution managing a part of the '*rising surplus*'.

Thus, we can speak of a *coincidence* in the expansion of 'social' waste and non-commodity waste under monopoly capitalism. Yet theorisation of the issues of '*social*' waste and of non-commodity waste has not progressed at the same pace. '*Social*' waste, as indicated, has been credibly theorised by Sweezy, Baran and other members of the American Marxist School. Non-commodity waste, on the contrary, so far does not appear to have been theorised systematically by any school within Marxism; to my knowledge it is largely a *blind spot* in critical economic theory. Therefore, the theorisation of this issue has become an urgent task for critical economic theory at the beginning of the twenty-

first century. Marxism needs to urgently strengthen its conceptual apparatus in order to expose the health and environmental consequences of production under monopoly capitalism. And in order to fill the void, we have to bring out systematically how monopoly capitalist enterprises indulge in production of *both* 'social' waste *and* non-commodity waste, - at the expense of the rest of society, and at the expense also of the population of the world.

## **9. Summary - Towards Construction of a Theory on Waste**

Let me conclude this Chapter on nuclear and military production and the two major forms of waste under capitalism, non-commodity waste and 'social' waste, with a note on the *extension* of the conceptual and analytical apparatus of critical economic theory. The work of extending Marxist economic theory, by systematically addressing the issue of wasteful production, was given a major boost, when the American School of Paul Sweezy and Paul Baran, in the forties, fifties and sixties of the previous century, analysed the misdirection in the allocation of resources in the United States economy, which they connected closely with the domestic and international interests of US monopoly corporations. The enormously high level of spending on the military, they argued, was predetermined by monopoly interests, and could only be thoroughly questioned from a distinct class position, that of the working class. Ultimately, a thoroughgoing analysis of the production of waste was only possible by rejecting capital's logic, and by adopting the standpoint of '*socialist rationality*'.

A key step in promoting the analysis of 'social' waste was made by Paul Baran, when in his book '*The Political Economy of Growth*', he drew a distinction between the 'actual' and the 'potential' surplus. Whereas the former term referred to society's accretion of material and financial resources, without measurement of their social significance, - the latter term, the '*potential surplus*', helped to lay bare the inefficient use of resources, the fact that under monopoly capitalism huge quantities of resources are diverted towards production of goods which do not contribute towards increasing human welfare. One key example cited was that of state-purchases of arms and other financial allocations towards the military, which helped to keep up 'effective demand' in macro-economic terms, but which, he argued, constituted a net loss in social terms. In proposing the novel concept of the '*potential surplus*', Baran furnished critical economists with an instrument to question the irrational allocation of resources under the system of monopoly capitalism.

However, although the contribution thus made by Baran and other members of the American Marxist School was invaluable, their conceptual and analytical work appears to have been limited to the issue of '*social*' waste, and to the social accumulation of capital. My starting point in conceptualising waste in this Chapter has been different. Rather than initiating my discussion at the level of the *social* allocation of resources, which discussion belongs to the sphere of analysis of social accumulation, I have instead used the procedure which Marx followed in *Capital II*, where he addressed the individual circuit of capital *before* discussing the social accumulation of capital. I have thus situated

the production of waste in the sphere of the *individual* accumulation of capital first. Taking manufacturing in the nuclear and military sectors as my primary reference points, I have targeted both the by-products, the *non-commodity waste*, which inevitably accompanies the production of commodities in the nuclear sector ( $C' (- W)$ ), and have targeted *commodities* characterised as waste *in the social sense* ( $C' (= W)$ ), which commodities are manufactured by factories located in the military and in the military-nuclear sector of the capitalist economy.

Ultimately, a general theory of waste under monopoly capitalism will have to encompass both the individual and the social accumulation of capital. It will have to address both non-commodity waste and 'social' waste. In this Chapter I have merely tried to sketch a possible framework for such a general theory of waste. Undoubtedly, inclusion of the issue of *non-commodity waste* into the debate, alongside 'social' waste, is not just essential for the development of Marxist economic theory. It also helps to further expose the utterly irresponsible behaviour of capitalist policy makers. Indeed, the *juxtaposition of the two subcategories of waste* effectively brings out how extremely damaging today's capitalist system is to life on earth. Nevertheless, the contribution of the American Marxist School towards the construction of a theory of waste has been decisive, for the issues of the waste of resources and the piling up of every new or additional waste ultimately need to be related to the structure of monopoly capitalism, in line with the theoretical position of the members of this School.

#### *References:*

(1) the principal sources for the discussion on waste by the American Marxist School are: Paul Baran, *The Political Economy of Growth* (Monthly Review Press, New York, USA, 1957) and Paul A Baran and Paul M.Sweezy, *Monopoly Capital. An Essay on the American Economic and Social Order* (Monthly Review Press/K.P.Bagchi & Company (reprint), New York/Calcutta, 1994); for a summary of the legacy of Sweezy and Baran, see also: John Bellamy Foster, *The Theory of Monopoly Capitalism. An Elaboration of Marxian Political Economy* (Monthly Review Press, New York, USA, 1986);

(2) Paul A Baran and Paul M.Sweezy (1994), op.cit., Ch.5, p.112; also: Paul Sweezy, *The Theory of Capitalist Development* (Monthly Review/K.P.Bagchi & Company, New York/Calcutta 1991), p.278;

(3) eg. Paul Baran (1957), op.cit, p.120-133; also: Paul A Baran and Paul M.Sweezy (1994), op.cit, Chapter 7, 'The Absorption of Surplus: Militarism and Imperialism', p.178;

(4) eg. Bernard Fischer/Lothar Hahn/Christian Kuppers/Michael Sailer/Gerhard Schmidt, *Der Atommüllreport. 'Entsorgung', Wiederaufarbeitung, Lagerung: das Offene Ende der Atomwirtschaft* (Th.Knauer, Munchen, Germany, 1991),p.59/60;

(5) on the categorisation of nuclear waste, see eg. John Valentine, *Atomic Crossroads. Before and After Sizewell* (Merlin Press, London, United Kingdom, 1985), Appendix, p.197;

(6) Peter Bunyard, in *Health Guide for the Nuclear Age* (Papermac, MacMillan Publishers Ltd, London, 1988), cites the following instance: 'At Grand Junction, Colorado, in the mid-1960s, local construction firms used the tailings from uranium mines to build houses with the result, as later investigations showed, that levels of radon in some buildings were *1,000 times* higher than the natural background level.' (p38); see for the same instance, Arjun Makhijani, Howard Hu and Katherine Yih (ed.), *Nuclear Wastelands. A Global Guide to Nuclear Weapons*

*Production and Its Health and Environmental Effects* (The MIT Press, Cambridge, Massachusetts, United Kingdom, 1995, p.120;

(7) Peter Bunyard (1988, op.cit.) notes that ‘waters off the coast of north-western England now show concentrations of plutonium and americium that are some 2,000 times higher than fall-out levels, while even the North sea has double the fall-out levels because of Sellafield discharges.’ (p.80/81); a report of the UK House of Commons Environmental Committee of March, 1986 cited an official Ministerial assessment on Sellafield discharges, according to which the Irish sea is ‘the most radioactive sea in the world’ – see K.A.Gourlay, *Poisoners of the Seas* (Zed Books Ltd, London, United Kingdom, 1988), p.186;

(8) Karl Marx, *Capital. A Critique of Political Economy. Volume II* (Progress Publishers, Moscow, USSR), p.139; it is striking that Marx considered the costs of storage as ‘unproductive ‘expenditures’, as expenditures which from the standpoint of the entrepreneur were ‘merely deductions from the productively expended capital’, since they added nothing to the value of the commodities;

(9) Chapter Two above; also Peter Custers, ‘*Nuclear Production and Economic Theory. A Thesis on Waste*’ (Paper Submitted to the Anti-Nuclear Convention, New Delhi, India, November 2000 – published in the quarterly journal *Aritro*, Offenbach, Germany, January-March, 2001, p.43);

(10) Chapter Three above ; also Peter Custers, ‘*Towards Elaboration of the Theoretical Concept of Negative Use-Value (Disvalue). Or: The Health and Environmental Consequences of Nuclear Production*’ (Amsterdam, the Netherland, August, 2001);

(11) on the conceptualisation of wars, see Chapter Twenty-Four;

(12) Peter Bunyard (1988, op.cit.), p.79; also Bernard Fischer/Lothar Hahn/Christian Koppers/Michael Sailer/Gerhard Schmidt (1991), op.cit, Chapter 7, ‘Wiederaufarbeitungsanlagen – Rangierbahnhöfe für Atommüll’, p.141;

(13) see eg. John Cox, *Overkill. The Story of Modern Weapons* (Penguin Books, Middlesex, England, 1981), p.24-26;

(14) Paul Baran (1957), op.cit, p.22; for a critical discussion of the differential concepts of the ‘actual surplus’, the ‘potential surplus’ and the ‘planned surplus’, which Baran used, see John Bellamy Foster (1986), op.cit., p.28-29;

(15) Paul Baran (1957), op.cit., p.38/39;

(16) *ibid*, p.23; John Bellamy Foster (1986), op.cit., p.28;

(17) Paul A.Baran and Paul M.Sweezy (1994), op.cit;

(18) Paul Baran (1957), op.cit., p.23/24;

(19) *ibid*, p.120; in fact, the section covering from p.120 to p.133 of Baran’s book was mainly devoting to a critique of Keynesianism; for the theme of military Keynesianism, see the Epilogue to Part Two of this study; for Keynes’ own views, see John Maynard Keynes, *The General Theory of Employment, Interest and Money* (Harvest/Harcourt, New York, USA, 1991);

(20) Karl Marx (1967), op.cit, Part I, p.25-155;

(21) see John Bellamy Foster (1986), op.cit., p.45;

(22) Paul Sweezy (1991), op.cit, Chapter XIV, ‘The Development of Monopoly Capitalism’, p.254; it is noteworthy that Sweezy in this book of his already argued that the existence of monopoly complicates the operation of the Marxist ‘*law of value*’, which holds that the value (and price) of commodities can be measured by the quantity of labour-time units they contain – see in particular p.54-55;

(23) *ibid*. p.273;

(24) *ibid*, p.274;

(25) see Paul A.Baran and Paul M.Sweezy (1994), op.cit, Chapter 3, ‘The Tendency of the Surplus to Rise’, p.52;

(26) *ibid*, p.9/10; on the theme of governmental revenues, see Chapters Ten, Fourteen and Eighteen below;

(27) Paul A.Baran and Paul M.Sweezy (1994), op.cit., p.389; quoted by John Bellamy Foster (1986), op.cit., p.44;

(28) Karl Marx, *Capital, A Critique of Political Economy. Volume III* (Progress Publishers, Moscow, USSR, 1977), p.101/102.