2. Theory of Choice

The object of this chapter is to present the way in which economic agents take their decisions in a post-Keynesian world. Since most of these decisions are set within a world of uncertainty, a concept which post-Keynesians have been keen to underline, the notion of uncertainty will be defined with care. Furthermore, although post-Keynesians have an organic view of the world, we shall pay much attention to the rationality which underlies the actions of economic agents, in particular within a world of uncertainty. Finally, we shall deal with the much neglected issue of consumer choice, about which we shall discover that post-Keynesians have, surprisingly, a common view.

2.1 THE DISTINCTION BETWEEN RISK AND UNCERTAINTY

Before embarking on the study of the way agents take decisions, it is necessary, as a preliminary step, to describe the environment in which these decisions are usually taken. Post-Keynesian economists, in particular those which Coddington (1976) has called the fundamentalist Keynesians, are known for their insistence on the importance of fundamental uncertainty. American post-Keynesians, in particular Hyman Minsky (1976, chs 3 and 6) and Paul Davidson (1972, ch. 2), have stressed the role played by uncertainty, especially in conjunction with money and monetary economies. In this section I will make no claims regarding the possible links between the presence of uncertainty and that of money (Hoogduin, 1991). Rather, the aim of this section is to distinguish clearly between situations of risk, which are those usually described by neoclassical authors, and situations of uncertainty, which are those faced by agents in a Post-Keynesian world. My intent is to clear up the confusion that the term 'uncertainty' has generated. This will allow us to tackle the question of procedural rationality with a clearer mind, although it should be pointed out right away that procedural rationality, rather than substantive or
global rationality, does not require the presence of uncertainty to be
exercised. However, whenever there is uncertainty, procedural rationality
must of necessity prevail.

A Definition of Uncertainty

The relevance of fundamental uncertainty, despite the post-Keynesian
ehortations to include it in economic analysis, has not been taken very
seriously by most mainstream economists. In fact, mainstream economists
are often annoyed at being told that they do not deal with uncertainty. They
point to the mainstream journals, the pages of which are filled with papers
entitled ‘the economics of uncertainty of this or of that’, which deal with
asymmetric or incomplete information, stochastic elements of some sort,
probability densities, and so on. For a neoclassical economist, what is not
certain is uncertain. There is thus a semantic confusion arising from the fact
that the word ‘uncertainty’ is being used by both post-Keynesian econ-
omists and mainstream economists, but with different meanings. What
should really be said is that these mainstream papers are set in an environ-
ment of risk, or one of certainty equivalence. Annoyed mainstream econ-
omists thus do not recognize the distinction between risk and uncertainty.

Besides the neo-Austrians (Lachmann, 1977) or economists who have
close links with them (Shackle, 1971, 1972; Loasby, 1976), there are also
some orthodox economists who have acknowledged the importance of the
distinction between risk and fundamental uncertainty. For instance, E. R.
Weintraub, no doubt influenced on that matter by his father, Sidney
Weintraub, while taking note that general equilibrium theory had not
dealt with fundamental uncertainty, has written that Keynes’s treatment
of uncertainty is ‘an innovation of sublime importance ignored for almost
thirty years by most economists and still ignored by many’ (1975, p. 530).
He adds that ‘there is no way uncertainty problems can be reduced to
problems involving risk’ (p. 532). Thus even those who make little use
of the distinction recognize its significance and its importance. We shall deal
later with the question as to why enlightened neoclassical writers still leave
aside situations of fundamental uncertainty.

Let us now see how uncertainty should be defined within a three-way
typology (Lavoie, 1985a):

1. There is certainty when each choice invariably leads to a specific
   outcome, the value of which is known.
2. There is risk, or certainty equivalence, when each choice leads to a set
   of possible specific outcomes, the value of which is known, each
   outcome being associated with a specific probability.
3. There is *uncertainty* when the probability of an outcome is unknown, when the value of an outcome is unknown, when the outcomes that can possibly result from a choice are unknown, or when the spectrum of possible choices is unknown.

There would thus be three types of uncertainty. The first one, the uncertainty of probability, is most often discussed in the economic literature. The question revolves around how one can get proper estimates of these probabilities. This is not considered to be a true problem by the mainstream. Estimates of probabilities can always be made, from a logical or subjective point of view. The uncertainty of value, when one ignores the values (presumably the monetary ones) attached to the different outcomes, can be easily brought back to a situation of risk, by making use of sensitivity analysis. There is finally what one could call fundamental uncertainty, where the individual is ignorant of the available courses of action or of the extent of future states of the world. Such a form of uncertainty leads to unknown probabilities, or to what Keynes and others call non-measurable probabilities. This is the type of uncertainty which is the least likely to be subsumed within standard analysis. This is what post-Keynesians mean when they speak of fundamental or true uncertainty, or of Knightian or Keynesian uncertainty.

The concept of uncertainty is an extension of the presupposition of realism, as pointed out by Lawson (1988). It is not difficult to think of situations where the essence of the problem is to find the options which are available, and where all future prospects cannot be listed. Technological advancement would be a good example of fundamental uncertainty, involving as it does the impossibility of knowing what the novelty will be, when it will appear, and how large its impact on society will be. Keynes and Knight underline fundamental uncertainty because they believe that it is a crucial element of our economic environment. When agents make their decisions, they act according to this uncertain knowledge, rather than as if risky situations prevailed. Thus both Keynes and Knight were convinced that a radical distinction between situations of risk and situations of uncertainty had to be made, and that economic analysis had to take this distinction into consideration.

The calculus of probability . . . was supposed to be capable of reducing uncertainty to the same calculable status as that of certainty itself . . . This false rationalisation follows the lines of the Benthamite calculus. The hypothesis of a calculable future leads to a wrong interpretation of the principles of behaviour which the need for action compels us to adopt. (Keynes, 1973, xiv, pp. 112, 122)

I still find a fundamental significance in the analysis of uncertainty in the essay,
and am puzzled at the insistence of many writers on treating the uncertainty of result in choice as if it were a gamble on a known mathematical chance. (Knight, 1940, p. xiv)

The Weight of an Argument or the Credibility of Information

There have recently been many assessments of Keynes's philosophical views and their impact on his notions of probability and uncertainty, as well as their evolution through time (Carabelli, 1988; O'Donnell, 1989, 1990). Furthermore several authors have attempted to underline the differences in Keynes's and Knight's accounts of uncertainty (Hoogduin, 1987). None of these topics will be dealt with in what follows. On the contrary I shall concentrate on the aspects that are consistent within each author, and focus on the common points in the analyses of these two authors. My view, again like that of Lawson (1988) I believe, is that fundamentally Keynes and Knight are in agreement. To highlight their minor differences would be like looking at the trees without seeing the forest.

Knight and Keynes both recognize that, for some experiences or decisions, the orthodox calculus of risk is the appropriate one, in particular in situations of scientific experimentations. Standard deviations can be computed and for point estimates we can even obtain a confidence interval, based upon the set probability of error. This can be linked to what Knight (1940, p. 226) calls the 'probability of error', and which Keynes (1973, viii, p. 82) names the 'probable error'. Both agree that in repetitive situations these probable errors are useful.

On the other hand, both Keynes and Knight would argue that, generally, decisions have to be taken under conditions where standard errors and probabilities are meaningless, even though they might be estimated and computed. This is certainly the case of most long-term business decisions. To clarify this matter, in his Treatise on Probability, Keynes defines a new concept, which he calls the 'weight of an argument'. The weight represents the relative amount of information which is available when a decision must be taken. It represents our relevant knowledge relative to our relevant ignorance (Keynes, 1973, viii, p. 77) or the degree of completeness of our knowledge (Keynes, 1973, viii, p. 345). Georgescu-Roegen (1966, p. 266) calls it the 'credibility' attached to a set of probabilistic expectations. Others refer to its quality or to its epistemic reliability (Anand, 1991, p. 200).

In some cases, the standard error of statisticians and the weight of an argument may be closely related. Where the law of large numbers applies, an increase in relative knowledge tends to decrease the standard error,
without the probabilities of the various outcomes being modified. This is why in these cases one can associate the standard error with the weight of an argument. The credibility of the probability statement augments with the size of the sample. There is a practical connection between the two. It may be, however, that additional evidence leads to an increase in standard deviation, as Keynes shows (1973, viii, p. 82). In general the evolution of the weight and that of the standard deviation or standard error might thus diverge. Keynes believes that the former rather than the latter is then of significance. When probabilities are purely subjective, the standard deviation is without meaning, since it only reflects whether or not the agent has given high probabilities to the outcomes the value of which are around the most likely value. An argument of high weight is not one in which the standard deviation is small.

The more relevant factor is the quality of information or the relative quantity of information which has led to the estimates of outcomes and probabilities. Keynes himself believed that the weight always increases with further information (1973, viii, p. 84). We need not follow him in this regard. In truly uncertain situations, further information might reduce the degree of confidence without necessarily changing the assessed probabilities, in the case of political crises, for instance (Minsky, 1976, p. 65). There is new information, but this information has destroyed part of the past accumulated knowledge, or it has uncovered new aspects of unsuspected ignorance. The stock of relevant information relative to ignorance has decreased. Weight may decrease with the acquisition of new evidence and can thus be defined as 'the balance of the absolute amounts of relevant knowledge and relevant ignorance, on which a probability is based' (Runde, 1990, p. 290).

Keynes's conclusion is that 'in deciding on a course of action, it seems plausible to suppose that we ought to take account of the weight as well as the probability of different expectations' (Keynes, 1973, viii, p. 83). This is how actions between risky and uncertain situations become distinguished. When standard errors are relevant, the probability density function is not independent of the measure of risk. In the case of fundamental uncertainty, probabilities and the weight of the argument are independent properties. Knight comes to the same conclusion. He also emphasizes the independent character of the weight of an argument and the probability distribution in situations of uncertainty. He is simply using words that will be later adopted by Keynes in the General Theory and after.

The business man himself not merely forms the best estimate he can of the outcome of his actions, but he is likely also to estimate the probability that his estimate is correct. The 'degree' of certainty or of confidence felt in the conclusion after it is reached cannot be ignored, for it is of the greatest practical significance.
The action which follows upon an opinion depends as much upon the amount of confidence in that opinion as it does upon the favorableness of the opinion itself... Fidelity to the actual psychology of the situation requires, we must insist, recognition of these two separate exercises of judgment, the formation of an estimate and the estimation of its value. (Knight, 1940, p. 227)

We thus see that the weight of an argument is here called by Knight the degree of certainty or the degree of confidence, or the worthiness of a probability estimate. As is well known, when in the General Theory Keynes refers to uncertain factors, or to uncertainty, he quotes the chapter dealing with weights of arguments of his previous Treatise on Probability. The weight of an argument is then translated by the 'state of confidence' or by the 'animal spirits' of the entrepreneurs. The following quotation shows clearly that Knight and Keynes are fundamentally making the same distinction.

The state of long-term expectations, upon which our decisions are based, does not solely depend, therefore, on the most probable forecast we can make. It also depends on the confidence with which we make this forecast -- on how highly we rate the likelihood of our best forecast turning out quite wrong. (Keynes, 1973, vii, p. 148)

The upshot of the matter is that situations of uncertainty cannot come down to situations of risk. When taking a decision in an uncertain world, a rational agent cannot only rely on the probability distribution which arises from past similar events or from subjective introspection. The credibility or the reliability of the acquired information, the degree of confidence in the assessed probabilities, must also be considered. It is also claimed by Georgescu-Roegen (1966, p. 267) that the lack of weight of an argument cannot be compensated by the high probability attached to the main outcome (although Keynes, 1973, viii, p. 348, is not so clear about this). Otherwise probabilities and weight could be summarized under one index, and we would be back to a revised form of expected utility theory. But if such a distinction between situations of risk and situations of fundamental uncertainty can indeed be established, why is it that neoclassical authors have generally ignored the distinction, and have reasoned or modelled problems as if the distinction did not exist?

Objections to Fundamental Uncertainty

The neoclassical arguments against the use of fundamental uncertainty can be organized in three stages. First there are those economists who argue that economic events are recurrent. This is a view of probability based on observed frequencies. It is believed by those economists that past
distributions of outcomes are a good indicator of future ones. As a consequence, probabilistic expectations of the future can be based on past distributions (Lucas, 1981, p. 223–4). But such an argument, Davidson (1982–3, 1988a) claims, is based on an ergodic view of the world. Ergodic processes ensure that 'the probability distribution of the relevant variables calculated from any past realisation tends to converge with the probability function governing the current events and with the probability function that will govern future economic outcomes' (Davidson, 1988a, p. 331).

When historical processes are non-ergodic, such convergence does not exist and we cannot rely on statistical distributions of the past to provide reliable data to estimate present or future distributions. Uncertainty then prevails. Non-stationary stochastic processes with structural breaks or crises, or even some stationary stochastic processes such as limit-cycles, are examples of non-ergodic processes. Uncertainty prevails in the real world because economic processes are not usually ergodic. The observed frequencies of the past cannot be a guide for the future. This sort of argument against the neoclassical frequentist viewpoint is usually attributed to Knight and Shackle. They both contend that most long-term business decisions have a unique character and hence cannot rely on past empirical measures, previous decisions having changed the economic environment.

At this stage, neoclassical authors come up with their second line of opposing arguments against the consideration of fundamental uncertainty. They argue that probability estimates are mainly of a purely subjective sort. The fact that historical processes are ergodic or not is irrelevant. In the less extreme subjectivist views, an agent may rely on past experience to establish probabilities, but basically probabilities are indices of the subjective belief in outcomes. Probabilities thus constitute a code of coherence to apprehend a world without certainty, and as such have given rise to axiomatic formulations. All situations can be described with the help of these subjective probability distributions, with means and standard deviations. At the limit, if future outcomes or possible choices are unknown, as they would in the case of fundamental uncertainty, risk analysis or expected utility theory can still be safeguarded by relying on the principle of insufficient reason which imputes an equal probability to all uncertain states. With this principle, a given probability distribution corresponds to every situation. When further pressed, neoclassical authors observe that, if compelled to, any person will quote a betting quotient on any outcome.

We now understand why Knight and Keynes insist so much on the distinction between risk and uncertainty; they both reject the principle of insufficient reason on the grounds that it will not lead to rational decisions
in an uncertain world (Knight, 1940, p. 222). As Blatt says (1982, p. 267): 'This is a possible rule. But it is a fool's rule.' Keynes is pretty clear about this, both in the *Treatise on Probability* and in the *General Theory*. When future outcomes or choices are unknown, that is when the set of known alternatives is not exhaustive, the principle of insufficient reason cannot be applied and therefore situations of uncertainty cannot be reduced to ones of risk.

The recognition of the fact, that not all probabilities are numerical, limits the scope of the principle of indifference (insufficient reason). It has always been agreed that a numerical measure can actually be obtained in those cases only in which a reduction to a set of exclusive and exhaustive *equiprobable* alternatives is practicable . . . A rule can be given for numerical measurement when the conclusion is one of a number of equiprobable, exclusive and exhaustive alternatives, but not otherwise. (Keynes, 1973, viii, pp. 70, 122)

Nor can we rationalize our behaviour by arguing that to a man in a state of ignorance errors in either direction are equally probable . . . For it can easily be shown that the assumption of arithmetically equal probabilities based on a state of ignorance leads to absurdities. (Keynes, 1973, vii, p. 152)

Keynes's position when probabilities are non-numerical in the above sense is that decisions must take into consideration both the credibility of the information (the weight of an argument) and the assumed probability distribution. In Chapter 12 of the *General Theory*, Keynes focuses on the predominant importance of the state of confidence or that of the weight of information, represented by the strength of animal spirits. There he goes so far as to say that decisions 'cannot depend on strict mathematical expectations, since the basis for making such calculations does not exist' (Keynes, 1973, vii, p. 163). Mainstream analyses either precisely assume the existence of an exhaustive description of the possible actions and the possible states of the world, or they omit the question of credibility and behave as if the credibility of information was not an issue, as in search theory, for instance (High, 1983–4).

Their reasons for doing so, assuming they accept Keynes's critique of the principle of insufficient reason, must be linked to the third line of defence of the neoclassical refusal to consider fundamental uncertainty. Neoclassical authors argue that the framework of expected utility, or that of portfolio theory, since under some conditions it can be shown to be equivalent to expected utility theory (Sinn, 1983, p. 96), is simple and allows one to obtain unambiguous results (Arrow, 1951, p. 411). If one were to discuss situations of fundamental uncertainty, rather than ones of risk, either several results would be possible (as in game theory, with no possible definition of what rational behaviour could be) or economics
would be following a nihilistic path. 'In cases of uncertainty, economic reasoning would be of no value' (Lucas 1981, p. 224). It is thus argued that fundamental uncertainty unnecessarily adds complexities. Neoclassical authors continue to assume that knowledge of the future is perfect, or that all uncertain situations can be reduced to ones of risk. They behave as if there was no fundamental uncertainty in the real world and as if agents could assign probabilities to every conceivable event and act upon these. They prefer to follow 'a passage more fertile in analytical results – rather than ... be content with making smaller, yet more relevant, strides' (Georgescu-Roegen, 1966, p. 242); or, in harsher terms, they 'prefer to be precisely wrong rather than roughly right or accurate' (Davidson, 1984, p. 572). This analytical position arises from the presuppositions of the neoclassical research programme, more precisely its instrumentalist epistemology.

In the case of uncertainty, the neoclassical justification for such an instrumentalist position would be that the adoption of a realistic concept of uncertainty leads nowhere. One must admit that some defenders of the notion of fundamental uncertainty, most notably Shackle (1984, p. 391), have left their readers with the impression that uncertainty only allows nihilistic conclusions. But this is not the position of the majority of post-Keynesians, and certainly not the position taken in this book. The impact of uncertainty on economic analysis and on economic results depends on 'how individuals are supposed to respond to the fact of uncertainty' (Coddington, 1982, p. 482). Neoclassical analysis relies on a very special sort of rationality, that of substantive rationality. This is why it cannot make sense of situations of fundamental uncertainty. The argument of the following section will be that, once procedural rationality is introduced into the behaviour of agents, the presence of uncertainty does not necessarily generate chaotic behaviour or prevent economic modelling.

2.2 PROCEDURAL RATIONALITY: RULES AND NORMS

Let us now recapitulate some of the lessons drawn from the previous section. When the economic environment is certain or is equivalent to certainty, that is, when situations of risk are encountered, the standard optimizing procedures, or some revised version thereof, might be rational. When fundamental uncertainty prevails, decisions have to take into consideration the credibility of the acquired knowledge. The standard optimizing procedures will not mimic the behaviour of economic agents. Decisions will depend as much on the degree of confidence attached to the
forecasts made as on whether the forecasts are favourable or not. If we forsake optimizing procedures, what are we going to replace them with?

Definitions of Rationality

At this stage we have to introduce more clearly the distinction between substantive rationality, upon which neoclassical economics is based, and procedural rationality (also called bounded rationality), which characterizes post-Keynesian economics. Simon defines substantive rationality and procedural rationality in the following way:

Behavior is substantively rational when it is appropriate to the achievement of goals within the limits imposed by given conditions and constraints . . . Given these goals, the rational behavior is determined entirely by the characteristics of the environment in which it takes place . . . Behavior is procedurally rational when it is the outcome of appropriate deliberation. Its procedural rationality depends on the process that generated it. (Simon, 1976, pp. 130–1)

The definition of substantive rationality is consistent with the view that most neoclassical economists have of their research programme: they see it as a science of constrained optimization. The goals of substantive rationality are usually some form of utility or profit maximization. The conditions and the constraints are the existing and possible states of nature, that is the external characteristics of the economic environment. Now, for the conditions and the constraints to be given, they must be known or probabilistically known, or as in game theory the description of the various outcomes must be exhaustive. Otherwise substantive rationality loses much of its strength.

Procedural rationality only requires appropriate reasoning. Behaviour is rational if there are good reasons underlying the observed behaviour (Lawson, 1985, p. 918). Bounded rationality focuses on the fact that there are other constraints on the agent taking decisions besides the external ones. These are the constraints on the capabilities of the agent in processing information. There are internal constraints which are not taken into consideration by neoclassical theory. Thus whether available information is complete or not, in all but the simplest of problems, is accessory. It will not be possible for the agent taking decisions to proceed with standard optimizing procedures. The computational and classifying requirements are too great, or the necessary information is just not available. March (1978, p. 590) says that agents develop procedures which are sensible given the decisional constraints, although they could look unreasonable if the constraints were removed. In a similar spirit, Cyert and Simon have offered the following extensive definition of procedural rationality:

The rationality of the business firm is a rationality that takes account of the limits
on its knowledge, on its information, on its capacity for computation, and on its understanding of theory. It is a rationality that makes extensive use of rules of thumb where a more exact application of theory is impossible whether because the theory is not understood, because the data needed for estimating its parameters is not available, or because the decision must be made under conditions of uncertainty. (Cyert and Simon, 1983, p. 104)

In standard neoclassical models the individual must gather information on all possible actions, all possible states of nature, and therefore on all possible outcomes induced by the previous two sets. Probabilities, often complex conditional probabilities, must be ascertained for each outcome, and each outcome must be assigned numerical (monetary) values. We have already discussed the complexity of this part of substantive rationality. But on top of that, through a system of preferences, with or without utility measures, with or without desired features such as transitivity, the agent must choose the most preferred action, the one that will optimize the situation. The agent must thus consider all of the various final outcomes, with their numerical counterparts, go back to find out what possible results each initial action generates, and then compare these to find the action generating the optimal set of possible outcomes. Optimality necessitates recourse to a backward induction reasoning which requires a substantial number of computations (Hey, 1983). The same huge computational capabilities are required in situations of certainty, when consumers make choices with respect to different goods, for instance. The stress put on human capabilities is not only limited to probabilistic or uncertain situations. It affects most situations of certainty as well. In a way, this is a more destructive critique than the notion of uncertainty since it does not rely on the scarcity of information but rather on its overabundance (Hodgson, 1988, p. 83).

Let me give an anecdotal instance of an overload of information in the case of a consumer choice in a world of certainty. A few years back, Professor Sergio Parrinello (1982) gave a talk at the University of Ottawa on a possible extension of the theory of consumer choice, basically arguing that the larger the range of choices the happier the consumer would be. We then took Professor Parrinello to a Chinese restaurant. Upon looking at the menu, which, like most Chinese menus, had a wide selection of more than one hundred dishes, our colleague asked somewhat distressfully if there was not some set course of dishes that would allow him to avoid the pains of making choices among these too numerous alternatives. We told him that we had chosen a Chinese restaurant precisely in the light of the theory he had so convincingly presented to us in the afternoon. It turned out, given the state of fatigue of Professor Parrinello's computing abilities
after his long trip, that the possibility of a wider choice had led to confusion rather than to satisfaction. Substantive rationality needs to be replaced by procedural rationality.

We are thus left with the conclusion that substantive rationality is not possible either when there is a lack of information or when information is too extensive to be processed. In both of these cases, substantial rationality is of little use to describe what economic agents actually do and to prescribe what they should be doing. Information processing, whether the gathered information is complete or not, is costly and time-consuming. As a consequence agents do not optimize, nor should they, according to the logic of marginalism itself, since presumably the marginal costs of optimizing computational procedures always surpass the marginal returns from optimizing. There is no point in relying on substantive rationality if no procedure can be devised that will make the amount of required computations reasonable. By abandoning optimizing rules, and adopting satisficing ones, we recognize the limits of the human mind, even when helped, as they are now, by computers. To some extent, the presupposition of procedural rationality is thus one of realism.

It should be noted that neoclassical theory, by relying on substantive rationality, gets further away from realism every time it tries to introduce some realistic component to its theoretical edifice. When they are being accused of not dealing with situations of uncertainty, neoclassical authors respond with models of risk, in which agents know all possible events and their accompanying probabilities. Similarly, some neoclassical authors have interpreted search theory as a response to the criticisms of Simon. It is felt that procedural rationality and its accompanying rule of satisficing means optimization under the costly constraint of information gathering. But the computations and the information required for the optimal resolution of this search are even more intricate. It may have taken months for the theorist to find the optimal solution of the model, without even having had to find concrete data. Furthermore the optimizing approach leads to a problem of infinite regress. To know whether or not the information search has been optimized, agents need to know beforehand the value of the information to be gathered. To argue that agents have a probabilistic view of the information to be gathered makes even more unlikely the practical possibility of such optimizing computations.

Whereas neoclassical authors claim that their new models make it possible to get away from the assumptions of perfect knowledge, they are in fact moving the neoclassical programme further away from realism. "The reason is that in order to apply the traditional optimizing concepts, the competence of the agent has been implicitly upgraded to handle the
extra complexity resulting from an unpredictable future' (Heiner, 1983, p. 571). What neoclassical theorists basically do when they construct models is to match the computational capabilities and information-gathering abilities of the agents to the requirements of finding an equilibrium, preferably a unique one. The extent of substantive rationality is thus defined in accordance with the goals being pursued by the modeller. Agents are assumed to be able to gather the necessary information and to process it fully.

On the other hand, the presupposition of procedural rationality, or what is also called bounded rationality or sometimes weak rationality, presumes that, in all but the simplest problems, there exists a gap between the relevant amount of information and the information that can be effectively processed. The relevant information might not be processed either because it is not known — this is the case that we have examined in our discussion of uncertainty — or because the computational and intellectual limitations of the agent prevent part of the available information being dealt with. To the extent that we might consider available information that is not processed as unknown information, it could be argued that the gap between processed information and relevant information is a measure of the extent of uncertainty, or the reciprocal of what Keynes called the weight of an argument. This is precisely what Heiner (1983, p. 562) does: he calls this gap the C–D uncertainty gap, or the gap between the agent's competence and the difficulty of the problem to be solved. Under those terms, uncertainty will thus be the higher the more complex the problem to be solved and the more feeble the perceived competence of the decision maker.

Under this revised definition of uncertainty, complex risk situations, or even ones of the certain type, would be classified under the category of uncertain situations since the computational requirements would be too great. This might explain in part why it has repeatedly been shown that, even in simple risk situations, individuals do not respond accordingly to the expected utility theory. Furthermore, with this revised definition of uncertainty, the concepts of uncertainty and procedural rationality become intertwined. All situations of uncertainty require procedural rationality, as we have previously argued, and decisions made on the basis of procedural rationality would be by definition related to situations of uncertainty. I believe, however, that it is more profitable to distinguish between certain, risky and uncertain situations in accordance with the definitions of the previous section, bearing in mind that even risky or perfectly certain situations may not permit the use of substantive rationality.
Rules of Procedural Rationality

Having shown that fundamental uncertainty precludes the existence of a best solution, and that the limited computational abilities of the human mind preclude the search for the best solution, we are thus left with the notion that procedural rationality is the process that leads to finding good solutions. This is where the idea of satisficing, rather than optimizing, comes about, without denying that some maximizing procedures may be used within procedural rationality. Agents may maximize, but within a very constrained framework, bounded either by the set of information which they have decided to process or by the rules and conventions which they have imposed upon themselves. The solutions sought, whether or not they are the result of some internal highly constrained maximizing procedure, are good or satisfying solutions.

Procedural rationality, in cases of uncertainty or of insufficient capabilities to process existing information, thus consists of means to avoid complex calculations and considerations, and of procedures enabling decisions to be taken despite inaccurate information. Some of these procedures are conscious—we may then speak of rules—while others are unconscious—we may refer to them as habits (Hodgson, 1988, p. 106).

For instance, a large part of our spending as consumers is based on habits. Furthermore shortcuts are used to arrive at quick decisions. Some forms of lexicographic ordering are used to process alternatives. For instance, in the Economics Department of the University of Ottawa, only Canadian (by law) and bilingual (by choice) candidates are seriously taken into consideration for recruitment, unless otherwise exceptional. This allows the recruiting committee to focus its attention on 15 rather than 100 candidates. Similarly, banks do not try to compute an interest rate that would compensate for a too high risk of default on the part of the borrower: they simply do not lend.

Because these procedures do not rely on optimizing behaviour, they are usually considered as instances of market failure and are called, sometimes disdainfully, rules of thumb. However, in a world of ignorance and of complexity, these rules of thumb are rational, because “they are modes of behavior that the firm (or individual) develops as guides for making decisions in a complex environment with uncertainty and incomplete information” (Cyert and Simon, 1983, p. 105). There are many examples of rules of thumb in the real world: pay-back periods for investment decisions; mark-up pricing or full-cost pricing for firms or retailers; the normal rate of utilization of capacity; financial ratios of all sorts, leverage ratios, cash ratios, liquidity ratios for firms; ratios of interest payments to gross income for households wanting to take a mortgage; all bureaucratic
rules. The examples could be almost infinite. Rules allow individuals or institutions to take decisions without having to consider or reconsider all of the available information.

That agents follow rules of thumb cannot be doubted, in situations of uncertainty and, more surprisingly, in situations of risk as well. Hey (1982) has given many examples of the type of rules of thumb employed by agents when searching at a cost for an acceptable price to buy: accept an offer if the quote is larger than the previous quote less the search cost, and so on. Furthermore there have been numerous studies showing the deficiencies of the standard expected utility theory in risk situations. Even when agents face relatively simple problems, with the knowledge of the appropriate possible outcomes, their values and their probabilities being known, it has been discovered that the axioms of substantive rational behaviour (transitivity and the like) are not verified. Although several complex variants of expected utility theory have been proposed, such as regret theory, none can explain all the violations of axioms which have been recurrently observed (Machina, 1987, p. 149). After observing that choices depend heavily on the manner in which the problem is being put, Tversky et al. (1990, p. 275) conclude that, even in the simplest situations of choice, those of risk, one cannot assume that agents respond with any optimizing procedure of the traditional sort. One must therefore conclude that, in the more likely uncertain environment, agents will have recourse to satisficing rules.

On a more general plane, various procedures have been suggested by Keynes and Simon to handle the complexities of decision making, especially in situations of true uncertainty. These are:

1. When a satisfactory solution has been reached, stop searching.
2. Take the present and the recent past as guides for the future.
3. Assume that the present evaluation of the future is correct.
4. Follow the opinion of the majority.
5. Look for alternative actions when existing ones are too uncertain.
6. Take actions that reduce the amount of uncertainty.
7. When uncertainty is too large, postpone the decision.

The first rule is in fact the core of procedural rationality. It presumes that the decision maker sets aspiration levels which make it possible to distinguish between what is acceptable and what is not. However the problem of ranking all of the possibilities is avoided since the agent is looking for one solution within the acceptable range, rather than the best among all solutions. All alternatives do not have to be considered in detail. The next three rules have been proposed by Keynes (1973, xiv, p.
114) to deal with uncertainty. Rules (2) and (3) are somewhat reminiscent of an economic forecast with adaptive expectations, onto which the latest news would have been grafted. This is precisely what forecasting agencies generally have to offer and what firms are looking for.

The fourth rule, that of relying on the opinion of the majority, is perhaps the rule the implications of which are the most important. When the available information is not very reliable or too complex to be processed, it seems that a rational reaction is to rely on the opinions of others, which are either better informed or which represent the majority view, that is the view that should prevail on the markets. The rationale here is that there are less chances of getting burned when one is following the crowd. For instance, unless one is a speculator with a better informed opinion, it is rational for businessmen to launch a new product when other businessmen are optimistic, that is when one can expect effective demand to be strong (Barrère, 1981, p. 153). The less confident we are in our own views, the more we should rely on the judgement of others. Furthermore, as Keynes said (1973, ix, p. 156), a banker who has been ruined is a sound banker provided he has followed all the rules and traditions of the profession and has gone under with a few of his colleagues. ‘Worldly wisdom teaches that it is better for reputation to fail conventionally than to succeed unconventionally’ (Keynes, 1973, vii, p. 158). The illusion of strong rationality in very uncertain situations will thus be safeguarded by mimicking others (Orléan, 1987).

This type of imitative behaviour has strong consequences. The rules that we have mentioned, financial ratios and the like, will be normalized through imitation. Not only do they constitute helpful guidance to decisions, but they also become norms and conventions which have to be respected. These norms are usually not the average of the aggregated opinion of all individuals, since the opinion of some is judged to be of more weight than that of others. As a consequence these norms represent focal points, determined in great part by the opinions of some powerful and respected group. We have already seen that procedural rationality is linked to the presupposition of realism. Now we see that procedural rationality is consistent with the presupposition of organicism (Lawson, 1985; Winslow, 1989). When they take decisions, or even when they set their preferences, entrepreneurs and households rely on habits, customs, conventions and norms. This means that, to a large extent, when proceeding to analyse the overall economy, we can dispense with going into the intricate details of individual behaviour and content ourselves with the study of the interaction between the various groups and classes of society based on the received conventions. There is thus consistency between the presupposition of methodological organicism and that of procedural
rationality. When the limitations of information processing are taken into consideration, the limits of individualism are even more striking.

Having established that conventions are the main response to uncertainty and excess information, it remains to discover when these conventions change. Rule (5) implies that when the old routines cannot provide a satisfactory answer they have to be replaced. In particular when the old routines imply too high a level of uncertainty, then some new information must be gathered and some new channels of thought must be found. Outlets for action that generate more confidence must be devised. For instance, when there are political or economic crises, uncertainty often rises, with the result that what before appeared as reasonable routines must now be discarded. This of course is the difficulty of post-Keynesian analysis: having established the importance of rules and conventions, when are these rules changed, when are the customs replaced? There must be some mechanism explaining the evolution of the customs, but apart from external shock factors and some reference to endogenous innovation, post-Keynesians still have little to offer by way of an explanation (Bianchi, 1990). This, of course, should be the contribution of the Institutionalists and their Veblenian evolutionary economics.

Finally rules (6) and (7) provide the ultimate responses to uncertainty and insufficient capabilities. In general, agents try to avoid having to take decisions involving a substantial amount of uncertainty. As is the case of stumtmen, who do their best to eliminate imponderables (uncertainty) while knowing that they cannot eradicate all risks, firms attempt to reduce the extent of uncertainty by signing contracts and extending their domain of control. I would argue that the power of a firm is a measure of its command over uncertainty. In the end, when doubts are too large, it is always possible to delay a decision (Pasinetti, 1981, p. 234). This is rule (7). It explains to some extent the fluctuations of the economy. Investment requires a conscious decision to increase or replace the existing stock of capital. Furthermore, when consumers are in doubt as to the products upon which they should spend their income increases, they can always postpone their decisions by saving their incomes. This is consistent with theories of aggregate consumption based on habits (Marglin, 1984a, chs 17–18; Green 1991). If a decision must be taken in any case, the strategy of decision making may change if the level of uncertainty increases. For instance, in classical decision theory, it is often assumed that risk-averse agents follow a maximin strategy; that is, they choose the action which minimizes the possible maximum losses, rather than pursuing a strategy that maximizes the minimum gains. I would argue that the choice of these strategies has nothing to do with the psychological character of the individual, but rather that the more risky strategy appears more appealing when
the relative level of available pertinent information is sufficiently high. When uncertainty is greater, the more prudent strategy will usually be followed.

Implications for Theoretical Analysis

It is now time to evaluate the theoretical implications for economic modelling of accepting, on the one hand, the Keynesian/Knightian view of uncertainty, and on the other hand the concept of procedural rationality à la Simon. We have seen in the previous section that mainstream economists ultimately reject the adoption of fundamental uncertainty because they dread the nihilistic consequences for economic theorizing. Not only are they afraid that the standard optimizing tools of the *homo economicus* could not be utilized, but also they are fearful that introducing uncertainty would destroy any pretence at establishing laws and regularities. Furthermore, for neoclassical economists, models not based on microeconomic foundations of the constrained optimization sort are not scientific for they do not rely on individual rationality. The rest of this section demonstrates that these fears are not substantiated.

Let us first tackle the question of the nihilistic component of fundamental uncertainty. As already pointed out, it must be admitted that those authors who have emphasized the importance of uncertainty have generally overestimated its destructive consequences for economic analysis. Two destructive paths have been pursued: one underlying the presumed irrationality of the agents, and the other the instability of the economic capitalist system. The reader should be convinced by now that uncertainty does not of necessity breed irrational behaviour. In fact, it can be argued on the contrary that, in both the *Treatise on Probability* and the *General Theory*, Keynes is striving to define a realistic and practical theory of procedural rationality based on the limitations of human knowledge and capabilities. When deprived of knowledge, reason cannot be based on simple probabilities and must turn to alternative strategies based on conventions and other procedures. In this context, 'Keynes may be viewed as basing the whole of economic theory on a single, broad, non-Neoclassical conception of agent rationality' (O'Donnell, 1989, p. 272).

The second path towards nihilistic conclusions follows some of Keynes's arguments. It has been assumed that uncertainty leads to instability since long-term decisions hinge on flimsy foundations, subject to sudden changes (1973, xiv, p. 114). This has meant to some that a proper theory set in historical time, where these violent changes in opinions would have to be recorded, is beyond the reach of economics. Sticking to Keynes for the moment, it is well known that he also considered uncertainty to be a
stabilizing influence on the economy, since a variety of opinions and of the confidence with which they are held ensures mitigated aggregate reactions to news (Keynes, 1973, vii, p. 172). The position taken here is that the presence of fundamental uncertainty, combined with a rationality based on procedures, generates regular patterns, except in exceptional crises (bifurcations and the like).

The basic argument is that the rules and conventions of procedural rationality spare the economic agents from reacting to every perturbation in the economic environment. Since agents are not assumed to be maximizing some objective function, they do not have to react to every little change in the parameters of the function, whether these changes can objectively be ascertained or whether they are assessed from a hysterical subjective perspective. Provided that the new information leaves the agents in the satisfactory range, the existing procedures continue to be followed. As was said before, what counts with regards to the stable or unstable influence of uncertainty is how agents react to it. Uncertainty per se is no more a destabilizing force than it could be a stabilizing one. Only in situations of crises, when all rules or conventions seem to go by the board, could uncertainty be a destabilizing force. In normal circumstances, uncertainty is a source of regularities, as shown by Heiner. He concludes that 'greater uncertainty will cause rule-governed behavior to exhibit increasingly predictable regularities, so that uncertainty becomes the basic source of predictable behavior' (1983, p. 570). This is a conclusion reached independently by other post-Keynesians: 'In the real world economic systems function coherently, insofar as they do, because of the bounds produced by imperfections of knowledge rather than, as in conventional theory, despite them' (Earl, 1983a, p. 7).

Heiner's conclusions basically rest on the proposition that the greater the amount of uncertainty, the greater is the risk of taking the wrong decision; that is, deciding to change the procedures when this leads to losses, or deciding not to change procedures when a move would have produced a gain. If the world was known with certainty, one would always recognize the proper time to make a move. However, when there is uncertainty and incomplete knowledge, many false signals are received and, as a consequence, changes to existing behaviour seem worthwhile only when there are substantial expected gains; that is, when the gains (or the net gains compared to the no-change situation) and their probability are high. The argument of Heiner is thus based on some sort of compensatory calculus between the probability of an event and the weight of an argument, in the spirit of what Keynes seemed to have suggested in his *Treatise on Probability*, when he said that, to make decisions, 'we ought to
take account of the weight as well as the probability of different expectations' (1973, viii, p. 83).

The implications of all this are that models based on rules of thumb, such as mark-ups, target return pricing, normal financial ratios, standard rates of utilization, propensities to consume, lexicographic rules and so on, are perfectly legitimate since they rely on a type of rationality which is appropriate for the usual economic environment. In a world of uncertainty and of limited computational abilities, the economic agent cannot but adopt, except in the simplest of problems, a rationality which is of the procedural type. The models built on rules of thumb are not _ad hoc_ constructions. Rather they reflect the rationality of reasonable agents. As such they have microeconomic foundations which are just as solid, if not more from a realist point of view, as those of the standard mainstream models. There is thus no need to demonstrate that such or such element results from some maximizing procedure. Optimizing conditions may have some legitimacy when the problems to be solved are simple, but they describe neither the means nor the results of rational economic behaviour under the more realistic conditions of uncertainty or of limited information processing.

2.3 A THEORY OF HOUSEHOLD CHOICE

We have not yet tackled the issue of household choice. The object of neoclassical household choice is to make sure that the axiomatic conditions ruling household preferences are such that the existence of an equilibrium, preferably unique, can be demonstrated. In the more vulgar versions of neoclassical theory, this objective is reinforced by the requirements that the theory be amenable to mathematical manipulations. These objectives, which have little to commend them by way of realism, have been criticized from the very beginning. It is striking to see that the criticisms that could be levelled against marginal utility theory, or revealed preferences theory even before its inception, are still relevant today. Here are some extracts from such an 80-year-old critique.

Marginal-utility theory has usually been formulated in hedonistic terms ... Hedonism is hopelessly discredited by modern psychology ... Deliberation, reasoned choice plays but a minor part in the affairs of men. Habit, not calculation, governs the greater part of all our acts ... The habits of thought which count for most in shaping choice are not the result of prevision, but are of the nature of conventions uncritically accepted by virtue of membership in a particular group ... Calculation is difficult work. It is much easier to act on a suggestion than to weight alternatives ...

Adherents of the marginal-utility school ... deny that the marginal-utility
doctrines stand or fall with hedonism... [They] assert that economics is concerned only with the fact of choice between goods or between alternative activities, and not with the basis of choice...

If the marginal utility theory be interpreted hedonistically it is psychologically invalid. If the theory be deprived of its hedonistic content it is reduced to the unobjectionable statements: that men will not buy a thing unless they want it; that a commodity cannot be sold for more than somebody is willing to pay for it...
(Downey, 1987, pp. 48, 49, 51, 53)

Thus we see that the criticisms of mainstream theory, and the alternatives which are suggested, have not changed over time. Downey argues that marginal utility theory is based upon a deficient view of human conduct. He rejects substantive rationality, because it ignores habits and the difficulties of comparing choices. He emphasizes the role of social conventions. He recognizes that mainstream choice theory does not need the concept of utility or hedonism, that is some unique measure of pain and satisfaction; but then he suggests that, deprived of it, the neoclassical theory of choice is almost a tautology. The post-Keynesian theory of household choice builds upon several of the intuitions mentioned by Downey: the substantial role played by habits and social conventions, procedural rationality and a more proper psychological foundation.

An Overview of the Principles of Consumer Choice

There have been little efforts made by post-Keynesians to explain how consumers make choices. Granted, there are several studies on the choices which entrepreneurs have to make when their firms face uncertain prospects, à la Shackle. Also neo-Ricardians are known for their analysis of the choice of technique in production. But, except for a few authors, such as Earl (1983a, 1986) and Baxter (1988b), post-Keynesians have been relatively silent about the microeconomics of household choice. Does that mean that post-Keynesians, or all post-classical economists for that matter, accept the neoclassical way of determining the composition of consumption output, that is the final demand for individual products? Would post-Keynesians endorse the axiomatic neoclassical presentation of consumer's choice?

The answer is no. Although there have been few contributions, or even few comments about consumer behaviour by post-Keynesian authors, there is a remarkable degree of coherence among these few contributions. The object of the present section is to outline the points upon which post-Keynesians seem to agree. I should point out from the outset that no axiomatic or formal model of choice behaviour will be offered to the reader. The concepts rather than the mathematics will be discussed. What
will come out of all this is that substitution effects, relying mainly on changes in relative prices, will be of little importance compared to habits and income effects.

The common ground of post-Keynesian choice theory can be summarized in the form of six principles:

1. the principle of procedural rationality;
2. the principle of satiable wants;
3. the principle of non-independence;
4. the principle of the subordination of needs;
5. the principle of the irreducibility of needs;
6. the principle of the growth of needs.

We have already discussed at length the issue of procedural rationality. This more realist type of rationality will be applied to the question of consumer behaviour. The second principle, that of satiable wants, can be likened to the neoclassical principle of diminishing marginal utility. It says that eventually more of one good or more of a characteristic will bring less supplementary satisfaction, however that last term is defined. In neoclassical economics, satiation arises only if prices are null or if incomes are infinite. In post-Keynesian economics, satiation often arises with positive prices and finite income. The principle of non-independence focuses on the fact that decisions and preferences are not made independently of those of other agents, an assumption which runs in opposition to the standard neoclassical models of choice. The derived satisfaction also depends on existing social norms. Finally, the last three principles, identified by Georgescu-Roegen (1954, p. 515) and implicitly utilized by Roy (1943) in two brilliant contributions, have been picked up in various guises by post-Keynesians. The principle of subordinate needs can be related to notions of hierarchies, thresholds and dominance. The principle of irreducibility states that some needs cannot be substituted for others, and that, as a consequence, 'everything does not have a price'. The principle of the growth of needs asserts that the growth of real incomes will induce the creation of new needs.

To define these six principles, and to give some substance to them, it has been necessary to go beyond the writings of self-assessed post-Keynesian writers. As pointed out by Earl (1983a, p. 2), there is no chapter on consumer behaviour in the essays of the post-Keynesian study guide edited by Eichner (1979). This is no chance omission. There are, however, several pieces of work which fit, like a puzzle, the presuppositions of the post-classical research programme or major conceptions advanced in other fields of economics by post-Keynesian authors. Earl himself has
found these links with the behaviouralists (Andrews, Richardson, Kay). I was myself put on the track by the humanistic economics of Lutz and Lux (1979).

At this stage the reader might think that he or she is being misled: that there is no more a post-Keynesian theory of consumer choice than there is a theory of frisbee flying; that perhaps one can talk of a behaviouralist consumer theory or a humanistic one, but not of a post-Keynesian consumer theory, since post-Keynesians have made no concerted effort to define such a theory. To this unbelieving reader, the following quotations from four well-known post-classical authors are offered.

There is a kind of competition in consumption, induced by the desire to impress the Joneses, which makes each family strive to keep up at least an appearance of being as well off as those that they mix with, so that outlay by one induces outlay by others . . . Generally speaking, wants stand in a hierarchy (though with considerable overlaps at each level) and an increment in a family’s real income is not devoted to buying a little more of everything at the same level but to stepping down the hierarchy. (Robinson, 1956, pp. 251, 354)

Although possibilities of substitution among commodities are of course relevant at any given level of real income, there exists a hierarchy of needs. More precisely, there exists a very definite order of priority in consumers’ wants, and therefore among groups of goods and services, which manifests itself as real incomes increase. (Pasinetti, 1981, p. 73)

Post-Keynesians generally assume that, in an economy that is expanding over time, it is the income effect that will predominate over the relative price, or substitution, effects . . . Substitution can take place only within fairly narrow subcategories. Consumer preferences are, in this sense, lexicographically ordered . . . A household’s consumption pattern, at any given point in time, thus reflects the lifestyle of the households that constitute its social reference group. (Eichner, 1986a, pp. 159–60)

There are hierarchies of needs from basic needs up to higher needs such as the need for self-fulfilment. The needs are taken as given in a given environment. There are segments in the population which correspond to income classes . . . To different segments there correspond different patterns of consumption to satisfy the hierarchies of needs. (Schefold, 1985, p. 116)

All four quotations mention the principle of subordination of needs or of wants. By introducing lexicographic ordering, Eichner is opening the door for the principle of irreducibility. Note also that these authors refer to the principle of non-independence: there is a class structure or at least an income structure to the composition of consumption. Finally, Eichner and Pasinetti put emphasis on the predominance of income effects over the substitution effects, which is the principle of growth of needs. We thus
have in these short quotes four of the five exclusive post-Keynesian principles of consumer choice which I have listed above. As I have claimed before, the fifth principle, the principle of procedural rationality, is part of the presuppositions of the post-classical programme, and thus it cannot be doubted to be part of a post-Keynesian theory of choice.

I thus hope to have shown that some coherent view of consumer's choice is emerging from post-Keynesian circles, although the latter have paid little attention to the question. Furthermore I hope to show that this post-Keynesian view of household's choice is perfectly compatible with the rest of the post-Keynesian research programme, and that in many ways it can be related to the views of the classical authors, thus reasserting the linkages between the neo-Ricardians and the post-Keynesians, and reaffirming the significance of the usage of the term 'post-classical'.

The Distinction between Needs and Wants

In standard economics, as pointed out in the introduction of this section, everything can usually be brought under the heading of utility. This means that everything desired by an individual corresponds to a want. Every want can be compared to all the others, and in that sense all wants are equal. It is possible to rank the various wants, but this ranking solely depends on the ability of each want to create utility. This, however, was not the view of classical economists, nor initially that of the marginalist economists. It has been recalled by several specialists in consumer behaviour that both Karl Menger and Alfred Marshall considered a hierarchy of needs, that is groups of wants that could be distinguished from each other. Menger proposed a list of needs of differential importance: water, food, clothing, lodging, transportation and tobacco(!), from the essential to the less essential (Lutz and Lux, 1979, p. 18). Marshall also recognized that there existed a variety of wants, some being more basic than others. From his discussion, we can identify the following hierarchy of needs: biological needs (food, clothing, shelter, variety); health, education and security; friendship, affection, belonging, conformity with social customs; distinction; excellence; morality (Haines, 1982, p. 111).

The above lists look strikingly similar to the pyramid of needs suggested by Abraham Maslow and his humanistic school of psychology. This pyramid is said to be constituted by five sets of needs, from the more basic to the highest: physiological needs (air, water, food, sex, sleep); safety needs (health, education, shelter, stability, protection); social needs, subdivided into two sets: belongingness and love needs on the one hand, and self-respect and the esteem of others on the other; finally, the moral needs, which Maslow called self-actualization; that is, the search for truth, jus-
tice, aesthetics, the meaning of life, achievement (Lutz and Lux, 1979, p. 11; Lea et al., 1987, p. 499). Although there is little doubt that these lists were constituted independently, the needs that are identified appear in the same order. We may thus suspect that the proposed order is of significance. This does not mean that all individuals have the same ranking, or that there is no interpenetration of the needs. But we can certainly presume that every individual entertains a ranking of the above sort. In fact, later research seems to demonstrate that needs are clustered around two or three levels: the lower level, which is represented by Maslow’s first two layers of needs, and the higher level dealing with love, esteem and self-actualization (Lea et al., 1987, pp. 146, 501). These two layers broadly correspond to what we want to have and what we would like to be.

If we assume that individuals respond to differentiated needs, rather than to undifferentiated wants, it becomes easier to presume that the fulfillment of each of these needs cannot be compared. In neoclassical standard versions of consumer theory, diminishing marginal utility is explained by the variety of wants. A post-Keynesian view would focus on the hierarchy of needs, where some needs are more basic than others, which implies that they must be fulfilled as a priority. In that sense all needs are not equal. We should thus differentiate between needs and wants. Needs are susceptible to a hierarchic classification and are the motor of consumer behaviour, while wants evolve from needs and constitute ‘the various preferences within a common category or level of need’ (Lutz and Lux, 1979, p. 21).

At this stage it might be preferable to give a simple example of the above distinction between needs and wants, an example which will highlight the difference in emphasis between the neoclassical and the post-classical research programmes. Kagel et al. (1975) have reported an experiment made with rats, where these animals had to pay to obtain goods. More precisely, rats had to press on a lever a certain number of times to obtain drinks or solid food. What neoclassical authors have retained from this experiment is that, when the price of root beer goes up compared to that of some other soft drink (when the number of presses required to get one portion of root beer increases), rats shift their consumption of drinks away from root beer (McKenzie and Tullock, 1978, p. 59). This clearly represents a triumph for neoclassical theory, for it shows that price substitution effects are so universal that they adequately describe even the consumer behaviour of rats. If rats show economic rationality of the neoclassical sort, it must be presumed that the concept of the homo economicus cannot be so far-fetched for humans. Post-Keynesians, on the other hand, have focused their attention on another part of the experi-
ment, the one showing that, although the price of food relative to water is being increased fourfold, the rats refuse to drink more and eat less (Lutz and Lux, 1979, p. 69). The income-compensated demand for food is a vertical. This shows that drinking and eating are two different physiological needs, which to a large extent cannot compensate for each other. They are in this sense incommensurable. On the other hand, the various types of drinks represent wants. They can be substituted one for another. You need to drink, but you want a beer.

The fact that needs lack commensurability puts in jeopardy a standard concept of neoclassical analysis, the notion of opportunity cost (Lutz and Lux, 1979, p. 21). It is clear that the concept of the opportunity cost can only apply to wants within a given category of need. When different levels of needs are considered, there is no clear-cut definition of the opportunity cost. When lower needs are being fulfilled, the satisfaction of higher needs is not being given up since those needs are not yet active. While wants may lend themselves to quantitative measurement, needs are of a qualitative nature. There is no unidimensional measure of the satisfaction that these irreducible needs can generate.

Neoclassical authors usually assume that all needs can be subsumed into wants, so that in the end one can always offer enough of a good to compensate for the loss of another. This is also called the principle of Archimedes. An extreme version of this principle, although it cannot be derived from the behaviour of individuals, is the axiom of gross substitutability, which we have already mentioned in Chapter 1 and which says that an increase in the price of any good induces an increase in the demand for each of the other goods. The emphasis for neoclassical theory in its various incarnations is clearly on price substitution. On the other hand, post-Keynesians insist that needs at different stages of the pyramid of needs cannot be substituted for each other. Fulfilling the higher needs cannot be a substitute for the fulfilment of the lower ones. The Archimedes principle is invalid.

Procedural Choice among the Wants

Let us assume that there exists a pyramid of needs. Within each need, say furniture, there is a wide variety of possibilities. How are rational households going to decide between these possibilities? We previously argued that economic agents follow rules of thumb to avoid time-consuming decisions. In the case of consumer behaviour, where a substantial amount of consumer expenditure is of the repetitive type, it can be presumed that a large portion of these expenditures occurs through routines. That is, they
depend on past behaviour, the habits which have been incorporated in the consumer behaviour. These habits may come from past family behaviour, that is the behaviour of parents, or from cultural behaviour, or from the visible behaviour of friends, neighbours or colleagues at work. They may also have been acquired through persuasion, that of publicity and advertising.

There are also some expenditures, often on the semi-durable or the durable goods, which are not the result of routine decisions and which require a conscious choice. It may also be presumed that a lot of present routine expenditures are the consequences of past conscious decisions. How are these decisions taken? Post-Keynesians would argue that in general the main rule of thumb is some sort of non-compensatory choice. These rules of a lexicographic nature actually apply at three levels. First, we have already seen that needs could be ordered, some having priority over the others. Secondly, within a given category of need, there may be several types of sub-needs, for instance furniture within the need for lodging. One has to decide what kind of furniture has priority: beds, bedroom set, tables, dining set, kitchenware, libraries, sofas, paintings or various household appliances and gadgets. We may then speak of wants within sub-needs. At this level it has been demonstrated that households establish a pattern of consumption (Parouch, 1965; Clarke and Soutar, 1981–2). Some types of goods are acquired before others in a consistent manner.

Finally lexicographic ordering also plays a role in the actual choice of the good, once the preferred sort of want has been established. For instance, once the household has decided to add a compact disc (CD) player to its audio capabilities, it remains to choose the kind of CD player and its make. As we all know, unless we rely on the judgement of the seller at the audio shop, which is another possible rule of thumb, and assuming we had no difficulty in selecting the appropriate store, this can be a very agonizing decision, involving a large number of comparisons and the weighting of several different characteristics. At this stage, another decision rule of the lexicographic type may help us to take a quick decision: some characteristics will be considered to be incommensurable with others; that is, CD players without these characteristics will be excluded outright. This is what Earl (1986, p. 183) calls non-compensatory filtering procedures. A limit to the maximum price to be paid may be one of the required characteristics. In this fashion, the range of choices can be drastically reduced to some malleable number. Only at this stage might it be possible to employ compensating schemes of the sort favoured by mainstream authors, that is weighting the various characteristics of the remaining makes.
Orderings of a lexicographic nature may take several forms. The most extreme form would be what Earl (1986, p. 233) calls the naive lexicographic rule, where choice is based on a single characteristic. The product which scores best with respect to this characteristic is the chosen one, regardless of the other characteristics, unless there is a tie, in which case the next characteristic in the priority list becomes the crucial one. This is illustrated in Figure 2.1, where point $B$ is preferred to point $A$, since characteristic (or need) $z_1$ has absolute priority over characteristic (or need) $z_2$, but where $C$ is preferred to $B$ since there is a tie with respect to $z_2$.

Many more non-compensatory filtering rules which appear more reasonable are nevertheless possible. They may be called behavioural lexicographic procedures. Figure 2.2 illustrates such a possibility, which relies on a saturation or satiation level $z_1^*$. It is assumed that satisfaction $S$ depends on characteristic $z_1$ only, up to the level $z_1^*$. Any higher level of $z_1$ is preferred to any level of $z_2$. On the graph, point $B$ is preferred to point $A$ on the grounds of that priority, but points $B$ and $C$ would be indifferent. We may thus write:

$$
\text{If } z_1 < z_1^*, \quad S = S(z_1) \quad (2.1)
$$

Turning now to the right-hand side of Figure 2.2, we suppose that the
saturation level $z_1^*$ has been exceeded and that in this case satisfaction
depends on the saturation level $z_1^*$ and on the second characteristic, $z_2$.
The order of preference between the various combinations indicated is
given by the following inequalities: $G > F = E > D > C$. Note that the
consumer would be indifferent between combinations $F$ and $E$, since it is
assumed that the characteristic $z_1$ does not matter once the saturation level
$z_1^*$ has been overcome. The level of satisfaction is:

$$\text{If } z_1 \geq z_1^*, \quad S = S(z_1^*, z_2)$$

In Figure 2.3, we suppose that $z_1^*$ is not exactly a saturation level, but
rather a threshold. This means that, although the consumer needs exceeds
this threshold, resulting in characteristic $z_1$ becoming relevant, increases in
$z_1$ provide supplementary satisfaction. Standard analysis could then apply
beyond $z_1^*$, with the usual compensatory indifference curves. The follow-
ing equalities or inequalities would hold: $F > D = E > C = B > A$. The level
of satisfaction could be written as:

$$\text{If } z_1 < z_1^*, \quad S = S(z_1)$$
$$\text{and if } z_1 \geq z_1^*, \quad S = S(z_1, z_2)$$
Finally, another kind of lexicographical ordering, suggested by Georgescu-Roegen (1954) and formalized by Encarnación (1964), could be imagined. It is illustrated by Figure 2.4, and it again corresponds to a threshold level rather than to a level of satiation. Below the threshold point of $z_i^*$ corresponding to the first priority, preferences are ordered according to the highest level of characteristic $z_i$. However, for a given $z_i$, the agent prefers to have more of characteristic $z_1$ than to have less of it. Beyond the threshold point $z_i^*$, the reverse occurs: preferences are ordered according to characteristic $z_2$, but for a given $z_2$ the agent prefers to have more of $z_1$ than less of it. The lines which are so constructed represent quasi-indifference curves. All points on each of these curves are now unambiguously ordered. Suppose there are two goods, $A$ and $B$, offering the characteristics $z_1$ and $z_2$. We can then write:

When $z_i < z_i^*$, $S(z_i^*, z_2^*) < S(z_i^*, z_1^*)$ if $z_i^* > z_i^*$.  
When $z_i \geq z_i^*$, $S(z_i^*, z_2^*) > S(z_i^*, z_1^*)$ if $z_i^* > z_i^*$.  

(2.4)

In the case of Figure 2.4, the following preferences hold: $G > F > E > D > C > B > A$. The standard utility analysis is now insufficient.
to represent this ordering. Satisfaction must be represented by a vector. From a mathematical point of view, this type of vectorial representation of preferences may appear more complex than the standard utility analysis, where all characteristics or goods may be substituted for each other. From a decisional point of view, however, things are much simpler. The individual does not have to assess a myriad of possibilities to take a decision, trying to compute whether or not the loss of a characteristic can be compensated by the gain of another. No compensation has to be performed. The individual simply has to assess whether the threshold has been attained or not.

The principles of subordination and of irreducibility thus rely on the structure of needs, which are the psychological pillars of the theory, and on the decision-making process of the individual consumer, basically rules of a lexicographic nature. It has also been emphasized that, when individuals are grouped within one household, or when an individual has several conflicting personalities, lexicographic choice may be the main rule which solves the inner conflicts and allows decisions to be taken (Earl, 1986, ch. 6; Steedman and Krause, 1986).
Growth of Needs and Conventions

Having assumed that there indeed exists a hierarchy of needs, or of semi-needs, how do consumers move up the steps of the pyramid? The basic answer is that individuals move upwards in the hierarchy according to income effects. Of course, as has already been pointed out, different individuals have different scales, and it is likely that widely different income levels are needed to reach the upper grades of the hierarchy of needs. Different individuals have different threshold levels. However the principle remains. Unless there is some Freudian fixation with some type of need, that is a neurotic obsession with some set of goods, the needs of individuals will grow as their lower needs are gradually fulfilled.

This is the principle of the growth of needs. When a need has been fulfilled, or more precisely when a threshold level for that need has been attained, individuals start attending to the needs which are situated on a higher plane. There are always new needs to be fulfilled. The needs of the lower levels, however, require income to be satisfied. To go from one level of need to another dictates an increase in the real income level of the individual. The fulfilment of new needs and, therefore, the purchase of new goods or new services are thus related to income effects. This is the microeconomic counterpart of the post-Keynesian focus on effective demand, that is on macroeconomic income effects. What is being asserted is that income effects are much more important to explain the evolution of expenditures on goods than are substitution effects. The latter only play a minor role in a static analysis of consumer behaviour. Still, even within a static analysis, income and related effects, such as interdependence, may play the dominating role.

The emphasis of traditional theory on substitution effects has led to the neglect of the study of the hierarchy of consumption and of the income effects. Beyond the physiological needs, convention is the main reason for which it is believed that a hierarchy of needs or semi-needs will be more or less identical for all individuals of a similar culture. A household’s pattern of consumption ‘reflects the lifestyle of other households that constitute its social reference group’ (Eichner, 1986a, p. 160), that is ‘the consumption of each class will be guided by a conception of its appropriate lifestyle, given its place in the social pyramid’ (Nell, 1992, p. 389). The consumption pattern of individual households is thus influenced by the demand structure of households with similar incomes or similar types of jobs, as it has been empirically shown (Alessie and Kapteyn, 1991).

The relationship between income levels and the quantities consumed of a given good is known as the Engel curve. Engel curves thus depend to a large extent, again beyond physiological needs, on the existence of
customs and conventions. For a given individual or household, the Engel curve of a given good, or of a set of goods satisfying a given need, may appear as shown in Figure 2.5. When the revenues of the household are low, no amount of the good is being purchased, unless the good contains characteristics fulfilling the lowest of the needs. This is because the income of the household is insufficient to fulfill the needs which stand lower in the hierarchy. Goods which respond to higher needs will not be bought irrespective of their price. When the satiation or the threshold levels of these lower needs have been reached, as a result of income increases, the consumer may consider the purchase of goods of higher standing. The new good will be increasingly purchased, again until a threshold has been reached, at which point the quantities purchased might stay the same or decrease, as in the case of the so-called inferior good. The same graph may apply in a macroeconomic setting. Another possibility, associated with one-shot purchases such as travels abroad on summer vacations by an individual household, is illustrated by the kinked line (Eichner, 1987a, p. 642). The choice is then a binary one, whether to purchase or not at all. The upshot of all this is that changes in relative prices, unless they are so drastic that they change the ordering of needs or demi-needs, will have a very minute impact on the shape of the Engel curves or on the thresholds with which they are associated.
This ordering of needs and semi-needs is to some extent the result of innate preferences, especially again with respect to the lower physiological needs. It is clear, however, primarily with respect to the more social needs, that the publicity being exerted by the producing sector, as well as the acquired traditions, will have a substantial impact on the composition of consumption. This is where the principle of non-independence plays its part. What is being asserted is that the behaviour of the consumer, as well as the satisfaction which is derived from consumption, is not independent of the behaviour of other consumers. Economists, who follow fads in their research, would be hard-pressed to deny this role of conventions.

The notion that consumers care about others, or about their relative position, is nothing new in the literature. Thorstein Veblen (1899) is known precisely for having emphasized these points. Furthermore even Pareto distinguished between the notions of opheimity, which he reserved for the traditional notion of independently assessed satisfaction, and that of utility, which was supposed to take into account the consumption of other agents. That distinction was not retained by mainstream economists, except for Duesenberry’s (1949) relative income hypothesis, for mathematical convenience one may suspect. The fact remains, however, that consumers care about each other. To the hierarchy of needs corresponds a hierarchy of consumers, of which marketing officers of large corporations take advantage, something which Galbraith (1962, ch. 11) calls the dependence effect.

Many sociological or psychological arguments can be advanced to explain why consumers want to go beyond their physiological and most basic material needs. They are usually based on some comparison with the situation of other consumers. In the semiological view of consumption, consumer goods are a sign which flashes to the outside world which rank of the consumers’ hierarchy the agent occupies (Baudrillard, 1972). This leads to a desire for belongingness, or for normality. The consumer wants to demonstrate that he or she belongs to a certain class of society, to a certain group within the hierarchy of consumers. This brings comfort to the consumer. Households, or at least members of the household, will thus attempt to imitate the behaviour of other consumers. They will follow what appear to be the existing norms of consumption, to show that they belong to the appropriate rank of the hierarchy. This is what Harvey Leibenstein (1950) has called the bandwagon effect.

There are other reasons for which one should expect individual demands for a given product to be a positive function of the demand of society for that product. Consumers watch and copy other consumers because in so doing they learn how to spend their increased purchasing power. Consumers need to discover their preferences (Pasinetti, 1981, p.
They are not innate. They are acquired by experience and by imitation of the consumption pattern of friends or of people of higher ranks in the consumers' hierarchy. Purchases of specific products in chain reaction are thus explained by the informational content of consumption by neighbours, relatives, friends or acquaintances (Marris, 1964a, p. 146). The impact on purchases of socioeconomic contact reinforces the belief that the composition of demand depends on socioeconomic classes.

On the other hand, there will also exist a contradictory desire, that of differentiation, held by all consumers. Those of the higher ranks of the hierarchy attempt to distinguish themselves through their ostentatious consumption, while the consumers of the middle ranks try to transgress temporarily the limits of their rank. The norms set by the upper classes will in this case define the composition of this temporary consumption. In this spirit, Leibenstein has devised the snob effect, where individual demands for a product are an inverse function of the overall aggregate demand for that product, and the Veblen effect, where individual demand is an inverse function of the perceived price of the product.

René Girard's envy is the other sociological explanation of customized consumer behaviour which has recently been advanced. Girard's envy is very similar to Runciman's concept of relative deprivation. Individuals feel relatively deprived when they want a certain good that a reference group possesses, and when they believe that it is feasible to obtain the good (Baxter, 1988b, p. 52). Envy is defined as a desire to get what others have. It is thus distinct from jealousy, which is a desire to keep what one already has. The goal of publicity, besides the creation of purchasing habits, is to provoke envious feelings. Publicity makes one realize what the Joneses are up to, and indicates how to suppress the unhappy feeling of envy: the consumer need only buy the good which the Joneses have already incorporated into their structure of consumption (Dumouchel and Dupuy, 1979, p. 47). The norms of consumption are thus set either by imitation or by envy. Whatever the spring of action, the result is the same: the hierarchy of needs or semi-needs becomes the same for all, since all consumers try to emulate those which belong to the upper echelons of the hierarchy of society. These consumer elites set the trends. 'Emulation effects normally follow the social hierarchy; the consumption styles of the rich and famous set standards to which the rest aspire (or, sometimes, against which they react)' (Nell, 1992, p. 392).

Another consequence of this analysis based on envy or on relative income positions is that happiness is a function of the rank occupied in the consumers' hierarchy. This is a well known phenomenon. While individuals in a given industrialized country are not happier than those of the previous generation despite huge changes in standards of living, it appears
that on average individuals in rich countries are happier than individuals from poor ones (Veenhoven, 1989). Similarly it has been discovered that within a country individuals belonging to the upper income echelons generally consider themselves happier than those with low income (Sci-tovsky, 1976, p. 136). Happiness or the satisfaction of needs is thus dependent on one’s relative position, on the national or the global scale. Material needs only fulfil social needs to the extent that they allow an individual to move up the social hierarchy. Figure 2.6 illustrates this intuitive fact. Assume two individuals, each with their own level of satisfaction or happiness initially given by point A. Suppose individual 1 obtains an increase in wage income, leading to the fulfilment of higher needs. Point B will now represent the new situation, until individual 2 discovers that his or her relative position has changed for the worse, at which stage point C will represent the two levels of satisfaction. When individual 2 manages to overcome his or her envy by consuming more goods, the initial relative position of the two individuals in the hierarchy will be re-established, and very likely the final situation, D, will be identical to the initial one, A (Attali and Guillaume, 1974, p. 142).

Some of the consequences of the principle of non-independence will become more obvious later. For instance, the notions of fairness and
justice will play an important role in the analysis of the labour market and of inflation since the increase or the decrease in relative wages will allow consumers to satisfy their social needs, that is those needs related to the rank established within the hierarchy of consumers. For the moment it may be noted that the above comments help to justify the classical method of dividing households into two or three classes, the workers, the rentiers and the capitalists. It can be presumed that their consumption behaviour as households, including their propensity to save (or not to save), is similar within a class. This will apply with even greater force when these classes are subdivided into income classes.

Characteristics and Hierarchy

The question now is how to formalize, to some extent, the principles which have been developed in the previous subsections. Various formulations have been explicitly or implicitly suggested by various authors working outside the mainstream. In their presentation of humanistic economics, Lutz and Lux (1979) put together the Maslowian pyramid of needs and Georgescu-Roegen's plea to use lexicographic ordering or some form of lexicographic ordering. In his search for more adequate foundations of consumer behaviour, Arrous (1978) proposes to put together Georgescu-Roegen's lexicographic ordering and Lancaster's analysis of the characteristics of goods. This approach is also the one which dominates Earl's latest essay on consumer behaviour (1986, p. 234). Pasinetti (1981, p. 75) recommends making use of Lancaster's definition of a group of goods to identify a need, while Nell (1992, p. 390) observes that a lifestyle is specified by standards of characteristics. We will thus attempt to put together an analysis of needs that relies on an ordering of a lexicographic nature, where decisions are made on the basis of non-compensating priorities. The characteristics of the goods rather than the goods themselves will be the crucial distinctive elements, assuming, however, that goods can be joined together into groups.

It must be recognized that such a view is not totally novel, nor uniquely post-Keynesian. In their textbook of psychological economics, Lea et al. (1987, pp. 496–501) associate Lancaster's economics with Maslow's needs. In his own presentation, Lancaster (1971, pp. 146–56) recalls the importance of the hierarchy of needs (or of wants, as he calls them) as presented by certain earlier marginalists, relating these needs to sets of characteristics. Lancaster explains hierarchies by the possibility of satiation effects, when prices are positive and incomes finite. He establishes a link between the satiated needs of an individual and the income class to which that individual belongs, with the assumption that needs are partially ordered in
a lexicographic way, which Lancaster calls dominance. Similarly, Ironmonger (1972) proceeds to an analysis based on Georgescu-Roegen's distinction between utility and needs, using a technique which is reminiscent of Lancaster's. In Ironmonger's book, goods fulfil wants (Lancaster's characteristics), the latter being lexicographically ordered, with various satiation levels and income levels. These non-orthodox views, however, have not been much disseminated among the mainstream, and as a result they can be considered as typically post-Keynesian.

Let us start by considering a consumption technology; that is, the relationship between goods and the characteristics that these goods provide. As a first approximation, one may think of these characteristics as being various wants. Let us suppose that there is a very simple consumption technology, with three characteristics, which we shall call $z_1$, $z_2$ and $z_3$, and four goods, which we shall call $x_1$, $x_2$, $x_3$ and $x_4$. The technology matrix is given by $T$ and the $t_{ij}$'s indicate how many units of each characteristic are provided by one unit of each good. Prices are not considered at this stage. We thus have in matrix form:

$$
\mathbf{z} = \mathbf{T} \mathbf{x}
$$

(2.5)

More explicitly, this equation looks like the following:

$$
\begin{bmatrix}
    z_1 \\
    z_2 \\
    z_3
\end{bmatrix}
= 
\begin{bmatrix}
    t_{11} & t_{12} & t_{13} & t_{14} \\
    t_{21} & t_{22} & t_{23} & t_{24} \\
    t_{31} & t_{32} & t_{33} & t_{34}
\end{bmatrix}
\begin{bmatrix}
    x_1 \\
    x_2 \\
    x_3 \\
    x_4
\end{bmatrix}
$$

If all $t_{ij}$'s are positive, this means that each of the four goods contains all three characteristics. The four goods thus provide the same characteristics, but, unless the $t_{ij}$'s are proportional, the proportions in which these characteristics are being provided by each good are different. Note that here it has been assumed that the consumption technology is linear; that is, doubling the quantity of a good doubles the amount of characteristics provided. This assumption is a simplifying one and is not very important, unless one attempts to derive from it conclusions about the shapes of demand curves, based on the optimality and uniqueness of the chosen bundles of goods (Watts and Gaston, 1982–3).

Let us now suppose that each good cannot fulfil all characteristics. Let us suppose further that we can separate goods according to the set of characteristics they fulfil, that is, goods that fulfil a given set of characteristics cannot fulfil other characteristics. These goods thus constitute an intrinsic group; that is, they respond to very precise and limited wants.
The matrix of consumption technology is then said to be decomposable into submatrices. An example of such a decomposable matrix, with the previous notation, would be the following:

\[
\begin{bmatrix}
 t_{11} & t_{12} & 0 & 0 \\
 t_{21} & t_{22} & 0 & 0 \\
 0 & 0 & t_{33} & t_{34} \\
 0 & 0 & 0 & t_{44}
\end{bmatrix}
\]

Expanding the matrix, the relationship between the goods and the characteristics would then be the following:

\[
\begin{align*}
 z_1 &= t_{11}x_1 + t_{12}x_2 \\
 z_2 &= t_{21}x_1 + t_{22}x_2 \\
 z_3 &= t_{31}x_3 + t_{32}x_2 + t_{33}x_3 + t_{34}x_4
\end{align*}
\]

In this example there are two distinct intrinsic groups. The first group is constituted by the goods \(x_1\) and \(x_2\), since they only cater to characteristics \(z_1\) and \(z_2\), while there are no other goods which can fulfil these two characteristics. We can also see that only goods \(x_3\) and \(x_4\) can provide characteristic \(z_3\), and that these two goods provide no other characteristic. Therefore goods \(x_3\) and \(x_4\) also form a group, distinct from the first one. Lancaster's argument is, then, that one must distinguish between two types of substitution effects. Within a group, the increase in the price of a good might lead to its abandonment by all consumers since the other goods might eventually offer the same characteristics more efficiently, that is, for a lower price. This is called by Lancaster efficiency substitution. All consumers should act in a similar way within a group of goods. In the example above, in the second group, suppose that \(t_{33}\) is larger than \(t_{34}\). This means that the price of good \(x_4\) must be proportionally smaller than that of \(x_3\) if both goods are to be part of the consumption basket. Otherwise, characteristic \(z_3\) can be obtained from good \(x_3\) at a cheaper cost than from good \(x_4\), and the latter will not be bought at all. Efficiency substitution effects are based purely on technological parameters. They are not related to the preferences of individuals. Personal preferences play a role when it comes to comparing characteristics within a group or sets of characteristics between groups. For instance, if the agent has a strong preference for characteristic \(z_1\), while good \(x_1\) provides that characteristic at a low price, good \(x_1\) may be preferred to good \(x_3\), although the latter good provides characteristic \(z_3\) very efficiently.

We thus see that the combination of personal and efficiency substitution effects may provide the usual price substitution effects that mainstream theory relies upon. Notwithstanding the fact that substitution within a
group can be questioned when the technology of consumption is not linear, as was pointed out above, the notion of group can be expanded in a direction that severely limits the extent of price substitution effects. Lancaster's analysis may be generalized to include the notion of needs and their irreducibility. Submatrices can in fact themselves be decomposed to form subgroups (Arrous, 1978, p. 259). We might thus suggest that efficiency substitution occurs only within subgroups. Each of these subgroups contains essentially identical goods, that is the same goods under various brands (manufactured by different producers). Personal preference substitution occurs only between subgroups of the same group, while neither type of substitution can arise between goods of different groups. Irreducible needs are thus formally represented as sets of group characteristics, these sets showing no commensurability. Such a vision of consumer theory drastically reduces the extent and the power of price substitution.

Figure 2.7 illustrates the decomposition of a matrix of consumption technology along the proposed lines. Within the technological matrix, the submatrices $A_1$, $A_2$, and $A_3$ of matrix $A$ represent three subgroups of goods between which there exists personal preference substitution. Within each of these submatrices, there can be efficiency and personal substitution.
However between the set of characteristics of $A_1$ and that of $A_2$ there can only be personal substitution. On the other hand, the matrices $A, B, C, D, E$ are in order of dominance as they would be in Maslow's hierarchy of needs; that is, the characteristics of matrix $A$ fulfill lower needs than those of matrix $B$, while those of $B$ fulfill lower needs than the characteristics of matrix $C$, and so on. The needs corresponding to matrix $A$ must be fulfilled; that is, the various thresholds and satiation levels must be attained before the consumer can start to consider the goods which belong to the groups of matrix $B$. To each of the five matrices within the matrix of consumption technology one could attribute one of the five levels of needs ascribed to Maslow. We could thus say, following our earlier distinction in terminology, that the matrices $A, B$ and so on represent needs, for which there exists a hierarchy, while the submatrices $A_1, A_2$ and so on represent the various wants, which can to a large extent be compensated.

We know that in reality things are not so simple. We have already seen that the hierarchy of needs of Maslow has not been well demonstrated, and that it seems that only two or possibly three levels of needs can really be distinguished: one corresponds to the material needs and their social spin-offs, from which we can perhaps isolate the most necessary commodities, while the other coincides with the higher moral needs, the two levels being truly irreducible and independent of each other. Forgetting for now about the moral needs, one can also think of consumers as setting threshold levels for various types of expenditures, such as transport, lodging, vacations, entertainment and so on, and then deciding on a lexicographic order within each of these categories, as does Eichner (1987a, p. 648) in his presentation of a decision tree. Let us call sub-needs these various types of consumption expenditures which are ordered in a hierarchy. Consumers rank their possible expenditures on these sub-needs in a lexicographic pattern, each sub-need corresponding to a set of characteristics. While it is understood that the order is not irreversible, only the closest sub-needs may be substituted for each other. Each increase in income brings a revision of the thresholds, and therefore each consumer goes over the same need on numerous occasions as income rises.

This type of behaviour is illustrated in Figure 2.8. Each of the three main matrices represents a category of expenditures, say food, lodging and entertainment. Each category of expenditures presents characteristics which are linked to each other. The various submatrices $A, B, C \ldots$ represent the various sub-needs, each letter representing the rank of the sub-need. Consumers thus fulfill first their physiological needs, here food, then the other necessary ones, such as lodging. Entertainment is considered last, but then, when some low thresholds have been reached, the consumer revises the criteria serving to appraise whether or not the need is
Theory of Choice

Figure 2.8 Subordination and overlap in needs: decision tree and sub-needs

Characteristics

Category of consumer expenditures

Food

A

D

G

Lodging

B

E

H

J

Entertainment

C

F

I

K

being fulfilled, and new characteristics are then considered. The consumer may start looking for more sophisticated characteristics of food (submatrix D), instead of only checking the caloric intake. As income continues to rise, the criteria of acceptable housing, for instance, may be revised upwards and the consumer may then start to look for some completely different type of housing, trying to fulfill the sub-need corresponding to submatrix E. All sub-needs are thus ordered in a lexicographic manner, but because of a considerable overlap between needs, as suggested by Joan Robinson in the passage quoted at the beginning of the section, consumers may visit each major need a considerable number of times. If the order is not perfectly lexicographic, as one would reasonably expect, one can imagine situations where sub-need H could be fulfilled before sub-need G but never before sub-need F. There would thus be some limited possibility of personal preference substitution between submatrices of adjoining rank, while efficiency substitution would be possible only within each submatrix.

The lack of importance of substitution effects and the importance attached to income effects by post-Keynesian authors is fully compatible with orderings of a lexicographic nature. This can easily be shown heuristically even if the matrices given by equation (2.5) are not fully decompo-
Figure 2.9 Characteristics and ordering of a lexicographic nature: the importance of income effects and the irrelevance of substitution effects

Table. Let us suppose that consumers make choices according to Georgescu-Roegen's quasi-indifference curves, as represented by equation (2.4) and as illustrated by Figure 2.4. Consumers have a priority list of their needs, the $z_1$ characteristic representing the lower need and the $z_2$ characteristic representing the next need in the hierarchy. This order in priorities is upheld until a threshold level $z_1^*$ is reached. Beyond this threshold, the $z_2$ characteristic becomes the prime determinant of choice. Let us use Lancaster's representation of characteristics, here illustrated by Figure 2.9. It will be shown that, even if goods cannot be isolated into distinct groups, there are severe limitations to substitution effects when there are lexicographic filters.

Let us assume that there are three goods, $x_1$, $x_2$ and $x_3$, which fulfil the two needs represented by $z_1$ and $z_2$. The prices of these three goods being given, and his income being given, the consumer is constrained in the fulfilment of his needs. The constraint is usually represented by the efficiency frontier, illustrated in the initial situation by the kinked line $x_1x_2x_3$ of Figure 2.9. The maximum quantity of good $x_j$ which the consumer can buy is given by $Y/p_j$, with $Y$ being income and $p_j$ the price of the $x_j$ good. The level of characteristic $z_i$ which can be attained is thus $t_i Y / p_j$. 
With lexicographic ordering, consumers choose what neoclassical authors call a corner solution. Here only good \( x_1 \) is purchased. The consumer buys the good which allows him the highest fulfillment of characteristic \( z_1 \), because his income and the existing prices do not allow him to reach the threshold \( z_1^* \).

Let us now suppose that the price of good \( x_3 \) is cut in half. The ray representing good \( x_1 \) doubles in length. The new efficiency frontier would be the straight line \( x_1,x_3' \). Neoclassical authors would argue that the price change has induced efficiency substitution effects. All consumers who used to purchase good \( x_3 \) would abandon the product. In our example, the price change induces no change in the choice of all consumers whose threshold, relative to income is \( z_1^* \). They would all keep purchasing good \( x_1 \). There are no substitution effects here. Suppose now that real income doubles, all rays doubling in length to \( x_1',x_3',x_5' \). For a neoclassical author this would not change the shape of the efficiency frontier; it would now be \( x_1',x_3' \).

Consumers purchasing either good \( x_1 \) or good \( x_3 \). In a world of lexicographic ordering, however, consumers abandon good \( x_1 \) and purchase good \( x_3 \), since the combination offered by point \( x_3' \) is the one that offers the highest level of characteristic \( z_1 \) while exceeding the threshold level \( z_1^* \). Rational consumers may choose point \( x_3' \), although it is not part of the efficiency frontier. This illustrates the secondary importance of substitution effects and the primary importance of income effects, while showing how inferior goods arise naturally from choices of a lexicographical nature.

To sum up, the impact of substitution is severely constrained. This is true in all cases: when the structure of consumption looks like the one illustrated by Figure 2.7, which corresponds precisely to the scheme of Maslow’s hierarchy of needs; when the structure of consumption looks like the one shown in Figure 2.8, which reproduces Eichner’s lexicographic ordering of sub-needs; or even if only lexicographic filters prevail.

**Consequences for Price Theory**

The emphasis of orthodox theory on static behaviour has led to an excessive amount of research on substitution effects. On the other hand, income effects have been either neglected or assumed away. (Whereas income effects used to be seriously considered, the famous Engel curves being a tribute to the interest generated by these dynamic effects, their importance in the eyes of most researchers has vanished.) Those who have attempted to estimate the importance of pure substitution effects on the general categories of consumption expenditures, having taken into consideration the income effects through time, have discovered that these
substitution effects, own-price elasticities and cross-elasticities, are quite negligible (Deaton and Muellbauer, 1980, p. 71). While the own-price elasticities of food, fuel, drinks, travel, entertainment and other services turned out to be negative, as expected, the absolute value of these elasticities was found to be no greater than 0.05. The price elasticity of clothing and housing was not statistically different from zero. These findings seem to correspond to the picture of consumer behaviour which has been drawn in the preceding subsection. The cause of these small substitution effects, within the post-Keynesian framework, is that the large categories of consumer expenditures fulfil important needs which cannot compensate one for another. Variations in their relative prices induce no change in consumption behaviour, or very small ones. Only within each one of these large spending categories could one possibly observe more substantial substitution effects. One can thus presume that the more disaggregated the analysis is, the more likely we are to find high absolute values of price elasticities. However the findings of Houthakker and Taylor (1970) show that, even at a much more disaggregated level, that is with over 80 categories of consumer goods, consumption expenditures are mainly determined by habits and income effects, while price substitution effects play a fairly modest role.

The crucial issue here is that the fluctuations in the price of a good, unless they are really substantial, will not have much impact on the quantities sold. The major exception to this prediction would be new goods being introduced to consumers. Innovations on the consumer market either create new needs or fulfil existing needs which were previously poorly met. Besides these innovative commodities, the reason that fluctuations of relative prices would have little impact on demand is that all goods respond to a need (or to a set of needs). Provided that these needs, or sub-needs, are arranged in a preset order, the decrease in the price of a good will only make it more attractive to consumers who have already attained that part of the pyramid. All those who are still trying to attain their threshold levels with respect to lower needs will not be concerned by this price decrease. Furthermore, since a substantial amount of expenditure occurs on the basis of habits and customs, the decrease in prices may go unnoticed unless it is heavily publicized. The decrease in the price of a good will only have an impact to the extent that it can replace other goods fulfilling the same needs, or, more precisely, what we have called the same wants. This is the traditional substitution effect, limited however to the goods which have similar characteristics. In classical theory, these goods were for practical purposes treated as identical (Schefold, 1985, p. 112).

The symmetric consequences of the above is that changes in the prices
of goods fulfilling needs of the higher levels of the hierarchy will have no impact whatsoever on the consumption of the goods of the lower levels of the hierarchy (Roy, 1943). The reason is that these goods are not part of the basket or of the hypothetical basket of consumption of all consumers which have not yet fulfilled the required thresholds of their lower needs. These poorer consumers just do not care about the prices of the goods which help to fulfil the higher needs since these goods cannot be acquired owing to their budget constraint. On the other hand, if there is an increase (or a decrease) in the relative price of the goods which help to fulfil the lower needs, this will have repercussions on the quantities sold of all goods belonging to the higher part of the hierarchy. A lower relative price will increase the real income of all households, leading to an increase in the consumption of all goods fulfilling the higher needs of the hierarchy.

What we have here is an asymmetric relation which is similar to the one established by the classical authors when they were discussing necessary and luxury goods (Roncaglia, 1978, p. 52). According to the classical classification, luxury goods were non-necessary goods that were not consumed by the workers. Only the rentiers and the capitalists could spend their income on luxury goods. Necessary goods, on the other hand, were consumed by both the workers and the upper classes. The consequence of this, according to Ricardo, was that changes in the production conditions of luxury goods or in their prices did not have repercussions on the overall rate of profit or on the cost of producing necessary goods. On the other hand, changes in the prices or the production conditions of necessary goods had repercussions on the overall rate of profit and on the cost of production of luxury goods. The neo-Ricardians have drawn similar conclusions from Sraffa's analysis of basic and non-basic commodities, the former playing the role of the necessary goods, so to speak, while the latter replaced the role played by luxury goods. Steedman (1980) has integrated the classical theory with the neo-Ricardian approach by showing that in a world of heterogeneous labour, the rate of profit does not depend on the overall average real wage rate. Rather only the real wage rate of workers producing goods consumed by workers is a determinant of the rate of profit.

There is thus a strong relationship between the classical and neo-Ricardian asymmetric conception of the economy and the post-Keynesian theory of consumer behaviour, based on a hierarchy of needs and hence presumably on a hierarchy of goods, from the more basic necessaries to the products of high luxury. Whereas the neo-Ricardian focus is on the consequences of this asymmetric relation for the determinants of relative prices, the impact of the asymmetry for the post-Keynesian theory is on the quantities consumed. Using the same conceptual framework which
distinguishes between goods fulfilling lower needs and those responding to higher needs, the neo-Ricardians tell us how a change in the conditions of production or in the composition of demand by the workers could affect relative prices or the purchasing power of consumers through the cost side. On the other hand, the post-Keynesian theory shows how these changes in purchasing power are translated into increases in the quantities consumed of the various products, and how little substitution effects are induced by changes in relative prices, owing to the existence of hierarchical needs and sub-needs.

One may thus conclude that when changes in relative prices are small, the substitution effects that they induce can be ignored, either because they are negligible, as in the case of goods fulfilling different needs, or because they concern goods which for all practical purposes may be considered identical. On the other hand, substantial changes in the relative price of a good are usually associated with novel products, which create new needs. Pure substitution effects in this case do not arise, since this consumption innovation needs to be incorporated within the hierarchy of needs and wants. This picture of the lack of importance of the substitution effect in consumer behaviour is certainly compatible with the views of neo-Ricardian authors:

If the effect of the price on the quantity bought is not appreciable, then the effect can be ignored without great error. Alternatively, when the effect is important enough to need general consideration, it seems it will often be the case that the effect constitutes an irreversible change, which is incompatible with its treatment in terms of a demand function. That is the effect will entail a permanent change in the habits of consumers, which even marginalist authors would have to treat as a change in 'tastes' (Garegnani, 1990, p. 131)

If one accepts the principles which are the building blocks of the post-Keynesian theory of consumer theory, macroeconomic constructions which focus on classes and groups of agents appear more reliable. We have seen that stability of the neoclassical theory of the exchange economy depended on the end on assuming the existence of a representative agent, that is on the assumption that all agents had identical preferences and identical income. Post-Keynesian analysis leads to the belief that agents or households belonging to the same income class have a similar structure of consumption. We know, however, that agents do not have identical incomes. There is thus ample justification for utilizing income classes rather than the representative agent or a large number of differentiated individuals in macroeconomic studies. Furthermore, since income changes rather than price changes appear to be the main influence on changes in consumption, the importance of the study of income effects in macroeconomics is reasserted.
Saving Decisions of Households

Little attention has been given so far to savings decisions. This is no accident. In traditional theory, savings and consumption are linked, since savings are time vehicles designed to smooth consumption through time. Savings are viewed as a decision to retard consumption and maximize intertemporal utility. Savings are the result of a rational choice by individuals, based on given preferences and expectations of future incomes.

In post-Keynesian theory, savings are mostly carried out by institutions or through institutional vehicles. Generally speaking, savings by households is not the result of rational choice, but rather the accidental effect of other decisions and events. Furthermore household savings are to a large extent determined by institutional rules. As is recalled by Green (1991, p. 107), both the Institutionalis (à la Veblen and Galbraith) and the post-Keynesians (such as Kaldor) see the bulk of savings as being controlled by the business sector. As we shall see in the next chapter, firms with some oligopolistic power set their prices on the basis of a target level of retained earnings. These retained earnings are the savings of the business sector.

Still, national accounts show that households save. Besides the fact that a large proportion of household savings must be attributed to unincorporated businesses which are included with individuals in the national accounts, one must recall that about half of the remaining household savings result from investment in owner-occupied housing. These savings are, so to speak, forced savings. They arise from the decision of households to acquire their own lodging and, in that sense, they arise as an afterthought rather than as a conscious decision to save. The other half of household savings is the acquisition of financial assets. Again a large part of these savings is carried out under the guise of private pension funds and is included in personal savings in national accounts. The amounts collected by private pension funds are often non-discretionary: the individual has no say in the decision to save; the exact amount is imposed by some formula worked out in the collective agreement. Furthermore these funds are under the control of the corporations which are offering pension plans to their employees. The individual has little or no say in its use. The same can be said of the amounts which are collected by government in the case of universal public pension plans: the sums are non-discretionary and no control can be exercised by the individual.

One must thus conclude, firstly, that a substantial part of the savings of an economy is not carried out by the household sector, but rather by the business sector; and secondly that a substantial part of the savings of the household sector is the result of institutional constraints or of the decision to invest in housing. Furthermore several post-classical authors believe
that even a large part of the remaining household savings is not the result of a deliberate and discretionary decision to save. This position has been presented in particular by Marglin (1975). He argues that the remaining personal savings are largely accidental. They are a residual, the result of a temporary disequilibrium. For most households, 'the pressures to spend are supposed to be too great for the typical household to resist' (Marglin, 1984a, p. 144). We are in a Galbraithian world, where corporations hammer the consumer with their advertising, which arouses envy and imitative behaviour. 'Good resolutions to behave in a thrifty manner are hard to keep when they are constantly assaulted by advertising and the temptation of new commodities' (Robinson, 1956, p. 251). As a rule, households spend all of their incomes, sometimes even more, except when incomes are so large that they can hardly be spent on consumer goods and have to be invested in conspicuous durables, which are partly consumption goods and partly an alternative to financial intertemporal vehicles.

Most households, then, but assuredly not all, only save when there is an increase in their incomes. The reason for this saving behaviour is not to be found in the belief that the increase is temporary, but rather in the time that is required to learn how to spend the extra money. This view is consistent with the post-Keynesian approach to consumption decisions. Consumers are not viewed as having ordered preferences defined over all types of goods. On the contrary, consumers set themselves priorities over the types of goods that they are likely to consume. Income increases bring into consideration possibilities that had not been assessed before. Beyond near-subsistence levels, where urges rather than preferences rule, these possibilities have to be learned. The acquisition of habits prevails over instincts. When incomes are rising, learning prevails over habits. As Pasinetti (1981, p. 233) points out, when per capita income is increasing 'consumers themselves may be uncertain about the direction in which their demand is going to develop'. Households save while they learn how to spend their increased purchasing power.

The post-classical theory of savings is thus based on habit persistence and income effects, the same effects that had been emphasized to explain the structure of consumption and its evolution. It is ironic to note that, when the standard neoclassical savings theory, such as the permanent income and the life-cycle hypotheses, have been reformulated to make them amenable to empirical testing, they have been rendered almost indistinguishable from the post-Keynesian habit persistence savings theory (Green, 1984, p. 99). While the neoclassical theories assume that present wealth and future incomes determine present consumption, they are actually tested by making use of present and past incomes or consumption, precisely the variables that would enter a savings theory based
on income and habits. The reason for which the neoclassical version, rather than its non-orthodox cousin, has been so popular is that it is based on substantive rationality, whereas the habit persistence theory is based on procedural rationality. Furthermore the apparent empirical success of the neoclassical savings hypotheses has justified the theoretical inclusion of wealth stocks in the consumption function, adding credibility to the Pigovian full employment argument based on real balance effects. Once we realize that neoclassical authors have instead tested a restricted version of the habit persistence theory, which does not rely on wealth stocks, the arguments based on the stabilizing effects of real money balances are greatly diminished.

The evidence available from the 1980s reinforces this post-Keynesian theory of incidental household savings. In nearly all industrial countries, rates of both saving and income growth have simultaneously been falling. An empirical study conducted by Bosworth et al. (1991) shows that there has been a decline in the savings propensities of a vast majority of households, whatever their income. Bosworth et al. conclude that the cause of this decline cannot be found at the microeconomic level. Rather, they believe that slower income growth is the most plausible cause for lower savings rates by households throughout the world. 'The problem is that the hypothesis is in direct conflict with popular theoretical models of consumers who base their decisions on forward-looking, rational expectations' (1991, p. 227). While this may be a problem for neoclassical authors such as Bosworth, it is not for post-classical authors. Post-Keynesians posit that households save 'when their incomes are rising faster than they can adjust their spending' (Marglin, 1975, p. 22). It follows that the rates of savings of households of all income classes and the rate of growth of real income are intimately connected in post-Keynesian theory. As Marglin (1975, p. 24) has put it, 'the direction of causality is opposite to that customarily assumed; household savings are not a cause of growth, but the result of it'. One would predict from this post-Keynesian theory of saving that the saving rate of households would decline with a slowdown of the growth rate of real income.

What are the consequences for post-Keynesian macroeconomic models? Post-classical economists of all allegiances usually follow the classical savings hypothesis in assuming that the propensity to save out of wages is equal to zero. *Workers spend what they get.* At the very least, the propensity to save out of profits is assumed to surpass the propensity to save out of wages. As was explained by Kaldor (1966, p. 310), this inequality is mainly due to the institutional framework. Corporations have large retained earnings. Unless shareholders spend more than what they get in the form of dividends, the propensity to save out of profit
income is necessarily greater than that out of wage income. The habit persistence theory adds that, beyond institutional saving and owner-occupied housing, most households save by accident, when their real incomes increase. The great majority of households, those which may be called workers, thus have a propensity to save which is very close to zero once we exclude housing from productive investment. For all practical purposes, the propensity to save out of wage income may thus be considered equal to zero, especially in long run models. Indeed, in his initial presentation, Marglin (1975, p. 29) found an estimate of the long run propensity to consume which was equal to one.

The rest of the households, a small proportion of the population, may behave differently. They save a substantial proportion of their high incomes. A large portion of their revenues is not wages, however, but property income and salaries which can be assimilated to property income. As Kalecki (1971, p. 76) would have it, the salaries of higher business executives 'are rather akin to profits'. The savings of wealthy households may thus be seen as an addition to the savings from profits, rather than savings from wages. In a simplified mode, the propensity to save from profits will thus reflect a combination of the retention ratio on profits of the business sector, as well as the positive propensity to save of those wealthier households. In a slightly more complex mode, profits will have to be explicitly divided into retained earnings, on one hand, and distributed profits and interest payments, on the other. This will allow us to distinguish between the savings realized by the business sector and those of the household sector, still assuming that no savings arise out of wages. All these assumptions will be used in Chapters 5 and 6.

2.4 AN OVERVIEW OF THE ALTERNATIVE

In this chapter we have seen that situations of uncertainty are definitely different from those of certainty or of risk. Taking into account uncertainty does not forcefully convey nihilistic conclusions. Uncertainty does not necessarily lead to irrational behaviour or to global instability. In situations of uncertainty, rationality is of the procedural sort. Agents follow rules of behaviour that allow them to face a lack of knowledge and the lack of faith with which they can hold their expectations. The same type of bounded rationality is followed when agents face a problem symmetric to that of uncertainty; that is, when they are overloaded with information. In both cases there is a gap between the amount of information which would be required to take an optimal decision and the amount of information which is accessible, either because proper infor-
information just does not exist or because that information is too complex to be adequately processed.

Whereas mainstream authors have avoided discussing fundamental uncertainty because they feared its devastating consequences for theoretical analysis, post-Keynesians argue that on the contrary uncertainty and procedural rationality provide the regularities that we observe in the economic world. There is thus no excuse for not taking into consideration this fundamental fact of our environment. The use of cost-plus prices or normal ratios is thus the legitimate consequence of an analysis based on procedural rationality.

Similarly, the use of macroeconomic models based on the analysis of income classes and on income effects is the legitimate outgrowth of a post-Keynesian theory of the consumer where price-substitution effects are not important or are severely constrained to goods which respond to similar characteristics, and where increases or changes in demand are mostly determined by increases in real incomes or changes in consumer preferences. This post-Keynesian theory of consumption, based on the hierarchical nature of needs, is also reminiscent of the classical distinction between necessaries and luxury goods and of the neo-Ricardian division between basic and non-basic commodities. Under these circumstances, to ignore substitution effects, based on relative prices, appears to be much less disastrous than to ignore income effects and threshold levels.

From the empirical standpoint, the post-Keynesian theory of consumer choice points in the direction of studies that would try to identify the groups of goods that would respond to the various sub-needs, and that would trace the order of acquisition of these various groups of goods. Also, rather than trying to estimate imaginary demand curves, empirical studies should focus on estimates of income and price elasticities, taking into account preference interdependence and the imbedded and hierarchical nature of needs or groups of goods within categories of expenditures.