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Entrepreneurship in the works
of G.L.S. Shackle:
The Prescient Thoughts for a
Creative Imagination
by
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is most commonly linked to the promotion of small and medium sized enterprises and self employment (see for example ILO, 1986, 1990).

The primary aim of this article is to examine what role economics might play in some of such activities which form the bedrock of the renaissance of entrepreneurship education. In particular, it is argued that if economics is to have any significant impact in shaping the developing field of entrepreneurship education, as it quite possibly should, then closer attention needs to be paid to the ideas of non-orthodox economists such as Shackle.

In attempting to specifically highlight the potential importance of Shackle in furthering an understanding of entrepreneurship, the article is centred around the following question: If you were either a practicing or prospective entrepreneur, in the sense defined by current popular usage, would you really want an economist teaching you about business?

In the following section it is suggested that there are three main elements of a competency based approach to entrepreneurship education. These are all features strongly evident in the literature which appear to form a hard core of principles of orthodoxy. In section two it is argued that decision making is a crucial facet of a proper understanding of entrepreneurship and the entrepreneurial function, both at a practical and theoretical level. This serves to highlight the moribund nature of much neoclassical economic theorising in this domain. As a sequel we examine an alternative view of the decision making process than that found in economic orthodoxy. Shackle's notion of the enterpriser is examined in section three, with especial emphasis on his thoughts on the practical import of decision making. Finally, to demonstrate the potential practical relevance of Shackle's ideas on entrepreneurship, the discussion is related to back to the contemporary themes in entrepreneurship education identified in section one. It is argued, in conclusion, that a better understanding of Shackle's theory of decision making and the entrepreneur could help to constitute a much needed theoretical grounding to the resurgence of interest in entrepreneurship. Further, it is to be hoped that the review of Shackle's practical
expression of his sometimes esoteric theory, contained here, should go some way towards making it amenable to integration with currently fashionable competency based approaches to entrepreneurship education².

I EDUCATION FOR ENTREPRENEURS

Whilst it is not usually addressed in such a direct manner, much of the current renaissance of interest in entrepreneurship centres around the question: how can entrepreneurship best be promoted? The answer to this question is commonly given in terms of providing an enabling environment and/or improving the competencies of individuals in order that they can recognise and act upon entrepreneurial opportunities more effectively³. This is clearly expressed in a recent United Nations report on entrepreneurship:

"The agenda of infant entrepreneurship combines the tasks of encouraging and disseminating appropriate entrepreneurial capabilities among individuals and organizations and constructing an enabling environment in which these capabilities can be fully utilized in productive activities" (United Nations, 1992 p.140)

Influential supra-national organizations including the United Nations and the International Labour Organization have argued strongly in favour of education and training programmes to assist in the development of entrepreneurship⁴. Some of their arguments provide a useful prelude to considering the elements of a framework in entrepreneurship education into which can be integrated the types of competencies or capabilities which might be encouraged. Three broad elements which are particularly influential in the contemporary management literature on entrepreneurship are discussed. In many ways these can be viewed as underpinning a paradigmatic competency based view of entrepreneurship education. These elements are, first, the need to see entrepreneurship as a process; second, the importance of people and visions within this entrepreneurial process; and finally the role of planning in implementing entrepreneurial vision.
Whilst it is frequently accepted that "entrepreneurial talents crucial for success are often unique or experience based and, as such, difficult to teach and acquire" (United Nations, 1992 p.147) the role of education is nevertheless stressed as an important element in encouraging entrepreneurship. The "starting point in training modern entrepreneurs" (op cit p.147) is seen to be an education system capable of providing skills relevant at all levels in the economy, together with opportunities for continually upgrading skills and knowledge. Such skills may, in part, be acquired through training and retraining. In addition, education may provide broader, less tangible benefits in terms of an encouragement of favourable attitudes within society towards acting entrepreneurially. In this respect, the United Nations advocates emulation of business school programmes in topics such as identifying opportunities, product development, business planning and financing. Overall, it is argued that "entrepreneurial capabilities encompass attitudes, knowledge and skills" and that encouragement of such capabilities "involves a broadly based commitment to learning, imitating and experimenting" (op cit p.140)

Given the above endorsement of business school programmes it would appear warranted to briefly examine the key elements typically underpinning such courses. There are any number of texts now available on entrepreneurship, largely written for the business school market. Within these several common themes emerge. Three of the most important, which are both interconnected and related to themes developed by Shackleton, are what shall be termed the three "Ps" of entrepreneurship: people, process and planning. It should be remembered that the main focus of such literature is on new venture creation. This reflects in many ways the ordinary language convention of what is commonly understood by entrepreneurship.

Central to the treatment of entrepreneurship in much management education is the idea of entrepreneurship as a process. A widely used description of the entrepreneurial process considers four main phases (see Stevenson et al, 1985). These are, first, identification and
evaluation of opportunity; second, developing a business plan; third, assessing the required resources to implement the plan and, finally, managing the enterprise through to a harvesting of the rewards of enterprise. These distinct phases can be thought of as proceeding progressively in an overlapping manner so that, for example, an adequate assessment of opportunity must have partially considered the nature of business ultimately desired.

This focus upon a process based vision of entrepreneurship is not confined to management education. However, whilst proponents of the Austrian school of economists, for example, in contrast to the economic mainstream, also stress the importance of viewing economic actions and entrepreneurship in particular in process based terms, it is notable that Kirzner (1973, 1992) as the person who has done most to develop the Austrian theory of entrepreneurship considers only the first stage of such an entrepreneurial process as outlined above. His theory appears to stress the requirement of "alertness" in spotting entrepreneurial opportunity as both a necessary and sufficient condition for entrepreneurial action. Perhaps the most notable exception amongst economists, to this guillotining of discussion of practical requirements that must be met in order to move beyond spotting a profitable opportunity to acting upon it, is to be found in the work of Shackle. His work has the virtue of addressing the obvious questions. He is led on one occasion, for example, to pose the question of whether it is worthwhile for an individual to start a business (see Shackle, 1973 p.59). His answer to this question is discussed in detail in section three, but it may usefully be noted here that consideration of this question led him to question what types of capabilities would be required to move beyond merely having identified an opportunity.

The second feature of much management education in entrepreneurship is the stress which is found upon the individual people actually undertaking entrepreneurial action. The unique vision of the individual entrepreneur in conceiving a worthwhile opportunity is fundamental. This in itself, however, is unlikely to be sufficient for entrepreneurial action. The third
stage in the entrepreneurial process requires that an assessment be made of those resources needed for successfully implementing the vision. This means assessing factors such as the aims and objectives of the entrepreneur, together with factors such as skills and experiences which might make entrepreneurial pursuits more viable in some activities than in others. It requires that the faculty of imagination is joined to more reasoned inquiry. The role of education can play an important role, both in helping the entrepreneur to accurately assess strengths and weaknesses, and in supplementing skills or otherwise providing information about means of overcoming perceived deficiencies. Again, the work of Shackle seems nicely to address many of these people related issues. Not only does he place great stress on the entrepreneurial imagination, but he also considers the manner in which acquisition of skills and experience by potential entrepreneurs goes hand in hand with the faculty of imagination, helping to provide an amalgam of reason and imagination which may be an enabling factor behind business success.

In Shackle's theory, exercising our imaginative faculties goes hand in hand with planning since planners must direct imagination towards actions subject to the resources that might be possessed or acquired. Imagination of future scenarios is closely bound up with decision making. Similarly, planning is seen as an important element in entrepreneurship education. The formal discipline of preparing a business plan plays an important role in determining the required resources, as well as providing a management tool that can be used to acquire resources from external sources and assisting in managing a new venture. Most significantly the process of writing a business plan must be seen as part of a broader process of planning which enables the success or otherwise in meeting objectives to be specified. Business planning is closely tied up with the process of evaluating the effective use of scarce resources by individuals.

Process, people and planning are interrelated elements which crop up time and time again in the management literature on entrepreneurship education. As we have alluded to, they also form important elements of the work of Shackle, albeit in a largely modified form. In
the competency based approach to entrepreneurship education there is a need to see entrepreneurship as a process unfolding through time, undertaken by people with an imaginative vision. This vision will typically require resources for effective implementation. Business planning provides both a means to acquire these resources and to make good business decisions.

The role of entrepreneurship education may be both to engender an appreciation of the faculty of imagination which may be latent within individuals and so encourage individuals to adopt more entrepreneurial attitudes, and to supplement this with skills, knowledge and competencies which enable them to make reasoned decisions as to whether it may be worthwhile starting a business. To the extent that these twin themes encapsulate the key elements of any debate surrounding entrepreneurship education, Shackle's theories of the enterpriser and the decision making process may well provide an insight into both the theory and practice of entrepreneurship unmatched by other economists.

II ENTREPRENEURSHIP AND DECISION MAKING

As an initial answer to the question of the appropriateness of economists as entrepreneurial teachers, we might answer, rather cryptically, that it would depend upon whether the economist in question preferred to talk about business or economics. Business was the term which Shackle preferred to use when talking about economic matters. Indeed, according to Shackle "Economics is about business, widely conceived" (Shackle 1966 p.144). Of course, whilst it is clear that he is using business in a far broader sense than is common, it is nevertheless equally clear that Shackle in spite of his obvious philosophical bent was an eminently practical economist.

Shackle regarded the whole of the business man's business as decision making (Shackle, 1966 p.145). "Decision making is the act which marks out the business man from all those who collaborate with him in production" (Shackle, 1966 p.131). Decision has a quite precise
meaning for Shackle, since "it is patent that men's decisions are not choices amongst actual but amongst imagined consequences" (Shackle, 1966 p.126), so that whilst "economics is the study of the business of choice" (Shackle, 1979 p.37), in turn, "the business of choice is the business of imagination" (Shackle, 1979 p.60).

Before analysing precisely how Shackle's decision theory is related to a theory of entrepreneurship, it is first necessary to establish why entrepreneurship is so inextricably bound up with decision making. We should also perhaps re-emphasise at this point the long-standing awareness by economists of an inability of orthodox neoclassical economics to adequately incorporate the entrepreneur. Such a point was noted by Shackle as long ago as 1943, but has recently come under close scrutiny (see, for example, Barreto, 1989; Julien, 1989).

Whilst the Austrian critique associated primarily with von Mises and more recently with Rothbard and Kirzner is well known as an approach in which the entrepreneur takes centre stage, and hence is stinging in its criticism of neoclassical orthodoxy, orthodox economists themselves show surprising candour. Baumol (1968), for example, has clearly pointed to a failure to admit the entrepreneur as a meaningful economic agent in that systemic whole which comprises much contemporary economic orthodoxy.

Various economists have considered how best to resurrect the entrepreneur. In a recent review of economists' thinking about entrepreneurship, Hebert and Link (1988) attempt a taxonomy of approaches. From this they claim that it is possible to deduce two broad approaches. Theories of entrepreneurship may be categorized as either static or dynamic. In trying to relate everyday, or commonsense notions of the entrepreneur with those provided by economists they argue, however, that only dynamic characterizations can have any operational meaning (Hebert and Link, 1989).
Dynamic Entrepreneurship

Amongst the various characterizations of the entrepreneur to be found in the economics literature, the entrepreneur is defined in dynamic variants as: a decision maker; a risk taker; an innovator; an industrial leader; an organizer and co-ordinator of economic resources; a contractor; an arbitrageur; an allocator of economic resources. The definition of the entrepreneur as decision maker has been highlighted, since upon closer examination we may reflect that all of the following categories depend upon decisions being made. That is, none of the other activities, however valid as descriptions of the entrepreneur, can be properly understood, prior to any decisions being made. Hebert and Link (1988) see Shackle as providing a theory which stresses not only decision bearing but, given his strong admiration for the work of Cantillon, also emphasises risk bearing under conditions of uncertainty. As we shall see, however, his account in fact covers most, if not all, of these dynamic characteristics directly, and certainly covers the rest indirectly once we realize the dependence of each upon the primacy of a decision making role which is necessarily adopted by the entrepreneur.

In contrast to the dynamic characterizations of the entrepreneur, Hebert and Link also stress some static conceptions: ownership of an enterprise; employment of factors of production; supplying financial capital and finally management. Shackle also touches upon all of these in his writings, carefully relating them each time to his theory of decision making. Each of the static features of entrepreneurship is shown to be a contingent feature which can then be related to the dynamic context.

Whilst Hebert and Link draw out the analytic separation between static and dynamic theories, they make no attempt at defining the boundaries of each. Bausor (1986) has offered economists a useful guide to the set of features which any truly dynamic theory must encompass⁹. We shall adhere to his schema here as a means of distinguishing
dynamic and static theoretical accounts of the decision making process, as a prelude to a deeper understanding of the notion of entrepreneurship.

There are three essential structural elements of dynamic economic analysis, according to Bausor. The first of these is that time must be construed as backwardly irrevocable and uncertain into the future. Such a conception of time might realistically be named historical time. This has as an implication that each decision and each opportunity cannot simply be reversed or repeated. The second feature of dynamic theory is that once we accept historical time into our analysis, we cannot reasonably assume knowledge about future actual outcomes. Instead, our epistemic claims must be limited, perhaps somewhat metaphysically, to the imagination of individuals as to anticipated outcomes. Finally, given that action takes place largely on the expectations of individuals, rather than actual knowledge, there is no logically inherent reason why we should automatically assume either the constant existence of equilibrium or an immanent tendency towards it.

How well does standard neoclassical decision making theory stand up when measured against such criteria? Such theory is routinely taught to economics students and commonly exported to other academic disciplines. Decision theory is even taught as a routine management competency. Our discussion here is mindfully fragmentary, given both that this is not our central concern and is, in any case, treating a set of issues which are now well known. Nevertheless, in the manner in which such issues impinge on our later discussion of entrepreneurship, the arguments are still worth rehearsing once more.

Standard neoclassical, or microeconomic, theory of decision making is essentially static. It draws upon an axiomatic formulation which, in its simplest form, allows all decisions to be made only at one logically predefined point in time. Moreover, all possible choices are conceived of as well known to the chooser. In turn the chooser himself is presumed to be well informed about his own preferences. Given clear unambiguous knowledge both about the objects of choice (including their prices) and an individual's preference ranking over
such objects, it is a simple task to define the nature of choices which the rational chooser will make. The theory is completely determinist and deals only with situations of actual certain knowledge.

Such theory as we have just outlined is unlikely under any circumstance to form a satisfactory basis for a theory of entrepreneurship. Whilst relaxation of some of the axioms underpinning the theory is permissible it is extremely difficult to see how such theory could be made dynamic in accordance with the precepts described above. It is difficult, if not well nigh impossible, to imagine how any of the features commonly associated with entrepreneurship such as risk taking, innovating and the like could be adequately fused into such a theoretical schema as the orthodox theory of choice. It is clear for all to see why the orthodox economics profession largely dropped the entrepreneur from theoretical discourse. There was no need for the entrepreneur in a theoretical framework in which all choices are logically predetermined. The elegance of economic theory was responsible for the redundancy of the entrepreneur.

One area in which it is obviously desirable to extend the theory of choice outlined is to cover situations of uncertainty. Perhaps in this way the theory might be able to deal with situations of choosing involving the bearing of risks under uncertainty. If this is possible, then it might be that neoclassical economics can bring us closer to a satisfactory conception of entrepreneurship. Decision making under uncertainty\(^\text{10}\) represents a simple extension of traditional decision making theory. It covers situations of risk which are actuarially definable. Choices are made over prospects according to such theory. Prospects are defined as a measure of the utility derived from some object weighted by the probability of an event occurring which will yield such an object. There is clearly a requirement that an individual will have knowledge of the utility that different objects will yield. In addition there is a requirement that the individual objectively knows the probability of each event occurring. The theory is axiomatic, being a simple extension of decision making under certainty. Choices are made not from directly perceived objects of choices but directly
perceived probabilities of objects of choice. The theory consequently suffers from similar weaknesses to the simpler variant of decision making theory, albeit perhaps in a lessened form.

It is difficult to see how orthodox expected utility theory, as the notion of decision making under uncertainty described is generally known, meets any of our criteria for a dynamic theory. First, by allowing a situation where future objects of choice can be treated in an entirely analogous manner to present objects of choice, the conditions for a dynamic theory are immediately broken. It is impossible to see how this position can be reconciled with the notion of historical time outlined above. Second, the axiomatic treatment of objects of choice, which accords goods and services some ontological status only if they can be directly perceived and evaluated is unrealistic and also fails to meet the specified conditions for a dynamic theory, since it presumes perfect foresight. Finally, the theory in its classic formulations is based on sets of expectations which give rise to uniform, objective assessments of probability, ultimately leading to possible equilibria subject to theoretically prespecified existence conditions. This breaks the final condition for a dynamic theory, that individual agents act according to possibly irreconcilable individual subjective expectations.

Since we have established the link between decision making and entrepreneurship, and have argued that an adequate theory of entrepreneurship must be construed in dynamic fashion, it now seems clear that our orthodox neoclassical economic theories of decision making are unlikely to be able to offer much guidance to those seeking theoretical underpinning to the practically based rise of entrepreneurship education discussed earlier.

**Shackle's Decision Theory**

Fortunately, decision making within orthodox neoclassical economics has a markedly different meaning than for Shackle. Shackle eschews the neoclassical economist's toolkit almost totally in formulating his own theory of decision making. Gone are those two
fundamental pillars of orthodoxy - equilibrium and economic rationality - as Shackle stresses creativity and spontaneity (Kirzner, 1992). These place limits on the scope of economic rationality, as human actions can no longer be completely explained in terms of past events and fixed preferences (Backhouse, 1985). As Shackle notes:

"We can choose only amongst imaginations and fictions. Imagined actions and policies can have only imagined consequences, and it follows that we can choose only an action whose consequences we cannot directly know, since we cannot be eyewitness of them" (Shackle, 1970 p.106)

Rather than knowledge being the key to understanding human action, Shackle would argue in contrast that it is unknowledge which is the touchstone of decision making theory. Unknowledge is the term used by Shackle to characterise the inevitable uncertainties caused by the effect of time on mans' affairs. Because of an absence of knowledge which might be thought potentially relevant to the decision making process, decision making should be understood as "the focal, creative, psychic event where knowledge, thought, feeling and imagination are fused into action" (Shackle, 1962 p.105). This is in strong contrast to neoclassical accounts since reason is seen as just one element in decision making.

In Shackle's amalgam of reason and imagination it is not only economic rationality which is undermined. Equilibrium also needs to be viewed as merely one possible state of affairs. This is because Shackle views objects of choice as subjective impressions of the future. Consequently, such imaginations cannot be finitely recorded and hence no state of full co-ordination is definable (Ricketts, 1987; Hebert and Link, 1988). Immediately we grasp Shackle's startling vision, bordering on anarchy, that his views represent a thoroughgoing rejection of the equilibrium paradigm, through the adoption of a clearly anti-determinist stance.
Why should Shackle's theory of decision making be understood as being so inextricably bound with entrepreneurship? Briefly, Shackle followed Cantillon in believing that entrepreneurs had to bear the risks associated with uncertainty. This implies decision making in the face of irremediable uncertainty. As we have seen above, many different meanings have been used to describe the entrepreneur. In recognition of this point, Shackle is particularly precise about his own characterisation of the concept. Indeed, he goes so far as to adopt an alternative term, the enterpriser. Aside from when he is referring to the works of other economists such as Cantillon, Keynes and Myrdal, Shackle does not use the term, the entrepreneur, preferring instead his more precisely defined notion of the enterpriser. For the sake of convenience alone, however, we shall treat the enterpriser and entrepreneur as synonymous.

For Shackle it is the very faculty of imagination which makes us enterprising. And since, by necessity, everyone faces choices we are all entrepreneurs, in the sense that by choosing we must turn to our imagination for guidance. In this respect, by classifying everyone as an entrepreneur, it would appear that Shackle may have little to offer at a practical level in terms of advice to the aspiring businessman. That this view is wrong is easily established.

Since both consumers as well as producers are equally entrepreneurial through the act of choice, business decisions are just one type of entrepreneurial decision. This is wholly appropriate, serving to highlight why Shackle preferred the term the enterpriser over that of the entrepreneur, with its inevitable business connotations. The reason why it is appropriate to regard business decision making as just one class of entrepreneurial act can easily be shown by example. Economists generally assume that individual tastes are fixed as parameters to their models, as in the famous maxim _de gustibus non est disputandum_. Individuals thus select quite simply from predefined opportunities offered in the marketplace, expending as much effort as is deemed worthwhile on search activity and the like. In contrast, the discipline of marketing, and indeed business men themselves, might stress the active effort needed to convince people that opportunities may actually exist in
the marketplace. Such opportunities are not given, they are often created through changing peoples' tastes\textsuperscript{11}.

Consider this last point in the light of Kirzner's well known theory of entrepreneurship (1973, 1992), which stresses the role of opportunity, and which is sometimes seen as a halfway house between Shackle's theory and more neoclassical approaches. Kirzner would emphasise that the entrepreneur is the person who is alert to the opportunity. It might reasonably be argued that this is insufficient. For many producers it is not enough merely to spot the opportunity. Instead, the key activity is in deciding how to persuade or convince customers that they have an opportunity to exploit\textsuperscript{12}. In this sense, therefore, through the exploitation of opportunity it must be both consumer and producer who are acting in an entrepreneurial manner.

At a practical level it is generally producers' inclinations to behave entrepreneurially that we are most interested in. Indeed, it is hoped that this article, despite the largely theoretical tenor employed to this point, should be read as an examination of whether Shackle offers us any practical guidelines on how decision making can enable a producer to not only spot existing opportunities but to create and exploit new opportunities. In this respect our focus must be on the two key elements of Shackle's theory already identified: imagination and creativity. Before we look in detail at Shackle's common-sense notion of the enterpriser as it applies to business activity, we must pause to consider what, in essence, are the key ideas constituting Shackle's approach to decision making?

Shackle argues that it is inappropriate to analyse uncertainty in a probabilistic manner, since calculation of probability is frequently impossible due to an irremediable lack of information. Many decisions are of a one-off nature for which the relevant past information simply cannot be available. As a result, Shackle stresses an account of decision making under uncertainty based on two key qualities of an expectation. First, the
desiredness of an imagined sequel to any possible action needs consideration, and second, the possibility of the outcome occurring is also in need of examination.

A model of decision making was constructed by Shacke which has remained at the centre of his writings through the bulk of his long career. Shacke's model tries to answer how the business man might build reason upon ignorance, given that the future is, in principle and in practice, unknowable. It is an amalgam of two basic approaches. The first approach would ask what bounds we can put on ignorance. That is, the business man must use his practical conscience to assess both what the worst consequence of an act of investment could be and what the best would be. This assessment is given the conceptual name of focus loss and focus gain. Against the assessments of most successful and worst outcomes must be weighed the possibility of alternative sequels to an action. The second approach tries to assess how surprised we would be by the occurrence of any outcome. Possibility, as used here, is viewed as quite distinct from probability. It is completely subjective. This does not, however, negate its usefulness. No one, for example, would ever suggest that a tomcat would prove more successful, over a period of time, at business decision making, than an experienced businessman. The chief distinction between these two lies in the sophistication by which each assesses possibility. What is important, in situations where the appropriate knowledge to form probabilities is not available, is an assessment of whether we think an occurrence possible, together with how surprised we would be were it to occur. Shacke terms this second feature of decision making potential surprise.

We can briefly summarise the benefits of Shacke's theory of decision making in helping us to make sense of entrepreneurship, by comparing it with our requirements for a dynamic theory. In terms of the requirement concerning the appropriate notion of time to be used in economic analysis, Shacke stresses that people imaginatively create the future. In this respect, reason does not constitute the soul of human affairs and action. Reason is just part of our guide to action. Shacke emphasises that we cannot know the future, and that the past often offers us little guide. We can only imagine futures, and in so doing, 'mens'
imagination shows them more often, not places to get to, but directions in which to travel" (Shackle, 1966 p.108). Shackle's theory certainly fulfils our first condition for dynamic theory through his stress on imagination, and the way in which he melds this key insight into a central theoretical precept of his theory.

The second requirement for dynamic theory has, in part, already been dealt with, since the recognition of the relationship between time, knowledge and uncertainty is what leads to the clear analysis of the role of imagination in Shackle. There is supreme clarity in his claim that action is premised not on exclusive knowledge, but on anticipated outcomes, where this anticipation is guided by more than just reason. It is guided by imagination and the practical conscience of the business man.

Finally, since Shackle clearly expounds the reality that individuals are unique in their different experiences, it follows from his theory that they must come to have distinct imagined future skeins. There is, thus, no necessary reason why individual expectations should coordinate in equilibrium. Instead, Shackle, in his rejection of equilibrium, envisages economic phenomena in terms of an irrevocable past and unknowable future as a process of kaleidics\textsuperscript{15}, similar in its pattern of overall predictability to the changing shapes and colours in a child's kaleidoscope.

III THE ENTERPRISER

So far we have noted that theories of entrepreneurship can be split into those which are dynamic and those which are static. Of those dynamic variants of entrepreneurship theory which were identified, all should be seen as either necessary or contingent adjuncts to the decision making process. Decision making, therefore, must assume some primacy in any coherent theory of entrepreneurship.
Following the claim that only dynamic theories of entrepreneurship can have operational meaning, a set of characteristics which any dynamic theory must possess was outlined. This showed how orthodox decision making theory differs from the theory proposed by Shackel. If we desire a dynamic theory of decision making as a necessary underpinning to our theories of entrepreneurship, then neoclassical orthodoxy is somewhat impoverishing. In contrast, Shackel's theory of decision making appears on first showing to possess all the necessary attributes.

In this section we leave behind us neoclassical economics, with its emphasis upon rationality and equilibrium and its de-emphasis on the entrepreneur, to delve more deeply through the medium of the "enterpriser" into how decision making is so inextricably bound up with entrepreneurship. In Shackel's theory, as we shall see, nearly all of the major themes identified by Hebert and Link's survey of economists' theories of entrepreneurship are present and addressed. All of them, however, are neatly linked back to the central concern with decision making. Given the beauty with which Shackel expresses his concerns, this section draws liberally on his own words and phrases to express this interpretation of his theory.

First, the manner in which Shackel conceives enterprise is examined. From this we are led to consider the role of profit and investment. This leads nicely into an analysis of the role of the firm and the roles of business-men. This highlights the manner in which Shackel is able to weave many elements into his theory of the entrepreneur. Considering the various roles adopted by the entrepreneur brings us back to where we started. We are led to reconsider decision making via the importance of innovation and uncertainty.

The classical notion of the entrepreneur, as an owner of capital risked on highly uncertain ventures, made him the bearer of uncertainty. As a result, at the very least, a decision had to be made about "which venture or what type of venture to back" (Shackle, 1966 p.147). In addition, as director of an enterprise, the entrepreneur was also responsible for decisions
concerning various aspects of the production process. But what exactly is understood by such related terms as the enterprise, being enterprising, and the enterpriser?

**Business Decisions, Enterprise and the Enterpriser**

Shackle believed that enterprise was linked to action. Indeed, it may be defined as "action in pursuit of imagination" (Shackle, 1979 p.140). This accords with the Oxford Dictionary's definition of being enterprising as showing imaginativeness. Shackle, nevertheless, goes further in claiming that:

"Enterprise is conduct by which a man deliberately foregos the assurance that some particularly bad thing will not happen, in order to escape the certainty that some particular good thing will not happen" (Shackle, 1973 p.63)

and

"To be enterprising is to embrace the unknowledge which consists in plurality and diversity of envisaged possible outcomes" (Shackle, 1979 p.99)

Taken together, these two quotes serve to show, first, the manner in which enterprise is related to decision making, and second, how such decision making is bound up with an acceptance of uncertainty or unknowledge. By such uncertainty was meant "an awareness of the possibility that accepted knowledge is wrong or insufficient" (Shackle, 1970 p.76). This leads to the need for imagination in decision making. It requires us to assess different possible sequels to our actions.

When talking about entrepreneurship it is generally desirable to relate our discussion to the real world activities of firms and businessmen. If we regard enterprise as imaginative contemplation of action this seems to suggest that the firm might well be conceived of as
a planning unit. This would require that we understand the nature of objectives which the firm aims to meet. In common with much economic theory Shackle supposes "that the firm seeks to maximize its wealth" (Shackle, 1970 p.26). This enables Shackle to claim:

"It seems that we might select decision making and uncertainty bearing as the economic roles which men come forward to perform because of the prize of profit" (Shackle, 1969 p.263)\(^{16}\).

If there is one essential function of a firm, it is "to take decisions" (Shackle, 1968 p.35). These are of a planning nature, where Shackle stresses that "the task of the planner is to invent, not to discover" (Shackle, 1984 p.71). The planner has as his task imagination directed towards actions. Such imagination is subject to a sole constraint, "that what it creates in thought must be deemed possible by the planner" (Shackle, 1984 p.71). In this respect action must not use resources greater than can be commanded, hence the enterpriser through the decisions which are made becomes an allocator of scarce resources. This relates back to the notion of enterprise, since "enterprise suggests another essential aspect of choice, namely, that action requires resources. If that were not so, there would be no need for choices of action" (Shackle, 1979 p.139).

Related to both profit and planning is the process of investment. Much of Shackle's intellectual energy has been directed towards an analysis of the investment decision. This is the domain where the notions of focus loss and gain and potential surprise have been most rigourously applied. That Shackle regarded investment as a creative art is clear to see. Investment "requires the truly roundedly equipped and gifted business-man to have a remarkable outfit of intellectual, emotional, moral and above all "poetic" characters and qualities. What he needs of the poet's psychic endowment is imagination" (Shackle, 1979 p.65)
These same recurrent themes of decision making and investment; imagination and creativity; and uncertainty or unknowledge all derive ultimately from Shackle's treatment of time. In true dynamic fashion Shackle casts the past as irrevocable and the future as unknowable so that "like all humans the business-man is the prisoner of time" (Shackle, 1970 p.21). It is perhaps most noteworthy that he continues the passage by stressing the fact that the competitive advantages gained and exploited by businessmen, whilst they arise out of uncertainty can also be created by the businessman:

"The businessman is not merely the helpless victim of uncertainty. He is at all times actively promoting it. For he hopes to discover and apply new knowledge, knowledge of natural principles or market principles, and in so far as knowledge is genuinely new it must subvert in some degree what has been accepted as knowledge hitherto. New knowledge is in part destructive of old knowledge" (Shackle, op cit, p.21)

The creation of uncertainty by businessmen is linked by Shackle to the role of the enterpriser as innovator. First, he outlines the fact that "so long as there can be novelty, knowledge is not complete" (Shackle, 1970 p.93). This leaves the way open for an analysis of the relation between innovation and uncertainty. Shackle sees "the very essence and spirit of modern business" as finding and exploiting novelty of product or technique (Shackle, 1970 p.101; see also p.94):

"Business life is full of the endeavours of men and firms to conceal their real intentions and even to give misleading evidence about them...Secrecy and deliberate misguidance are as much a part of business as war. And finally, there is novelty. In a world where nothing is more continuously discussed or more ardently and expensively produced than technological innovation, the fact of a vast and perhaps illimitable area of yet to be discovered knowledge is taken for granted. The whole spirit of business is to outdo one's rivals by inventing or adapting a new technique or
a new product and exploiting its potentiality during some interval before it can be imitated" (Shackle, 1970 p.94 - my italics. See also p.101 and Shackle, 1973 p.15)

Through successful innovation may come business success (Shackle, 1970 p.76). "To hit upon something new that will beat what exists is the only way for a firm to alter its rating in the table of success" (Shackle, 1970 p.155). Business success is related to novelty, and hence to uncertainty, since "business success depends in its most dramatic forms on the exploitation of novelty" (Shackle, 1970 p.30), where "the very concept of novelty implies essential and deep rooted uncertainty, for the novel is the hitherto unknown, even the unimagined" (Shackle, 1970 p.76).

In making those decisions which may lead to business success the legacy of judgement is paramount. This is because "an enterprise in contemplation does not offer its outcome as an observable fact, for that fact is in the future, beyond the eyes of men" (Shackle, 1973 p.64). At the stage of committing himself to an enterprise the business-man must make his decisions on the basis of imagination alone, since at the moment of decision, the enterprise itself is but a thought. Hence the test of an enterprise lies in the mind of the business-man. This requires the skilled exercise of judgement to succeed.

Shackle claims that "in judging what is possible and what is tolerable, the business-man is guided by what we shall call his practical conscience, his instinct for avoiding those acts which seem to endanger his firm's survival" (Shackle, 1970 p.97). This practical conscience enables the business-man to "conceive only such sequels to their present action as are congruent with the way they have seen the world to work" (Shackle, 1973 p.62). In using our imagination in the service of our practical conscience, we must not lose sight of the fact that "the business of choice, however, is a response to imperious practical needs" (Shackle, 1979 pp.140-1)
Is it Worthwhile to Start a Business?

Can we say anything meaningful about the way in which the businessman sees the world to work? That is akin to asking whether there is insight into the decision making process which we can provide which, using Meredith's (1962) analogy once more, helps us to explain why our businessman is likely to be better at making business decisions than the average tom cat. The rest of this section aims to outline Shackle's practical prognosis with respect to a question which he himself once asked: Is it worthwhile to start a business?

Shackle, in seeking an answer to his question, suggested in process based terms that it is first necessary to specify the options open to comparison and then to examine the nature of these options (1973 p.59). It might be thought that entrepreneurship, as outlined here, being a creative act of imagination, is impossible of systematic analysis and description of the sort that might be needed if our economic theories are to have anything to contribute to contemporary entrepreneurship education. Is it not a contradiction in terms to seek practical guidance in creativity? Careful consideration of Shackle's considered words of wisdom should probably lead us to think otherwise.

Whilst we have to recognize that the task of describing thought processes of businessmen is like the painter explaining the composition of a picture, in that the selection and arrangement of parts arises out of individual circumstance, habit and experience (Shackle, 1970 p.104), we should also recognize, to continue the metaphor, the high level of technical skill which the majority of the most highly inspired and creative artists can exhibit. Their technical training is not the direct source of creativity, but without a set of skills and tools to draw upon, the most creative of artists would probably find their creative output artificially constrained. In the same way, the potentially gifted businessman needs a set of tools and techniques at his disposal if he is to make the most of his full range of ability. In essence the claim is that the businessman's decision making capabilities need constant honing.
Throughout his writings Shackle offers many words of wisdom to the practising businessman. He advises that business ideas should be sought where the focus loss, or worst possible scenario, should be carefully related to the resources commanded such that the possibilities for gain are maximized subject to the individual not incurring too great a penalty if failure were to ensue (see Shackle, 1973 p.65). Once business ideas have been generated, which on the surface may appear feasible, the difficult act of deciding upon whether investment should be undertaken or not must be made. Shackle describes this decision in the following way:

"The decision to invest his money in a new business enterprise requires a man, in principle, to start by inventing a variety of enterprises, specifying each in considerable detail as to products, technologies, scale, location, markets, suppliers, finance, associates in management. Then for each such figment he must begin to consider the things that can happen to it, if he does bring this particular figment to realization. And this task is endless." (Shackle, 1968 p.5)

Evidently the business-man needs a way of limiting the task if a successful business is to be started. Whilst in principle all possibilities should be reviewed, in practice this is impossible. As a consequence, Shackle is led to ask "How does a person choose one course of action out of many?" (1973 p.2). His answer is that the business-man's task is made easier by using his preferences, experience and resources to naturally circumscribe the field of choice. Nevertheless, choice still requires conjecture and systematic analysis, in part using standard economists' tools, such as discounting (Shackle, 1970 p.77). This choice of conduct may thus arise out of a confrontation of tastes with circumstance.

In planning to start a business, the businessman must recognise that it is not the fate of other firms that matters, but "what can, what may happen to itself" (Shackle, 1970 p.101). Here Shackle sees the requirements of the
businessman, not in terms of some theoretically prespecified optimal use of resources, but more as a process of satisficing:

"Amidst his hazards the businessman has one comfort: the basic conditions are the same for all, he can reasonably hope to do as well as the next man and where all are making some misjudgements the average performance may be good enough for survival" (Shackle, 1970 p.22)

Since decision making is a means by which misjudgement should be reducible, good decision making skills may prove the difference between successful action and failure. The key to such decision making lies in the businessman reducing his "business to an orderly procedure, whether consciously or not, if he is to perform it" (Shackle, 1979 p.95). It is commonplace wisdom that some successful entrepreneurs do not formally plan. Nevertheless, such entrepreneurs should still be viewed as decision makers, albeit using less formalised mechanisms. Analysis of expectation requires that "the formal, the psychic and the inferential are satisfactorily fused" so that it is possible to understand why the businessman chooses one course out of many (Shackle, 1970 p.110). The actual manner of this fusion, will, however, vary markedly from entrepreneur to entrepreneur reflecting their different pattern of tastes and circumstance, which should presumably result in observable differences in attitudes towards formal planning.

The actual procedure of decision making, insofar as it leans towards the formal, may borrow heavily from the legacy of economic thought. Shackle stresses the utility of a partial method of analysis using the ceteris paribus assumption. Whilst the "businessman's problem is really indivisible and the most advantageous course depends upon the whole circumstances...there may in practice be no escape from the method of considering different aspects of his problem in succession" (Shackle, 1970 p.22). Some things must be presumed known which can only be discovered through time.
Nevertheless the use of the ceteris paribus assumption is required by the businessman "in order to study each partial aspect of his problem" (Shackle, 1970 p.23).

Because the profession of businessmen consists "in an endless series of acts of resolving questions for which there are insufficient data" (Shackle, 1973 p.67), in analysing any single possibility it is wise to assume the short run persistence of environmental factors (Shackle, 1970 p.22). This may be reasonable because, firstly, changes in the kaleidic society may not always be readily understood or analysed since for each businessman "both the business landscape and the use he makes of it are too much a matter of particular and specialized detail to be analyzed on the economists' general principles" (Shackle, 1970 p.104). Linked to this is a second reason, this tells why it may be appropriate for the businessman to make short run generalisations about the behaviour of other individuals:

"Since the personal experience of every individual is different from that of every other and their minds are also different...the systems will differ from each other in detail and often in very important ways. But the record...of those events which touch everybody in an obvious way, is roughly the same for everybody. And since this record is an important part of...such a system as we have sketched, it seems possible that the systems developed by different individuals may show sufficient uniformities for generalizations to be possible" (Shackle, 1943 p.125)

Even where analysis is simplified by the acceptance of unchanging short run data and the use of a ceteris paribus assumption, it must still be recognised that choice must be made in the face of an intricate mass of detail. The basic means of ordering this complex data is to separate the information into cost conditions and demand conditions (Shackle, 1970 p.23). By so doing, the businessman is able to order the world in such a way that it provides a useful starting point for the exercise of his imagination:
"The policy or scheme which the firm proposes to itself, according to which it will buy inputs, transform them by combining them in technological activities and then sell the resulting outputs must reckon with market facts...But these facts are merely a base from which its expeditions of imagination can set out to explore conceptually its possibilities of action" (Shackle, 1970 p.29)

The businessman can be presumed to have interests and purposes which he wishes to achieve. These will be influenced by tastes, education and innate or experiential qualities of mind. The extent to which these desires can be attained will depend upon circumstance. Thus Shackle argues that circumstance must encompass all that is not classified as part of tastes. Circumstance is, in turn, broken down into internal and external factors. The internal factors for the businessman comprise his endowments, including "capacities of brain and hands and his material possessions". The external circumstances include the subjective impression of the businessman concerning how the world works, together with an understanding of the "immediate state of that world". This notion of external factors also includes the manner in which it is presumed that other people will act (Shackle, 1973 pp.2-3).

In general, the techniques which Shackle advocates in the service of decision making are means by which businessmen may systematically plan, where such planning occurs in recognition of the sequential nature of the entrepreneurial process. Even if we do accept, however, that there are useful techniques which can guide the aspiring businessman in more competently deciding whether it is worthwhile starting a business, because of the importance of the element of creativity and imagination in entrepreneurship, there is no escaping the subjective element of such decisions. Shackle states his case to the businessman in forcible terms:
"The inescapable and perhaps wide ranging plurality of the ideas which he can plausibly form about the sale proceeds of future outputs and the expense of future inputs can be dealt with only by his own judgement" (Shackle, 1970 p.28)

As has already been remarked upon, this judgement about both what is possible and what is tolerable is guided by the practical conscience of the businessman. This involves the formal, the psychic and the inferential. To the extent that imagination may, in some sense be an innate feature of individuals, the task of entrepreneurship education must surely be primarily to improve the formal and inferential sides of decision making to hone the capabilities and practical conscience of the businessman in coming to sound judgements on business matters. In this respect the use of Shackle's theory of decision making may have a potentially important contribution to make.

IV USING SHACKLE'S ENTERPRISE IN ENTERPRISE EDUCATION

Within the recent expansion of entrepreneurship education the role of economists should probably be regarded as somewhat undistinguished, given the historical antecedents of the term. Certainly, economists have made valuable recent contributions at a theoretical level (see Casson, 1982; Kirzner, 1973, 1992; Hebert and Link, 1988; Barreto, 1989), in which a partial attempt to reconcile popular and academic usage of the term entrepreneurship has sometimes been attempted. Nevertheless, as Casson (1987) notes, the entrepreneur still can not be properly understood from within the confines of economic orthodoxy unless our theories themselves are radically changed. New insights into the theory of the entrepreneur must be seen as "the first step towards an economic theory which forms part of a wider integrated body of social science" (ibid p.153)

Within this attempt to build new theory we might usefully take to heart Shackle's view that "the ultimate test of a theory is perhaps the pragmatic one: does it lead to successful action?" (Shackle, 1965 p.183). Theories should be able to usefully address the sort of
practical concerns, such as starting a business, which we have seen that Shackle himself addressed. From the economists' perspective, if greater understanding of the practicalities of entrepreneurship and its role in society are to be achieved, then acceptance, tolerance and understanding of views derived from other disciplinary bases as well as from practical experience must all become goals. Again Shackle summarises this point nicely when he claims that amongst other things "to be a complete economist a man need only be...a man of the world with experience of practical business and finance" (Shackle, 1955 p.241)

We have seen how Shackle rejected orthodox pillars of economic thought, such as economic rationality and equilibrium, in favour of a process based approach. His rejection was built largely upon philosophical foundations. What was termed the paradigmatic view of entrepreneurship education in section one also incorporated a strong vision of entrepreneurship as a process. Whilst this approach may have much to commend it at a practical level, however, it should not be seen as a criticism to say that it is lacking in the kind of sustained and deep theoretical analysis provided by Shackle. There would seem an opportunity for social scientists to embrace Shackle's largely conceptually based ideas and the more pragmatic, empirically based ideas of much management education in entrepreneurship, in order to integrate these insights more fully, so as to give both empirical grounding to our theory and theory to our empirical knowledge.

The analysis which results from Shackle's theories provides insight into the sequential nature of the decision making process, whilst stressing the point that any process of business planning can not be directed at actual knowledge of what is to come, but merely towards our imagination of how events are likely to unfold. This point can be seen as a parallel to the entrepreneurial process described in section one of this paper. As we have seen, when Shackle starts to use his theoretical framework to address practical concerns, such as the benefits from starting a business, there is much to be learnt. In addition, by laying such emphasis upon difference between individuals in terms of the manner in which the imagination can and will be used, Shackle comes much closer than other economists to
the paradigmatic view of entrepreneurship education, in which the role of the individual in entrepreneurial action is paramount. Finally, by showing so clearly how decision making is bound up with entrepreneurship, Shackle, enables us to grasp exactly why planning is such an important element of the entrepreneurial process\(^\text{18}\).

In moving towards a closer reconciliation of theory and practice, in which economics can play a useful role in entrepreneurship education, the theories of Shackle would appear to offer a useful starting point. Given the problems with reconciling discussion of entrepreneurship and orthodox economic theory, as discussed earlier, it is perhaps not so surprising that the influence of economics in entrepreneurship education has been rather undistinguished. By offering a theoretical framework which appears to fit more closely with several key ideas in the orthodoxy of entrepreneurship education the prospects for using the work of Shackle as the basis for reinstating the importance of economics would seem to be worthy of further investigation\(^\text{19}\). As a final note of caution, however, in progressing from what we know to a more satisfactory integration of entrepreneurship theory and practice we should remember the following:

"Business and life at large is a scurrying throng of events and disorderly interactions...But the essential fact of our human predicament, that we are obliged to act without knowledge, to act first know afterwards must somehow be built into our theorizing" (Shackle, 1973 p.40)

**V CONCLUSIONS**

Throughout his long and distinguished career as an academic economist Shackle stressed the themes of creativity and imagination as essential attributes of enterprise. Paradoxically in this respect his own thinking and level of knowledge seems poles apart from the beloved notion of unknowledge which underpins his theory of decision making. Indeed, given the forces for change within the economics profession, which both practical necessity
and theoretical inadequacy warrant, it should, perhaps be claimed in retrospect that Shackle's incisive mind led him to defend a theoretical position characterised by uncanny foreknowledge of things to come. The creative, imaginative mind of Shackle, reflected in particular in his theory of entrepreneurship, certainly demonstrated a fertile prescience, the considerable output of which should occupy the attention of thinkers for decades to come.

It is not just abstract, logical thought which should benefit from Shackle's perceptive mind, though. As we have seen, Shackle was an eminently practical man. As discussed, the theoretical framework developed by Shackle certainly provides real insight into the nature of the entrepreneurial process, through its reconciliation of the imaginative nature of decision making with innovation and creativity. However, unlike so much writing by economists on the topic of entrepreneurship, the practical element of Shackle's thinking and writing is like a breath of fresh air.

We have seen how emergent themes in entrepreneurship education can be well understood in terms of Shackle's theory of decision making. Further, the manner in which he framed his theory has the potential to provide businessmen with tools of analysis which could reasonably be expected to improve the systematic analysis of decision making by prospective entrepreneurs. Isn't Shackle exactly the sort of economist who should be teaching prospective entrepreneurs?
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Notes:
1. Drucker points out that the way in which features such as tastes and technology are treated as parameters by many economists precludes economic analysis of entrepreneurship. Gilder (1986) similarly criticizes economists and addresses the failure of economists to incorporate the creativity of the entrepreneur.
2. What is written here is markedly different in style to much which is used in contemporary entrepreneurship, which is largely lacking in theoretical sophistication. It was Keynes who warned us many years ago, however, that business practice follows from the ideas of deceased economists. We should perhaps therefore attempt to ensure that such practice is best practice by offering guidance from best theory, such as Shackle's. It is a contention of this paper that whilst much of the language used may appear non-practical, we should not confuse practicality with simplicity. It is whether practical implications follow that is important.
3. In this paper we shall concentrate only on how individuals may be able to recognize and act upon opportunity more effectively. Encouraging an enabling environment is outside the scope of the paper.
4. See for example the recent reports by the International Labour Organisation (ILO, 1986, 1990) for discussion and references.
5. The sort of skills required might include: fact versus myth about entrepreneurship; reality testing skills; creativity skills; ambiguity tolerance skills and attitudes; opportunity identification skills; venture evaluation skills; venture start-up - action skills; venture strategy skills; career assessment skills; environmental assessment skills; ethical assessment skills; deal making skills; contacts-networking skills; and harvesting skills. This list is taken directly from Hisrich and Peters (1992) who are citing research by Ronstadt (1985).
6. Some of the better and more recent texts which stress the key elements in entrepreneurship referred to below include Hisrich and Peters (1992), Kao (1989), Burns and Dewhurst (1989) and Stevenson et al (1985).
7. It was common amongst English economists, such as Marshall, Dobb, Hobson and Shackle, to treat the entrepreneur and business man as largely coterminous. We shall follow this practice. It should be borne in mind, however, that business person should be a preferred term.
8. Shackle explicitly outlined his theory as a contrast to prevailing orthodoxy which made "no reference whatever to the process of thought, the motives and the treatment of the individual enterpriser" (Shackle, 1943 p.99). Shackle's theory can thus be seen as an erudite attempt to restate the case for the waning fortunes of the entrepreneur in economic theory at that time.
9. Unfortunately, having provided a list of factors which any true dynamic theory must possess, Bausor then makes a self refuting assertion, not necessarily warranted by his schema, that dynamic processes can
only be represented when outcomes of all possible choices are specified. Were this true, then it would be logically impossible to represent dynamic processes since the imagination permits infinite possibilities for outcomes. Instead it seems more reasonable to claim merely that, having established the requirements of dynamic theory, we inquire more closely into the nature of the decision making processes implied by such a theoretical stance. This is precisely what Shackle attempts to do.

10. Orthodox economic theory distinguishes act and event uncertainty. The former refers to the type of scenario described below, typical of what Phelps (1988) regards as the economics of uncertainty, in which it is the outcome of any decision which is unknown to the chooser due to incomplete, but symmetrical, information. The latter refers to situations of asymmetric information, generally referred to as the economics of imperfect information. This has the implication that uncertainty arises out of the interactions between different economic agents. We shall pass over detailed consideration of it here, noting first that it relies upon the same axiomatic postulates of rationality and equilibrium which make it incompatible with Shackle's approach; and second, that the logical separation between these two types of decision making largely ignores the interrelationships which may exist when both event and act uncertainty co-exist.

11. See Reckie (1984) for an analysis of the links between Shackle and marketing theory.


13. An excellent exposition and critique of Shackle's decision theory is provided by Ford (1983, 1990). See also Carter et al (1962). Shand (1984 p.84) claims that Shackle's decision theory may provide a "promising illumination of how entrepreneurial decisions may in practice be made".

14. This analogy was first drawn by Meredith (1962)


16. Loasby (1989) claims that profit for Shackle is just what accountants say it is, namely the difference between the start and end of a period in net asset values.

17. Kregel (1990) analyses further how business competition may create uncertainty, leading to new methods of production.

18. A discussion of how business scenario planning, similar to the planning process described by Shackle, may work in practice is to be found in Loasby (1990).

19. In this respect we might also note that Buchanan (1982) has argued that any methodological advance in economics must build on Shackle's work.
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