



The mountain of experience: how people learn in a complex, evolving environment

The mountain
of experience

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Abstract *Understanding how individuals learn is of great importance to economists to understand economic phenomena as well as their own position in society. The idea that holds that people hold those views that best suit their own interest is untenable. Bayesian views on learning also miss an important point – including the Denzau and North version of Bayesian learning they call a punctuated equilibria view. The important point is that information needs to be interpreted, given meaning. What meaning people give to the information they receive depends on their experience in the past. Past experience take the form of interrelated rules of conduct. In this paper the whole of these interrelated rules is called “the mountain of experience”. This perspective allows a perception on humans in economics that combines reason, adaptation and volition. Some implications of this perspective for economics are explored.*

Economic science has a hard time dealing with its complex and continuously changing subject matter. The way economists try to come to grips with their subject is similar to the way people in the economy try to come to grips with the problems in their complex environment. I address the evident fact from our own experience of differences in the way in which people learn. Most economists are involved in the what is usually called the neo-classical school, but some are differently inclined. In important ways, this evident fact of differences in perception of the economy is characteristic of differences between the way in which people learn in general.

How can we explain why two economists who are the best of two different approaches in economic theory, studying the same economic process, do so in different ways, ending up with different conclusions and/or policy recommendations? It surely can not be because they differ in the extent to which they have gathered information, or because one lacks in sophistication of the argument.

A case in point may be the role that the government is supposed to play in a transition economy. Two economists may agree on a large number of things (“facts” like how big the budget deficit actually is, what instruments for government policy are feasible, and perhaps even what the effects of these instruments are), but nevertheless disagree in their analysis. Let us also suppose there is agreement among them about the state of affairs in the economy – in Eastern Europe one of the problems was that the government had control of almost all the production capacity. The different instruments the



government has to address the problems may also be agreed upon – the government can, for example, privatise all at once while balancing its budget and devaluing its currency, or it can introduce a coupon system where all citizens receive the right to a share, it can also decide to slowly sell off government firms to the highest bidder while taking care that proper institutions are installed, etc. Let us further suppose that they agree about future exogenous developments relevant in any analysis (the exchange rate with the dollar, trade policies, Western aid to Eastern Europe, etc.). What the government can and must do varies according to the analysis of the problems.

Analyses of problems are based on the underlying theories that economists have. Theories have to be learned, either from others or for oneself. It is this process of learning that I am particularly interested in here, not so much the actual things learned. Whatever perspective taken in economics, a perception on the concepts of knowledge and learning is always, implicitly or explicitly, underlying it (Dolfsma, 2001; Hodgson, 1999, 2000). The proposal in this paper is along the lines developed by some of the classics in economics (see Hodgson, 1999, 2000), and in line with views in other social sciences such as psychology and sociology.

In search of an “orthodox” explanation

How can we explain differences in the way economists perceive the economy? How can we explain differences in the paths of learning? Neo-classical economists argue that the first place to look for an explanation must be neo-classical economic theory. Neo-classical economic theory has embraced Bayes’ conception of learning. Information is objective, the processing of information is similar among people, and thus the direction in which learning heads is the same. People or groups of people are on the same path (e.g. path A in Figure 1)[1]. Differences are explained by invoking incomplete information, or

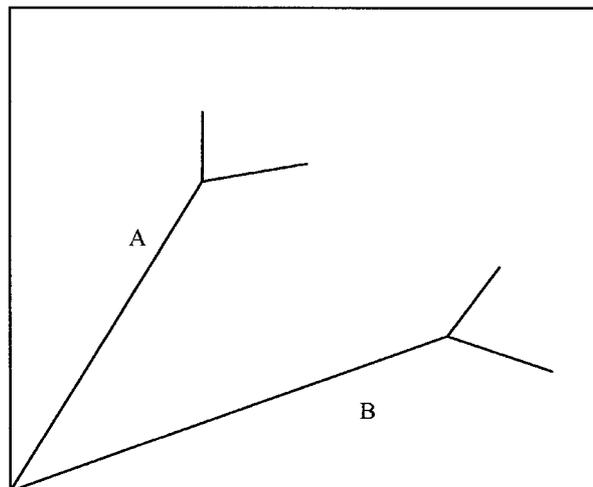


Figure 1.
Different learning paths

“noise”. Noise causes the right path of learning to be covered in mist, which may make people deviate in their directions of learning. Thus, in the Bayesian account of learning, after a point, path A may fork into a number of different paths. As soon as the noise vanishes the one and only right path will be opted for by all players. That people in their right mind, however, being open to the arguments or criticisms of others, can argue about the role of the government with recourse to the same “facts” is inexplicable: persisting differences between two obviously different paths of learning (A and B for instance) baffle a Bayesian. In addition, how it is possible that there is a role to play for economists in advising governments on how best to react to specific economic developments is difficult to grasp in a Bayesian view on learning. Does not every rational player have all the relevant information available, and are not all players alike? Why then, if everybody knows all the relevant facts, should economists give advice? The conclusion must be that economists do not have an explanation for their own role in society or they do not really believe the Bayesian view on how humans learn is realistic.

One way to meet the challenge of this anomaly in standard economic theory is by bringing in (some sort of) public choice theory[2]. Like politicians and anybody else, economists are economic men trying to sell their “products” as well as they can. The only way then to explain the existence of a “marginal” market like the market for the products of evolutionary or institutional economists is to argue that this is a niche market that only attracts economists who cannot survive in the large/mass markets with their stiff competition. Institutional economists, in this view, differentiate their products and create a separate market where they can still make a “profit”, albeit that the profit is smaller than in the “neo-classic’s market”. This position is entailed by the public choice argument, but it is a position that can not be maintained in all its cynicism. Intelligent and sincere men and women do choose to deviate from the mainstream. Not because they must be satisfied with second-best options, but because they believe such standpoints to be better or more promising, theoretically and/or empirically. (Many are, by the way, also negatively rewarded for taking such a position.)

Denzau and North on mental models

Recently, Denzau and North (1994) expressed their dissatisfaction with what they call the rational choice framework. They disagree with its assumption that “individuals know what is in their self interest and make choices accordingly” (Denzau and North, 1994, p. 3). In their view these assumptions are not realistic. Only if the real world were simple can individuals have a comprehensive idea of what they ought to do in order to best serve their own interest (Denzau and North, 1994, p. 10). But the real world predominantly is not a simple world, it is a world fraught with uncertainties. Individuals in these circumstances have to guess what will be the best thing to do (Denzau and North, 1994, p. 11), wherefore they need “some sort of mental model with which to understand the implications of a chosen action, as well as needing some way to identify

potentially useful actions and the possible outcomes of those actions” (Denzau and North, 1994). Here ideologies, dogmas, “half-baked” theories and myths play a role in interpreting the environment and simplifying the choice-set of individuals (Denzau and North, 1994, pp. 3-4):

Under conditions of uncertainty, individuals’ interpretation of their environment will reflect their learning. Individuals with common backgrounds and experiences will share reasonably convergent mental models, ideologies, and institutions; and individuals with different learning experiences (both cultural and environmental) will have different theories (models, ideologies) to interpret their environment. Moreover, the information feedback from their choices is not sufficient to lead to convergence of competing interpretations of reality (Denzau and North, 1994, pp. 3-4).

Thus, Denzau and North make the credible claim that individuals face a world that is so complex that they can not possibly have all the knowledge to make choices that result in the outcomes that are in their best interest. The key is learning; people learn how to interpret their environment and what to do and act accordingly. Denzau and North say that learning takes time and is strongly dependent on the social or cultural circumstances the individual happens to be in (see above quotation). Social and cultural influences on an individual’s learning are “channelled” through institutions (Denzau and North, 1994, p. 12) to the effect that “no two individuals have exactly the same experiences” (Denzau and North, 1994, p. 14). Since learning is crucial to the argument of Denzau and North, how do they propose learning to take place? People learn by induction, which requires that some mental model already exists (Denzau and North, 1994, p. 11). Learning is irreversible according to Denzau and North (1994, p. 8). Learning takes place at “two conceptually distinct levels” (Denzau and North, 1994, p. 13): first, the developing of a structure consisting of concepts and categories, all of which are used for interpretation. And, second, learning about “details and the changed applicability of the existing knowledge” (Denzau and North, 1994)[3]. Supposedly, because individuals live in an uncertain world where feedback processes will never be sufficient to bring complete convergence to the true model of reality. At times people feel that their model is inadequate. Within a brief period categories and concepts are then reorganised and new concepts have to be acquired – one’s mental model changes. Denzau and North call this dynamics “punctuated equilibrium”. Hereafter the slow process of learning of the second sort sets in again.

So, while Bayesian learning theory does not allow the equilibrium model to be altered in the process of learning, Denzau and North argue that uncertainty in the environment may at times lead to such a discontinuity. What they thus in fact argue for is a modified Bayesian learning theory, much in the line of what Fuhrer (1987) suggests. If only people had enough time and their rationality would not be bounded and they would always, all of them, have the right mental model. Information does not need interpretation, in this view, it is straightforward what signals mean[4]. Learning would be the same with everybody if only feedback processes would be sufficient. Since information is

assumed unambiguous it also is thought of as the criterion for deciding whether or not a mental model needs changing.

If this is true, how then to explain the situation in which different economists, who are equally bright, have the same abundance of information on a particular topic and have been able to analyse the topic extensively, can still take a different perspective? How is it that as feedback is sufficient and information similar, economists can still have widely divergent mental models?[5] Denzau and North might explain this by arguing that information is not, and perhaps can never be, perfect and people will have to fill the gaps. People fill the gaps on the basis of the mental models they have and the expectations these engender. Different mental models engender different expectations, which will then give rise to different analyses. But remember that feedback based on available information was assumed to be perfect in this hypothetical situation, having supposedly led to a convergence in the mental models these economists have. The Denzau and North modification to Bayesian learning theory is insufficient to function as a means of understanding human behaviour because it retains its most important misconception: that information is unambiguous, that interpretation plays no role, or, to rephrase it in still another way, that meaning is straightforward.

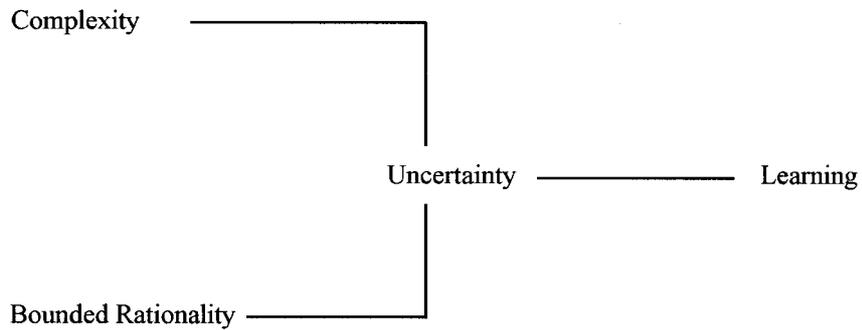
The mountain of experience and learning

How then to explain the choice (conscious or not) of the individual economist on his theoretical program? What should be done to include the economist himself into the economic picture of the world? Learning is the key to understanding our own behaviour as economists and (thereby) the economy as well. Learning of habits and rules is ubiquitous, as Hodgson (1997) has argued persuasively.

Learning has two aspects: the “why” and the “how”; functional explanations are not enough (cf. Ullman-Margalit, 1978). The “why” is relatively easy to address. However, dealing with the “how” does not explain the sometimes vast differences in the views that people have on similar topics. To explain such differences an answer to the “how” is needed. On the latter issue there is, however, less of a consensus than on the former issue. I hope to show that my answer to the “how” issue is convincing and fruitful. In my opinion it can explain many phenomena left unexplained thus far. But first the “why”.

People learn because they are confronted with uncertainty in their environment, uncertainty they are going to have to deal with[6]. There is uncertainty because people’s competencies are insufficient to meet the complexity of the environment. Heiner (1983) calls this the competence-difficulty, or C-D gap[7]. The general idea of the “why” of individual learning is depicted in Figure 2. Real time is generally neglected in the static world of orthodox economic theory (Clark and Juma, 1990). Real or historical time introduces change, which may have repercussions for the C-D gap. Relative to a person’s existing knowledge, the environment’s complexity can change, for instance. A person can reduce the C-D gap by adopting suitable rules of conduct – we call this “learning”.

Figure 2.
Why people learn



Ullman-Margalit (1978) argues that, to arrive at a realistic and satisfactory account, functionalist explanations are insufficient. I suggest that a more complete picture of learning requires the view that the individual's rules of conduct are interrelated. Without meaning to invoke the connotations that Schumpeter (1949, p. 40) has given to the term, I would like to use his words and coin the term "mountain of experience" for the individual's system of interrelated rules of conduct[8]. I would like to use this phrase to indicate that an individual's rules of conduct are interrelated to form a whole that is coherent in some way, and that there are different orders or levels in the rules of conduct an individual has. Rules higher in the mountain deal with situations of a more abstract or general nature. Among these rules are the search rules that Simon proposes (see, e.g. Simon, 1955; Vromen, 1995). To clarify what I mean here, let us return to the example of the economists analysing the situation in Eastern Europe.

A number of policy recommendations to privatise publicly held production units can be given. A monetarist will recommend against taking slow and thoughtful steps while privatising, but will argue that the government should privatise all at once to ensure efficiency, that the government should balance its budget and devalue the currency against the major export partners. How to explain the behaviour of this economist? The easiest thing to do if you do not agree with these measures is to call him a fool. There is, however, little point in calling each other names; it is better to understand each other's behaviour. A monetarist considers slow and thoughtful steps to reform the Polish economy a waste of time and money, since the Polish people are "economic men" who have all the information they need and will thus react aptly and adequately to any change in government policy: theory and recommendations cohere.

An economist's theory, his knowledge and interpretation of the state of affairs and likely future developments, his assessment of the problems faced in an economy, and the ways to address these problems should all cohere. All of these are rules of conduct the economist uses in his professional capacity. In the terms reminiscent of those sometimes used by Simon (1955), his theory is the higher order rules of conduct, while his assessment of the situation, and possible recommendations for policy is, lower order rules of conduct. One

cannot be a monetarist where economic theory is concerned and nevertheless sincerely advise the Polish government to privatise slowly while in the meantime support those publicly held firms that are on the brink of bankruptcy[9].

That rules are interrelated is the reason why an individual may not choose to behave in a way that would be better in many ways, but that does not fit with other rules of conduct in his mountain, even in situations that pose no uncertainty at all. Here we have an explanation for what some, notably neo-classical economists, would call “irrational behaviour”: willingly choosing to act in a way that will not result in the best outcome possible. The metaphor of the mountain of experience makes it possible to understand and, in some cases, predict such behaviour[10].

Learning

Other people’s mountains of experience cannot be taken over without effort; people have to form their own mountain of experience[11]. A mountain of experience consists of rules of conduct that must both separately and in combination be found to work. The consequences of their application must be satisfactory to the individual.

The idea of a mountain of experience explains why people cling to beliefs they have, sometimes in the face of evidence to the contrary. Because rules are interrelated, doing away with one rule will most likely have consequences for other rules. If the rules to be ridded are an essential part of the mountain, the whole mountain may need to be deconstructed. Empirical studies show that this may take a long time and lots of effort (Baldwin, 1992). Personal accounts of economists making a “gestalt switch attest to this as well”[12]. An individual has to believe that it is worthwhile to change his rules of conduct. If he thinks there will not be other rules that are more satisfactory, he will not change them.

This explanation for the existence of a mountain of experience is still in line with a neo-classical argumentation: individuals make a cost-benefit analysis on the basis of “objective” information. But there is more. A person’s mountain “determines” how he perceives and interprets a “fact”. The Polish government’s budget deficit can, for instance, both be considered a good and a bad thing, depending on the particular economist’s mountain of experience. The deficit is bad in the eyes of a monetarist, since it will fuel inflation and thereby deteriorate the balance of payments (and the economic situation in general). Another economist may judge that the deficit is a good thing, since the money is used to carefully restructure the economy, whose former institutions are maladapted to the demands a capitalist economy makes. “Facts” have to be perceived as necessitating changes in the mountain of experience, and perception is – as I have just argued – shaped by the very same mountain of experience.

An observer, who will have his own mountain that “determines” her perception, may interpret resulting unflinching behaviour in the face of “overwhelming evidence” as “stubbornness”. The result of such “stubbornness”

is that different learning paths emerge. Individual path dependency in learning can thus explain why there are such big differences in the way in which economists view the proper role of the government in Eastern European countries in their effort to reform their country's economy.

The economic agent, the economist and the entrepreneur

I draw a comparison between the economic agent in economic theory and the economist himself, arguing that the behaviour of both can be seen in similar terms. Both search for and adopt rules of conduct that will work in the environment they find themselves in, both integrate the rules of conduct in such a way that a coherent whole is formed. An individual's perception, interpretation and evaluation can be understood in the light of her "mountain of experience".

Scholars working in the field of the theory of the firm take a similar perspective (Nootboom, 1993, 1995; Groenewegen, 1995). The perception, interpretation and evaluation (Nootboom (1996) coined the term PIE) of entrepreneurs is necessarily limited and biased. Nootboom and Groenewegen argue that this has important implications for the organisation and performance of firms. Inter-firm relations, it is argued, have to be studied in the light of the biased and limited PIE of entrepreneurs. Entrepreneurs who are aware of the limits of and biases in their perception may choose to organise their firm in such a way that this is accounted for. The argument in this paper is in line with the point made in these contributions to the theory of the firm.

The perception, interpretation and evaluation of individuals is shaped by their previous learning experiences. In order to understand present and future behaviour then, these previous experiences need to be known. In that way, the economic agent, the economist and the entrepreneur can understand the limits and the bias in PIE. Thus, the more concrete account of individual learning presented in this paper may have implications not only for the perception of the economist's own role in society and in the economy, but also for the theory of the firm.

Concluding remarks

The idea of the "mountain of experience" seems to be a powerful aid in understanding behaviour of economic agents and economists alike. It allows an approach to economics theory about humans that combines reason, adaptation and volition. Of course it is a first step and needs to be developed further. By combining the inseparably related "why" and the "how" questions concerning individual learning some avenues for new insights are created. Whenever people are confronted with a problem, they will look for a way to solve that particular kind of circumstances. They will form a rule of conduct. In this paper I argue that an individual's rules of conduct are interrelated to form a "mountain of experience". In the higher levels, rules that deal with more general kinds of situations appear. Simon's search rules are an example of this. Rules in the lower levels are more concerned with concrete, everyday life matters.

Notes

1. Figure 1 is of course an oversimplification. It suggests that learning has only two dimensions. In reality, learning may have more dimensions, even within the field of one science.
2. Perhaps more appropriately renamed “economist’s-choice-of-theories” theory.
3. Simon (1955) makes a similar distinction between first and second order learning.
4. Ambiguity of meaning in reality is the norm. Jokes, which are an important part, I would suggest, of the talking in economic relations that goes on in society (see McCloskey and Klamer, 1995), rely solely, or largely at least, on ambiguous meanings. I owe this point to McCloskey.
5. The assumptions do not seem to be farfetched. Even on events in the distant past, where “facts” are undisputed, known by everybody, and as complete as economists can ever get them, analyses do not converge at all.
6. Ignoring an uncertain situation is also way of dealing with it, the “ostrich” way.
7. Due to lack of space a more elaborated discussion on these concepts is not included here (see Dolfma, 1995). Note that neo-classical economic theory, contrary to institutional economic theory, has to assume that a person is, in principle, able to “close” any C-D gap he faces. In the terms Grunberg (1978) uses, neo-classical economics has to assume that the economy is a closed system (i.e. the number of variables and the relations between them is finite and can be known).
8. A rule of conduct is a person’s solution to the problem posed by a specific kind of situation that he has found to work. A person’s collection of rules thus can be called his “experience”. What works for a person not only depends on whether or not he was externally rewarded, but also on vicarious and self-rewards (Bandura, 1977). Institutions should be distinguished from rules of conduct. The former refers to the social, whereas the latter refer to the individual level. At the social level it is difficult to talk about preferences in the same way as for individuals (Elster, 1986). Strategic behaviour among people who are not equally powerful determines the goals social entities have (Hannan and Freeman, 1989). The Humean distinction between customs and habits, therefore, seems necessary from an analytical point of view.
9. It might be objected that coherence theories of learning could not account for innovation. This position seems to imply that one can take an Aristotelian point of view to assess if a solution to a specific problem is a genuine novelty. Learning here pertains to individuals. A person can learn to cope with a situation that is problematic to him in a way that may turn out to be innovative when evaluated “objectively”.
10. I do not propose a redefinition of “rationality”, but suggest a different way of understanding individuals’ behaviour.
11. I assume that persons have at any time in their life a mountain of experience – nobody is a *tabula rasa* when born. This may, for example, be because some rules of conduct are genetically formed (Bandura, 1986) or because actual learning starts before childbirth (Nossent, 1995).
12. See Klamer (1983), especially the interview with Rapping and his interpretation of that interview.

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