

On fallible knowledge

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Abstract

The paper discusses the nature and role of knowledge in a socio-economic life marked by genuine uncertainty. The starting point is to regard that uncertain environments render knowledge fallible and contingent. Knowledge is fallible for reasons associated both with interactions in space taking place at the same time (complexity), and with the passage of time. The paper stresses two types of knowledge, namely, “knowledge how” and “knowledge that”. The former is the knowledge of the way we perform something and the latter is the knowledge of why it is that we perform something. One way that agents find to cope with the condition of fallible knowledge is to resort to conventions (Keynes) and rules (Hayek). Conventions and rules are the repository of a social, intersubjective form of knowledge, which agents may acquire, store and communicate with each other. They partly provide the necessary information for the undertaking of their daily activities.

Resumo

O artigo discute a natureza do conhecimento em um ambiente sócio-econômico caracterizado por incerteza genuína. O ponto de partida é considerar que ambientes incertos tornam o conhecimento falível e contingente. O conhecimento é falível tanto em virtude de interações no espaço que acontecem ao mesmo tempo (complexidade), como devido à passagem do tempo. O artigo enfatiza dois tipos de conhecimento: “knowledge how” e “knowledge that”. O primeiro consiste em um tipo de conhecimento acerca do modo como fazemos algo e o segundo em um tipo de conhecimento acerca do porque fazemos algo. Uma forma que os agentes encontram para lidar com a condição de conhecimento falível é recorrer a convenções (Keynes) e regras (Hayek). Convenções e regras são uma espécie de reservatório de uma forma de conhecimento social e intersubjetiva que os agentes podem adquirir, armazenar e comunicar uns com os outros. Elas fornecem em parte a informação necessária para o desempenho de suas atividades cotidianas.

1_ Introduction

This paper discusses aspects and characteristics of human (limited) knowledge in a context where agents have to cope with genuine uncertainty. By definition, uncertainty is a situation in which people taking decisions have to come to terms with the fact that they possess scarce knowledge (or no knowledge at all). It is a pervasive fact of life. In other words, in the presence of uncertainty, knowledge is fallible and contingent, subject to change and revision in the light of observed realised results. Such features render problematic the accounts based on some sort of fixity of the world or the material reality.

Although uncertainty is sometimes regarded as synonymous with lack or scarcity of knowledge, and emphasis is put on the fact that agents do not have sufficient knowledge to take their decisions in many circumstances, the general idea here is to scrutinise the features of this limited knowledge, that is, to pose the question of the nature and scope of knowledge people have in a context of uncertainty.

All this calls for the possibility of errors of evaluation, failed expectations,

miscalculations and deficient predictions. Under uncertainty, acquisition of knowledge by agents and action based upon it is not trivial. Limitations of various sorts bring about limitations to behaviour. But, as Keynes (1937b, p. 124) asserts, notwithstanding the fact of uncertainty, that limitations of knowledge are a pervasive feature of the real world, people have to act. Action in the face of uncertainty requires some sort of “substitute for the knowledge which is unattainable” (Keynes, 1937b, p. 124) which serves as guide for agents. The paper stresses the role of some of these “substitutes”, namely, the socio-economic structures (like conventions and rules) which govern decision-making processes in the presence of fallible and contingent knowledge.

2_ What knowledge is

But what is knowledge? A first step is to regard that, at a more general level, knowledge can be seen as “justified true belief” (O’Hear, 1985, chapter 2). For a person A and a statement or a proposition p , we say that A knows that p if and only if the following clauses apply:

1. *A* believes that *p*;
2. *p* is true;
3. *A* has good reasons for believing *p* is true (justification).

We need then to address how to hold a justified true belief, that is, to know something. In relation to this, it is also important to consider the idea that we cannot have knowledge unless the idea of our being mistaken makes sense.

We cannot say that our beliefs about something are categorically true (certain knowledge) but only that they have a possibility of being true. We cannot plausibly claim to have a definite picture of a reality which undergoes change, even if we ascribe some degree of stability to some perceived regularities or active structures and relations, and are to some extent confident that they will hold in the future. Each of our accepted beliefs may turn out to be false, and many of them will in fact turn out to be false.

A given state of knowledge represents the best we can use here and now to solve the problems at hand. New knowledge may not supplement a previous state but instead disturb it. It is the tension between novelty and permanence which shapes knowledge people possess. Knowledge is the result

of people's activities and as such is subject to change, although things can remain "the same" for a long time.

What we call knowledge is a provisional state of things which can or may not be validated by the sequence of events in the world. Change affects knowledge. Knowledge may change incrementally and discontinuously. If things continue as before, or as expected, there arise no new concerns in terms of decision, no need to devise a new plan of action. The more one believes change has not important consequences, the more one is prone to believe in the long-run stability of a state of things or perceived regularities. But it is the belief in the constancy of things and the making of decisions according to this belief, which brings so many problems in environments marked by novelty. This is a situation people cannot escape from.

The process of change comes with time and involves both chance events and what Shackle (*e. g.*, 1961) calls "crucial decisions" or "non-divisible non-seriable experiments"; they bring new and unexpected circumstances to the fore. The knowledge people have has to be checked permanently against a reality in

which change plays an important role, so that there will always be new relations which ultimately threaten our current cognitive constructions. Although we can predict that our knowledge will fail and will have to be replaced or modified, we cannot predict how and when this will happen.

People take part in a stream of events and have to cope with the fact that it contains some surprises. Indeed, many of these surprises are the result of people's own actions. Reactions to surprises may entail alterations of previous frameworks and structures for actions such as conventions, rules, policies, routines *etc.* Some actions do intend to render the future different from what it would be without such actions (Loasby, 1976, p. 7). The very act of aiming at a goal inserts new data into the environment. Also, different people in different situations have better conditions to make a better use of their resources and, therefore, may be more effective in producing new knowledge – what Loasby (1986, p. 52-53) calls “diversity of perceptions and diversity of conjectures”.

Knowledge is a provisional portrait of the flux of events; therefore, it may be subject to revision. All form

of knowledge, including probabilistic knowledge, is by necessity fallible and contingent knowledge. As suggested by Russell and Keynes, knowledge is always associated with a component of certainty or doubt.

Successful innovation brings about change and the need to check and revise our previous knowledge. Novelty, resulting from a forward time flow, is the drive impinging on knowledge the possibility of its obsolescence.

Agents have some safeguards at their disposal to cope with the potential fallible, contingent character of knowledge, a hedge against the unstoppable urgencies of the new. As a rule, they resort to amendments such as “more or less”, “normally”, “in ordinary circumstances”, “by and large”, “if all things are equal”, and so on. Problems arise when one strives for precision and universality, as in the scientific enquiry. Fallible knowledge and vagueness are akin; paradoxically, the search for precision may increase our degree of ignorance:

The price of precision is not only error, but ignorance: the rigorous theorist or experimenter doesn't know what it is he doesn't know. ... If we become

more aware of our ignorance, we can make more effective use of the sufficiency of abstractions, and avoid paying such a high price for precision

(Loasby, 1976, p. 50 and 57).

The “pretence of knowledge” is a theme which has attracted the attention of authors like, for instance, Hayek (1974). In a world marked by “essentially complex phenomena” the acquisition of quantitative knowledge about many events is by force limited and may even not comprise important aspects of these events. All the facts and events that govern the dynamics of socio-economic processes cannot be fully known or measurable.

It is precisely the pretence that we can do implausible things with the knowledge that we are able to gather that led some people to believe that conventional economic theory is a project doomed to severe limitations or even utter failure:

Economics has veritably turned imprecision itself into a science: economics, the science of the quantification of the unquantifiable and the aggregation of the incompatible

(Shackle, 1972, p. 360).

3_ The problem of induction

One way of deriving knowledge from experience is through the inductive method. The problem is that no logical derivation is possible, for irrespective of the number of occurrences of an event, there is no strong justification for the conclusion that it will occur with certainty next time. This is the problem of induction, originally raised by Hume: experience of the past or the present affords no assurance of the future.

The principle of induction may be stated in the following manner:

- (a) *The greater the number of cases in which a thing of the sort A has been found associated with a thing of the sort B, the more probable it is (if no cases of failure of association are known) that A is always associated with B;*
 (b) *Under the same circumstances, a sufficient number of cases of the association of A with B will make it nearly certain that A is always associated with B, and will make this general law approach certainty without limit* (Russell, 1912, p. 37).¹

The belief in the uniformity of nature underlies the principle of induction (Keynes, 1921). However, we have no reason for assuming that uniformities and associations which

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¹ But, as Russell says, expectations based on this principle may be misleading: “The man who has fed the chicken every day throughout its life at last wrings its neck instead, showing that more refined views as to the uniformity of nature would have been useful to the chicken” (Russell, 1912, p. 35).

have always been held in the past allow us to suppose that they will hold in the future. The belief that the future will resemble the past is just a belief – for Keynes (1937a, 1937b), for instance, it characterises a convention. It may prove correct or incorrect after the situation we expected to happen really happens or not. It has something of the nature of a guess or of a bet.

In view of this, one needs to be more flexible in accounting for some aspects of the nature of knowledge:

“knowledge” is not a precise conception: it merges into “probable opinion”. ... A very precise definition, therefore, should not be sought, since any such definition must be more or less misleading. ... [A]ll our knowledge of truths is infected with some degree of doubt, and a theory which ignored this fact would be plainly wrong (Russell, 1912, p. 78).

What one is faced with are then *gradations* of knowledge – a gradient whose extremes are certain knowledge and complete ignorance. This implies the possibility of error in judgement, the possibility of (partially) knowing something instead of *certainly* knowing something. Thus, what is called knowledge can be better described as “probable opinion”:

What we firmly believe, if it is true, is called knowledge, provided it is either intuitive or inferred (logically or psychologically) from intuitive knowledge from which it follows logically. What we firmly believe, if it is not true, is called error. What we firmly believe, if it is neither knowledge or error, and also what we believe hesitatingly because it is, or is derived from, something which has not the highest degree of self-evidence, may be called probable opinion. Thus the greater part of what would commonly pass as knowledge is more or less probable opinion

(Russell, 1912, p. 81).

Thus, a “search for certainty”, or a clear-cut “criterion of truth”, is useless. An indubitable basis of knowledge, which may be either reason, as for the rationalists, or experience, as for the empiricists, is not in general available. Our beliefs about our current surroundings and about the future are not on a firm ground; they are *intrinsically* not well supported.

On the other hand, it is problematic to state simply that everything is radical unknowledge and ignorance, the fact of uncertainty notwithstanding. There are layers or degrees of uncertainty (Dow, 1995). Consequently, there are also

differentials of knowledge: different agents may have different levels or amounts of (quantitative and qualitative) knowledge for being in different contexts as to distinct degrees of uncertainty. For instance, after the introduction of a successful innovation in a specific market or industry some firms will benefit while others will face a novel situation without knowing *a priori* if they will be able to adapt themselves to this new environment created by this “structural break” or “crucial experiment”.

4_ On the foundations of knowledge

In general, two views on the foundations of knowledge are considered: empiricism and rationalism. For the empiricist account, the main instrument for the acquisition of knowledge is experience; knowledge is acquired through sense data. For the rationalist view, the chief road to knowledge is the exercise of reason, arrived at by thought; *a priori* reasoning has a central role for the acquisition of knowledge.

However, “foundationalist” views alone do not provide a reasonable

account of knowledge (Lawson, 1987, p. 967). The empiricist account, which claims the primacy of data and data-analysis, is unsustainable, for there is no data free of judgement and interpretation; rationalist views, which highlight the pre-eminence of *a priori* reasoning, if they are to be free from the same mistake, seem fated to end up with a measure of relevance distinct from realism of analysis.

Such a dualism is neither necessary nor desirable. A more encompassing explanation should transcend this dichotomy: the process of acquisition of knowledge may entail both procedures, in a continuous interchange:

knowledge can be understood, not as the building of a superstructure upon an unchanging foundation, but as proceeding in stages where the foundation at each new stage is the previous one. In the course of acquiring and developing knowledge, provisional starting points come to be questioned and criticised and existing views are rethought and reinterpreted. Thus despite strong temptations to draw distinctions between what is immediately given to the senses and what is contributed by interpretation, these two aspects – the immediate and the

mediated, the given and the constructed – cannot ultimately be separated. Knowledge development involves thought and experience where neither aspect can be isolated as foundational in any absolute and permanent way

(Lawson, 1987, p. 960-961).

Thus, the pursuit of absolute and immutable foundations is no longer justifiable. This is another manner of stating that knowledge is fallible and contingent.

5_ Knowledge: time and space

Acquisition of knowledge is constrained by individual or group idiosyncratic experiences. By their turn, experiences take place in specific contexts, that is, the spatio-temporal setting fundamentally influences decision-making processes.

Certainty is a provisional state governed by many circumstances, from the degree of confidence we have in a given statement about a situation to the discovery of new information not available to others yet.² But a provisional state of certainty can only be brought about because of the pervasive uncertainty and complexity in which human condition is immersed.

Knowledge and ignorance are intrinsically related. My knowledge now stems from my current individual experience in a given society, in a network of interactions in a given time. It is knowledge built through time in a process of constant and recurrent acquisition and discarding of information. Knowledge has then a spatio-temporal dimension. Because of that, there are differentials of knowledge:

an agent may have fairly extensive knowledge of the immediate environment, be virtually ignorant of the remote environment, and radically ignorant of the future (Fleetwood, 1994, p. 27).

Theories of uncertainty, such as, *e. g.*, those of Knight, Keynes and Shackle, stress the temporal dimension of the fallibility and contingency of knowledge. Theories of complexity, such as Hayek’s and Simon’s, emphasise the space dimension – ignorance concerning the vast number of interacting events taking place at the same time in a given complex environment; ignorance of the interactions among the sub-systems of this sub-environment, and so on.

Within relatively less complex systems there is greater conformity of

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² “Certainty is a psychological state that one can be in independently of whether one is right or wrong” (Grayling, 1995, p. 51). As Hayek states, “I prefer true but imperfect knowledge, even if it leaves much indetermined and unpredictable, to a pretence of exact knowledge that is likely to be false” (Hayek, 1974, p. 29), a position consistent with the principle of fallible knowledge.

belief, less dispersion of opinions, for there is less to be known and a smaller number of events taking place. In contrast, the higher the degree of complexity the higher our ignorance, the higher the dispersion and variation in such beliefs across people where the interactions are more varied and frequent. The degree of understanding (of generating knowledge) changes with the degree of complexity.

By combining both approaches the result is that even if the future were highly predictable and knowable, knowledge would still be limited due to the fact of complexity; conversely, even if the environment were of a simple character (for instance, the less complex economic environment of Robinson Crusoe), knowledge would still be limited because in a historical time setting future states of affairs are not fully knowable. Reductionist accounts, for not stressing the influence of both complexity and the passage of time upon decision-making processes, may then provide a partial account of the factors involved in many important situations.

If acquisition of knowledge is bounded by space and time, then so is the conduct which depends on its use. Context defines not only the basis for

knowing something but also for behaving upon it.³ The historical setting bounds the processes throughout which knowledge is being generated and used. The context defines different social practices and distinct social knowledge embodied in those practices. For instance, the conventions which govern pricing decisions are different in high-inflation economies and in moderate-inflation economies. The context of inflation determination in Germany in the 1920's (a classical episode of hyperinflation) is not the same of the American inflation in the 1990's; or, still, of the Brazilian inflationary experience of the 1980's (so-called chronic or inertial inflation). Not only did peculiar features or determinants take place in each of these circumstances, but, also, specific practices and behaviours were generated. The consequence of not emphasising the context-related aspects of knowledge (and behaviour) is that erroneous generalisations may arise.⁴

6_ Types of knowledge

For the purposes of the present discussion, one could also say that there are two types of knowledge:

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³ "Behaviour ... is highly dependent upon the context in which (context related) knowledge is obtained" (Lawson, 1985, p. 917). Or further: "Human action always takes place in some context and human agency is conditioned by context-related knowledge" (Lawson, 1987, p. 964).

⁴ But, although one may say that inflation has different historical conditioners according to distinct conjunctures, there are also elements which may be common to various different experiences which allow for some qualified generalisations.

“knowledge how”, or practical knowledge, and “knowledge that”, or theoretical knowledge (Ryle, 1949; Polanyi, 1958 and Hayek, 1967).

The category “knowing how” involves the practical execution of tasks, the process of doing something, the exercise of a skill, the capacity to perform an activity. The category “knowing that” consists of the thought of what is being involved in “doing something”, the process by which we are capable of theorising about a performance. It relates to acquiring information for explanation, for conscious formulation.

A person may observe the rules which are applied but this does not mean that this person can also formulate or fully understand them. Practice precedes the theory of it. As Ryle (1949, p. 30) states,

there are many classes of performances in which intelligence is displayed, but the rules or criteria of which are unformulated.

Principles informing activities are not generally known. No precise and articulated knowledge of the constituent detailed operations of a broader system necessarily takes place. The “arts” of skilful doing and skilful knowing are thus differentiated:

It is therefore possible for people intelligently to perform some sorts of operations when they are not yet able to consider any propositions enjoining how they should be performed. Some intelligent performances are not controlled by any anterior acknowledgements of the principles applied in them ... We learn how by practice, schooled indeed by criticism and example, but often quite unaided by any lessons in the theory (Ryle, 1949, p. 30 and 41).

Polanyi has also adopted Ryle’s approach as to the types of knowledge:

the aim of a skilful performance is achieved by the observance of a set of rules which are not known as such to the person following them (Polanyi, 1958, p. 49).

The unspecifiability of the process by which we thus feel our way forward accounts for the possession by humanity of an immense mental domain, not only of knowledge but of manners, of laws and the many different arts which man knows how to use, comply with, enjoy or live by, without specifiably knowing their contents. Each single step in acquiring this domain was due to an effort which went beyond the hitherto assured capacity of some person making it, and by his subsequent realization and maintenance of his success.

It relied on an act of groping which originally passed the understanding of its agent and of which he has ever since remained only subsidiarily aware, as part of a complex achievement

(Polanyi, 1958, p. 62-63).

This distinction is also useful to think of the processes leading to the formation of social rules of conduct. Complexity entails dispersion of knowledge, that is, the knowledge of the circumstances of which people need to make use never exists in “concentrated or integrated form”, but only as the “dispersed bits of incomplete and frequently contradictory knowledge” which each individual agent possesses (Hayek, 1945, p. 519). This “unorganized knowledge”, this “knowledge of the particular circumstances of time and place”, is used by people in order to perform

their activities and, according to Hayek, is not held by anyone in its entirety. In a context of fragmented knowledge of the relevant facts, we have not only the unavoidable imperfection of human knowledge but also

the consequent need for a process by which knowledge is constantly communicated and acquired

(Hayek, 1945, p. 530).

“Know how” is to act according to rules without the need of being able to explain them but merely being able to follow them (Hayek, 1967, p. 44). We always know more than we can deliberately state. As Hayek states,

an observed movement is directly translated into the corresponding action, often without the observing and imitating individual being aware of the elements of which the action consists or (in the case of man) being able to state what he observes and does. ... In one sense we thus know what we observe, but in another sense we do not know what it is that we thus observe

(Hayek, 1967, p. 47-48).

What we recognise as purposive conduct is conduct following a rule with which we are acquainted but which we need not explicitly know

(Hayek, 1967, p. 55).⁵

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⁵ These concepts have many applications. One could argue, for instance, that standard practices in economics fit this characterisation quite well: mainstream researchers or economists “know how” to use quantitative methods or econometric techniques in order to build models (theories) and make

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 empirical tests and predictions, but they do not “know that” – in many situations, their knowledge is limited and insufficient for the purposes intended. As Keynes states, “Peace and comfort of mind require that we should hide from ourselves how little we foresee” (Keynes, 1937b, p. 124).

Agents following rules know “how” but not “that”. Rules (and other types of socio-economic structures that govern human behaviour) avoid the necessity of knowing “that”. This situation can be seen as a paradox: agents possess knowledge “how”, which is crucial to support their everyday decisions; nevertheless, in many respects, they do not have knowledge “that”.⁶ This is the “paradox of ignorance” (Fleetwood, 1996). Thus, to fall back on socio-economic structures such as rules, conventions and routines can be both a conscious or semi-conscious behaviour, a way of obtaining some sort of “safe” knowledge.

7_ Knowledge of the observed and of the observer

From the above, it is also possible to suggest a distinction between the knowledge which is important for agents taking decisions and the knowledge which the observing analyst can acquire by examining agents’ actions and their consequences.

Although not used by those authors in this context, the analytical split of “know how” and “know that” is

quite useful here. On the one hand, in order to perform their activities, people need to know how, and do not need to explain why, those performances are being done, or their underlying mechanisms – they do not need to know “that”. On the other hand, the observer, if he/she aims to provide explanations or descriptions of phenomena, the relations and regularities involved, she/he needs to analyse the underlying mechanisms – they do need to know “that” through the investigation of behaviour of the observed performers making use of “knowledge how”. “Knowledge how” is thus related to the actions of observed people and “knowledge that” is related to the acts of thought, the theories and formulations of the observing people (say, the economist, the philosopher, the social scientist).

However, irrespective of the type of knowledge associated with people willing to know, the possibility that knowledge is fallible and contingent always exists. For both potential knowers the possibility of errors poses a challenge. Both acting and theorising have to face the fact of the limitations (or absence) of knowledge. One implication is that claims such as that of

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⁶ “Agents ... appear as skilful manipulators of a vast range of knowledge (“how”) embodied in the macro and micro social rules of conduct. These rules are necessarily drawn upon in order for agents to acquire and communicate knowledge and engage in socioeconomic activity” (Fleetwood, 1996, p. 174).

logical positivism, that “truth” can be achieved by means only of empirically observable and testable phenomena, or the pretence of some optimistic but wrong views of human behaviour, that an agent has complete knowledge and perfect foresight, are absurd.

8_ Knowledge beyond knowledge

Although it is not possible to know everything, since much is happening and will happen, it is also reasonable to state that there is an objective, “transcendental” reality whose existence is independent of our knowledge of it. Objects and relations exist independently, at least in part, of the enquiry of which they are objects; but at the same time they are subject to being consciously known (Lawson, 1987, p. 951).

Knowledge is both absolute (objective) and relative (subjective):

there is such a thing as direct knowledge which corresponds to our common everyday understanding of the term. But it is not a matter of absolute and pure immediacy. Rather it is a relative immediacy, depending upon our level of biological and social development. The directness of knowledge is relative in this

sense but, relative to such background knowledge, etc., it is absolute (Lawson, 1987, p. 962).

This also begs the question of the inherent intersubjectivity of knowledge. An unsuitable way of approaching how knowledge is acquired and communicated is by concentrating attention on the private domain of individual awareness. Rather, it is necessary to begin in the social domain, for language is an activity essentially public and intersubjective. Even our thoughts have such intercommunicative determination, for they are built on the basis of our knowing a (socially generated) language.

We are immersed in interactive experiences. We are, like it or not, necessarily engaged in the world; our acquisition and accumulation of knowledge is the result of our multiple activities there.⁷ Language can only be acquired in a public setting. A private language, a private “communication”, is impossible. One only succeeds in speaking a language if one follows the shared rules for the use of its expressions. Therefore, knowledge can only be known socially. Individuals who depend on others in their daily activities are social rather than a-social individuals.

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⁷ Omission or seclusion is only possible if there exists a reference point from which one intends to be omitted or secluded. I can only be completely “autonomous” (say, a hermit) if I detach myself from the social whole which in principle I belong to. But this social “entity” must still be there to certify that I am an “isolated” person from the rest of society.

It is worth to note in passing that the importance of the social context in the definition of knowledge is an important aspect of both Keynes's and Hayek's account of conventions and social rules of conduct. Their views will be discussed later.

Knowledge is essentially a social product. It is established socially, as the outcome of people's social activities. We cannot account for knowledge in terms of the result of a process in the mind of the isolated individual and to find its roots in the individual experience solely. An individual acting alone, separated from contact with other people and relying only on herself, can obtain scarcely any knowledge at all – perhaps only of very particular facts. To state that we can know nothing except our own momentary existence is then a mistaken way of approaching this subject. The material world surrounding us and other people are as important as the socialised individual in an account of knowledge.

Knowledge is accumulated and acquired by individuals – just as everything that mankind produces is created by individuals. However, it is production of knowledge by individuals

acting in co-operation, counting on one another, and communicating their experiences and their ideas. Each individual acquires knowledge from his/her own personal experience, but this would not be possible if it were not for the fact that she/he is in association with others, and if she/he did not learn from others what they have learned before. Knowledge and language are social products, the common dominion of a society. Even those who make outstanding contributions to the stock of knowledge need some form of communication and interchange to those who at the end of day will not be socially recognised as contributors of that new knowledge – the huge social web of material and intellectual resources is the departing point for the building up of all sorts of achievements.

It is only in society that we can acquire and communicate knowledge. It is the result of the interchange of experiences among the components of society in the progression of their countless forms of social activity, and it is screened and checked throughout the same process.

The consequence is that the aggregate of social knowledge – the totality of knowledge stored and

available to the members of a society at a given time – is always greater than the particular bits of knowledge each person can possibly possess. There exists an evolving stock of social knowledge at the disposal of people, to which they contribute and to which they can resort.

9_ Theories of fallible knowledge: the approaches of Keynes and Hayek

The idea of fallible knowledge can be found in the works of many authors. This section briefly scrutinises the distinctive approaches of both Keynes and Hayek, who immensely contributed to the theme, although from different perspectives.

Keynes and Hayek used distinct methods for analysing economic conduct, from which derived different ideas about the stability properties of economic systems, and divergent conclusions about intervention and policy. Despite their profound differences in many topics (such as methodology, the role of the State, monetary theory and policy, causes of unemployment *etc.*), there is an important commonality in their works

in regard to the features of knowledge, that is, their epistemological approaches are similar in many respects.

9.1_ Keynes: uncertain knowledge

Keynes's well-known version of uncertainty is the soil from which a huge bulk of research on the subject has flourished (Keynes, 1936, chapter 12; 1937a).

In the *General Theory*, Keynes states that the formation of expectations does not take considerably into account those factors which are “very uncertain”. Keynes differentiates “very uncertain” from “very improbable” (Keynes, 1936, p. 148, fn.). Although in specific situations very uncertain facts may become decisive, a reasonable guide to current decisions is to consider those facts to which an important degree of confidence is ascribed. The formation of long-term expectation is thus over-influenced by the current state of things, unless we have solid justifications to change our opinions about the existing situation. People's “usual practice” (a convention) is to take the existing state of things and expect that the future will be the same, modified only to the extent that they have “more or less definite reasons for expecting a change” (Keynes, 1936, p. 148).

Decisions to invest depend on the state of long-term expectations, which depend on both “the most probable forecast we can make” and

the confidence with which we make this forecast – on how highly we rate the likelihood of our best forecast turning out quite wrong (Keynes, 1936, p. 148).

The degree of confidence is thus associated with the perceived degree of uncertainty of the knowledge attached to a possible future event.

Nonetheless, the foundation of estimates of events in the distant future “amount to little and sometimes to nothing” (Keynes, 1936, p. 150), for the knowledge upon which they are based is scarce:

The outstanding fact is the extreme precariousness of the basis of knowledge on which our estimates of prospective yield have to be made. Our knowledge of the factors which will govern the yield of an investment some years hence is usually very slight and often negligible (Keynes, 1936, p. 149).

Thus, for Keynes uncertainty refers to a feature of knowledge of future events which by its own nature cannot be expressed in terms of a quantifiable probability distribution:

By “uncertain” knowledge, let me explain, I do not mean merely to distinguish what is known for certain from what is only probable. The game of roulette is not subject, in this sense, to uncertainty; nor is the prospect of a Victory bond being drawn. Or, again, the expectation of life is only slightly uncertain. Even the weather is only moderately uncertain. The sense in which I am using the term is that in which the prospect of a European war is uncertain, or the price of copper and the rate of interest twenty years hence, or the obsolescence of a new invention, or the position of private wealth owners in the social system in 1970. About these matters there is no scientific basis on which to form any calculable probability whatever. We simply do not know (Keynes, 1937a, p. 113-114).

That is, one is confronted with a(n) (implicit) taxonomy of uncertainty which posits a continuum between knowledge and lack of knowledge, from situations not subject to uncertainty (where we have a certain amount of knowledge) to “we simply do not know” situations, where there are no elements to calculate a probability distribution and ignorance prevails. Uncertainty is thus an attribute of knowledge, not of reality (according to Lawson’s categorisation; see Lawson, 1988).

This illustration of the degrees of uncertainty can be conceptually organised as follows:

- *(calculable) probability*: the game of roulette, the prospect of a Victory bond being drawn;
- *slight uncertainty*: the expectation of life;
- *moderate uncertainty*: the weather;
- *uncertainty* (in an absolute sense): the prospect of a European war, the price of copper and the rate of interest twenty years hence, the obsolescence of a new invention, the position of private wealth owners in the social system thirty five years hence, the yield of an investment some years hence.

The latter meaning is the one Keynes is most concerned with. In this situation of genuine, radical uncertainty (in an absolute sense, as a state of ignorance), there is no knowledge basis upon which agents could specify any quantitatively calculable probability, for “we simply do not know”. In this case, “the concealed factors of utter doubt, precariousness, hope and fear” (Keynes, 1937a, p. 122) come to the surface and affect agents’ mood more powerfully.

In this situation, agents are coping with *unknowables*, although they act upon something that they know (or at least they believe they know). The future will become present and check their previous beliefs about the possible results of their current decisions. Knowledge is “fluctuating, vague and uncertain” at the moment of the decision-making process due to the existence of a flux of time which is irreversible and which contains the germs of unknown and unexpected situations. Agents’ knowledge is limited due to the unlimited range of rival possibilities that may take form in the future. Thus, Keynes’s version of uncertainty refers to a current state of fallible and contingent knowledge in the actual present concerning potential competing futures.

Keynes’s version of uncertainty can thus be the strategic scaffold for a theory of knowledge based on a “hypothesis of a *non*-calculable future”, in the sense that under certain circumstances there is no possibility whatsoever of gathering enough information to justify the use of known, numerically measurable probabilities. Uncertainty is identified not with probabilistic knowledge but rather with

the *absence* of probabilistic knowledge: “uncertainty is associated with a situation wherein numerically determinate probabilities are *not* to be had” (Lawson, 1988, p. 46 and 48).

But how does the existence of uncertainty affect decision-making processes? Both Keynes’s liquidity theory of the rate of interest and employment theory based on the principle of effective demand, with emphasis on the determinants of investment decisions, are the areas in which strong contrasts with the conventional theory can be found. Uncertainty surrounds strategic economic decisions such as money holdings and investment, that is, capital (portfolio) decisions *latu sensu*. There are no sufficient future markets or future prices waiting to be known. It is in the nature of a monetary economy that time elapses between the taking of a decision and the unknown outcomes of the decision (Davidson, 1994). Decisions to invest are the most affected by the future, for in this case the time span between decisions and results is longer and the attempts at escaping from illiquid positions are costly and demand more time.

In sum, Keynes views probabilities as beliefs attached to

propositions about events rather than to events themselves. Uncertainty is a property of knowledge, expressing degrees of belief, not a property of external material reality (Lawson, 1988). That is, Keynes does not conceive uncertainty in its *ontologic* aspect; he stresses instead its *epistemic* form (McCann, 1994, p. 52).

9.2 Hayek: incurable ignorance

Hayek’s later multidisciplinary writings (post 1960), the period covered by what Fleetwood (1996) calls “Hayek III”, are mainly concerned in providing explanations of both the nature of dispersed knowledge in a complex world and how agents seek to cope with this condition by resorting to social rules of conduct. Society forms institutions which assist in the discovery, communication and storage of knowledge. These institutions, in the form of social rules of conduct and the price system, make the existence of (spontaneous) order in a capitalist economy a real possibility.

For Hayek, in economics, as in other social sciences, and unlike the physical sciences, the observer deals with “essentially complex phenomena” or “structures of *essential* complexity”.

A vast amount of events takes place at the same time and many events have direct and remote connections with other events:

the aspects of the events to be accounted for about which we can get quantitative data are necessarily limited and may not include the important ones. ... [I]n the study of such complex phenomena such as the market, which depend on the actions of many individuals, all the circumstances which will determine the outcome of a process ... will hardly ever be fully known or measurable (Hayek, 1974, p. 24).

This notion of complexity implies interdependence of actions. Individual decisions must take into account other people's plans, for complexity "depends not only on the properties of the individual elements of which they are composed, and the relative frequency with which they occur, but also on the manner in which the individual elements are connected with each other" (Hayek, 1974, p. 26-27).

If there is an endless number of individuals performing many tasks in their numerous activities, then there is ignorance of many relevant facts. This "incurable ignorance" of the particular facts which are or will become known

to somebody affects the whole structure of social activities. This structure

constantly adapts itself, and functions through adapting itself, to millions of facts which in their entirety are not known to anybody (Hayek, 1973, p. 13).

Human mind is limited in its capacity to acquire and process large amounts of information. People are not able to collect the aggregate of all events, relations and forces at work which composes a given complex order. That is why knowledge about the world is fragmented among all the participants in an economic system. Dispersion of knowledge stems from

the fact that each member of society can have only a small fraction of the knowledge possessed by all, and that each is therefore ignorant of most of the facts on which the working of society rests. Yet it is the utilization of much more knowledge than anyone can possess, and therefore the fact that each moves within a coherent structure most of whose determinants are unknown to him, that constitutes the distinctive feature of all advanced civilizations (Hayek, 1973, p. 14).

The "coherent structure most of whose determinants are unknown" is

the set of social rules of conduct which enables human actions but is irreducible to them.

The idea of dispersion of knowledge is consistent throughout Hayek's works. In his article "Economics and Knowledge" (1937), Hayek alleges that the main concern for economic analysis should be the

problem of the Division of Knowledge which is quite analogous to, and at least as important as, the problem of the division of labour (Hayek, 1937, p. 49).⁸

Although attention has mainly been focused on the latter, the former is "the really central problem of economics as a social science" (Hayek, 1937, p. 49). Social sciences need to interpret how the spontaneous interaction of a vast number of people, each possessing fragments of knowledge, produces a situation in which prices fit costs and which could be originated by "deliberate direction" only by a mind who controlled the knowledge dispersed among all the persons involved:

the knowledge of the circumstances of which we must make use never exists in concentrated or integrated form, but solely as the dispersed bits of incomplete and frequently contradictory knowledge

which all the separate individuals possess. The economic problem of society is thus not merely a problem of how to allocate "given" resources. ... It is rather a problem of how to secure the best use of resources known to any of the members of society, for ends whose relative importance only these individuals know. Or, to put it briefly, it is a problem of the utilization of knowledge not given to anyone in its totality. ... The various ways in which the knowledge on which people base their plans is communicated to them is the crucial problem for any theory explaining the economic process. And the problem of what is the best way of utilizing knowledge initially dispersed among all the people is at least one of the main problems of economic policy – or of designing an efficient economic system (Hayek, 1945, p. 519-520).

Thus, a distinctive characteristic of social life is this "unorganized knowledge": individuals are not in a position to acquire "the knowledge of the particular circumstances of time and place" (Hayek, 1945, p. 521). However, at the same time, some people seek to make good use of the "special knowledge of circumstances of the fleeting moment not known to others" (Hayek, 1945, p. 522). This may enable them to obtain valuable information in

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⁸ "Through [the price system] not only a division of labor but also a coordinated utilization of resources based on an equally divided knowledge has become possible" (Hayek, 1945, p. 528).

that particular context and, in conjunction with their specific skills, to benefit from this in a way which otherwise would not be available to them. This knowledge consists of an ability to discover particular circumstances, which becomes effective only if holders of this knowledge are signalled in the market which sorts of goods and services are required (and how urgently).

If the consequences of the emergence of new information are important, then, for Hayek, the best use of knowledge is made at a “microeconomic” level. For if the problem is mainly how to adapt to changes in the “particular circumstances of time and place”, Hayek believes that decisions should be left to the individuals directly involved with these circumstances, who are supposed to know promptly the relevant changes and the resources available to perform the ensuing right decisions:

The whole acts as one market, not because any of its members survey the whole field, but because their limited individual fields of vision sufficiently overlap so that through many intermediaries the relevant information is communicated to all. The mere fact

that there is one price for any commodity ... brings about the solution which (it is just conceptually possible) might have been arrived at by one single mind possessing all the information which is in fact dispersed among all the people involved in the process (Hayek, 1945, p. 526).⁹

Although complexity implies ignorance, agents have at their disposal practical means of acquiring useful information. One is the price system, a mechanism for discovering, communicating and storing information. The importance of this system is the economy of knowledge which it provides, or how little people partaking in it need to know in order to take their decisions. Thus, a suitable metaphor for the price system is that it is a “system of telecommunications”.

Notwithstanding, there is an important source of information other than the price system. Knowledge is obtained not only via the “telecom system” in isolation, “but by the telecom system articulating with, and embedded within, a dense web of social rules of conduct” (Fleetwood, 1994, p. 6).

Social rules of conduct which have evolved through time are an important structure for knowledge

⁹ Underlying this reasoning there surely is an ideological case for the non-intervention of the State in the economic domain which one does not necessarily need to embrace. Description and explanation of mechanisms, processes, phenomena *etc.* are not always connected with a particular prescription by some kind of necessity.

dissemination. While knowledge dispersed in the price system has a dynamic character, in the sense that it induces agents to revise constantly their plans, knowledge dispersed in a social network of rules of conduct is stabilising, in the sense that, by being used, it continuously maintains the stability of the social structure in which agents happen to be inserted (Fleetwood, 1996, p. 175).

In an account in many respects similar to that of Keynes, Hayek stresses that our ignorance stemming from complexity imposes severe limitations not only on the use of knowledge by the observed agents, but also on the knowledge the observing analyst may acquire. The study of the complex nature of the world brings a different perspective for the analysis:

It seems indeed not improbable that, as the advance of the sciences penetrates further and further into more complex phenomena, theories which merely provide explanations of the principle, or which merely describe a range of phenomena which certain types of structures are able to produce, may become more the rule than the exception. ... And the more we move into the realm of the very complex, the more our knowledge is likely to be of the principle

only, of the significant outline rather than of the detail. Especially where we have to deal with the extreme complexity of human affairs, the hope of ever achieving specific predictions of particulars seems vain. It would appear to be an evident impossibility for a human brain to specify in detail that 'way of acting, feeling, and thinking channelled by a society out of an infinite number of potential ways of thinking', which ... is the essence of culture

(Hayek, 1967, p. 20).

Human affairs can be so extremely complex that they place immense obstacles to those engaged in making predictions. In the face of complexity, one should aim to delineate at best “explanations of the principle”, “significant outline rather than detail”, “pattern recognition” (Hayek). Or, as Keynes says, “first, dubious approximations” (Keynes, 1926, p. 262). Such concerns led Hayek to say that “[i]t is high time, however, that we take our ignorance more seriously” (Hayek, 1967, p. 39).

For Hayek, it is impossible for a single agent or a group of agents to know all the particular facts that condition a given socio-economic order. Social rules of conduct (a form of knowledge) are the natural,

evolutionary result of human action in a world of ignorance. They function as a method for dealing with our “incurable ignorance”. Knowledge and ignorance play important roles in Hayek’s theory. The “problem of knowledge” as the problem of limited, fallible knowledge is central to his theory (as it is for Keynes’s). He focuses on the fact that people’s “irremediable ignorance” may bring about insurmountable obstacles:

It is the extent of our ignorance which makes it necessary that in the use of knowledge we should be limited and should refrain from many actions whose unpredictable consequences might place us outside the order within which alone the world is tolerably safe for us. It is only thanks to such restraints that our limited knowledge of positive facts serves us as a reliable guide in the sea of ignorance in which we move
(Hayek, 1968, p. 87-88).

Nevertheless, for Hayek there is a form of knowledge with a positive role. The idea of “tacit knowledge” comes to the fore (borrowed from the accounts of Ryle and Polanyi, as seen before). This type of knowledge (how) is practical and specific; essentially, it is knowledge of social rules of conduct:

So long as the individuals act in accordance with rules it is not necessary that they be consciously aware of the rules. It is enough that they know how to act in accordance with the rules without knowing that the rules are such and such in articulated terms (Hayek, 1973, p. 99).

[T]here is a difference between following rules of conduct, on the one hand, and knowledge about something, on the other (a difference ... between “knowing how” and “knowing that”). ... The habit of following rules of conduct ... ought to be seen for what it is, the skill to fit oneself into, or align oneself with, a pattern of whose very existence one may barely be aware and of whose ramifications one has scarcely any knowledge. Most people can, after all, recognise and adapt themselves to several different patterns of conduct without being able to explain or describe them (Hayek, 1988, p. 78).

Much of knowledge and skills drawn upon in people’s activities are known only tacitly. If a conscious reflection upon each act is not feasible, then much of the knowledge upon which we draw must exist at the level of tacit (practical) consciousness; it constitutes tacitly sustained or tacit (practical) knowledge: “There is a difference and a potential gap between what is said and what is done” (Lawson, 1997, p. 178).

10_ Conventions and rules as social knowledge

From what has been said above, it is evident that knowledge has to be related to its use. In this case, one has to leave epistemology, the study of knowledge, and enter into ethics, the study of human conduct.

Economic knowledge consists in the amount of information to which agents can resort in order to inform their decisions in the economic sphere. Also here, certainty of knowledge is hard to achieve. Knowledge, being subject to change, is provisional and fallible. Since we cannot claim for a definite truth concerning our knowledge we are led to behave to a great extent according to what is realisable, or reasonable, in the circumstances – we do the very best we can, the possible.¹⁰

We have to act, despite the fact that we acknowledge that the satisfactory achievement of our aims lies beyond our grasp. People try to cope with this condition by resorting to social practices like conventions (Keynes) and rules (Hayek). To fall back on conventions and rules may increase the predictability of people's actions. This pacifies their anxiety

concerning their irremediable lack of knowledge (or a high degree of uncertainty) in many circumstances and may render the results of actions more profitable. Conventions and rules can promote coherence and play a stabilising role in an unstable and unordered reality.

The resort to conventions and rules is a practical response for the possibility of misjudgement. As such, these socio-economic structures are like a vehicle for knowledge adjustment. The fact that agents fall back on conventions and rules when they make decisions allows for the possibility of error correction. Following or departing from a convention or a rule may engender penalty or reward. This is the form behaviour is adjusted and is an important source of assessment of the validity of agents' previous expectations and subsequent actions. Thus, conventions and rules act as an objective standard of reference which enables individuals to correct and re-direct their previous judgements in the light of realised results (or rather to keep the same course of action if it reveals to be successful over time).

To fall back upon conventions and rules is also indeed a form of

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¹⁰ But the very best may not accord to a narrow maximising rule of behaviour.

rational behaviour (different, of course, from the idealisation of behaviour advocated by the utilitarian view of the rational choice theory).

Notwithstanding the fact that knowledge about the future states of affairs is usually regarded as non-acquirable, rational behaviour is still propitiated by the general and extensive knowledge of “current ways of doing things” that the individual can get by being a member of society, and by actively participating in it (Lawson, 1985, p. 920). Conventions and rules embody these “current ways of doing things” which economic agents cannot be precluded from observing whenever they need to make decisions (for a more detailed discussion on this subject, see Andrade, 1998).

11_ Conclusion

This paper discussed the nature and role of knowledge in a socio-economic life marked by uncertainty. The starting point was to regard that uncertain environments render knowledge fallible and contingent.

The analytical prominence imputed to uncertainty implies that agents face enormous obstacles and

limitations in their capabilities of apprehending or knowing the endless number of current (and future) events taking place in the real world. As such, they cannot fully perceive or identify many facts of actual experience.

Besides, the environment itself, the structures shaping and being shaped by human action, is so characteristically complex and uncertain that it poses the problem of the feasibility of their full accountability by an individual mind or even a group of well-informed individuals.

Agents are always going to have imperfect, limited knowledge, subject to some sort of revision in the light of experience. As a practical solution to coping with this condition, they resort to some kind of social practice as conventions and rules. To a certain degree, conventions and rules allow for and assist the formation of beliefs in the relative certainty and simplicity of the environment in order to try to overcome the uncertainties and complexities actually underlying reality. A more comprehensive analysis of the nature and uses of knowledge should be grounded upon the hypothesis of fallible and contingent knowledge.

The present account of knowledge does not put a strong emphasis on an exclusive source for the acquisition of knowledge (by either reason or experience) but rather sees thought *and* sense data as combined sources for this aim. It is not therefore a foundationalist account of knowledge.

Knowledge is fallible for reasons associated both with interactions in space taking place at the same time (complexity), and with the passage of time. Both combine to create distinct levels of uncertainty.

The paper also stressed, for analytical purposes, two types of knowledge, namely, “knowledge how” and “knowledge that”. The former is the knowledge of the way we perform something and the second is the knowledge of why it is that we perform something. The latter is normally a special preserve of the analyst or observer achieved by interpreting the use of “knowledge how” by his/her object of study.

If knowledge is imperfect, and if people face practical difficulties in fully grasping all the information which is relevant, then an “objective reality” beyond our subjective experience and thoughts exists. However, this reality is

also subject, although partially, to being increasingly understood and theorised.

One way that people find to cope with the condition of fallible and contingent knowledge is to resort, as a practical solution, to conventions and rules (a subject matter that Keynes and Hayek analysed at length). Conventions and rules are the repository of a social, intersubjective form of knowledge, which agents may acquire, store and communicate with each other. They partly provide the necessary information for the undertaking of their daily activities under conditions of uncertainty and ignorance.

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