

## What is Lifelong Learning About? – Reflections on the TRAILER Project

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**Abstract.** Lifelong learning is specially linked with the idea of gathering learning instances in order to take them into account. Along life learning can carry out in the context of an institution or outside of it. TRAILER project defines a methodology and technological framework to facilitate the dialogue based on informal learning evidences between the learners and the people in charge of making decisions in institutions. However during the definition and especially during the application of the methodology some problems arose. This paper describes a approach to solve them drawing on metagames.

**Keywords:** informal learning, meritocracy, meta-games, tagging, competencies

### 1. Introduction

Learning and living are inseparable processes, but what is generally referred to as the “lifelong learning” agenda is about more than stating the obvious. It reflects, amongst other things, a position of political economy which broadly affirms ‘meritocracy’. Meritocratic advancement has usually been connected with the outward signs of achievement and skill through formal processes of accreditation, usually (but not exclusively) by Universities and Professional Bodies. Michael Young, who coined the term ‘meritocracy’ in his satire “The Rise of the Meritocracy” [1] railed against the fact that the idea had apparently been taken seriously by politicians:

“It is good sense to appoint individual people to jobs on their merit. It is the opposite when those who are judged to have merit of a particular kind harden into a new social class without room in it for others.” [2]

Young warns against meritocracy because he worries about the hegemony of educational institutions. Whilst few can argue with the idea of ‘lifelong learning’, finding effective ways of recognising merit acquired informally which circumvents the power of formal institutional accreditation has proved elusive. In pursuance of this, the TRAILER project [3] has been funded through the ‘Lifelong Learning’ programme of the European Commission. What does TRAILER tell us about the lifelong learning agenda and its place in the drive for meritocracy?

This paper addresses this question by focusing on the nature of information in the context of TRAILER. It draws attention the relationship between information, competency and learning, and how that relationship may be analysed in different ways. Drawing on analysis of TRAILER data, misconceptions of ‘competency’ and

the information required to justify it have, to some extent, been revealed by the project. By focusing on an analytic approach drawing on ‘metagames’ behind decisions made by learners to reveal data about themselves, an alternative approach to identifying individual merit and skill is suggested.

## **2. The Information challenge of TRAILER**

Certification by the educational institution still has the fiduciary qualities of the kind of ‘exclusive club’ that Young worries about. With its license to print degrees (which nobody else has) the University is the filter of choice for most employers, leaving little room for self-certified routes, or personal learning. The requirements for jobs increasingly state “must have a degree”, and whilst this is the case, there is little an individual without a degree can do. With online communications and ‘informal’ learning opportunities are there ways of overcoming this? Are there ways in which informal personal development may be recorded by learners which does carry the trust of employers? Is the electronic information environment a challenge to institutional hegemony?

To address these questions, the nature of the information that is revealed through certificates, and through non-institutional statements about learning needs to be examined. Yet information is a contested concept. Different aspects of information have established characterizations, and yet none of those definitions are consistent with one another. Bateson’s definition “a difference that makes a difference” is perhaps the most famous definition, although this is very different from Shannon’s influential work [4], or indeed from conceptions of information harboured by geneticists or physicists. As Deacon has recently argued: “We have no coherent theory of information” [5].

## **3. Information, Decision and Metagames**

It is difficult to ‘see’ information. We see websites, the creation of ‘online artefacts’ which results from decisions taken by individuals who put them there. The political sphere of action is illuminated by information, but constituted by decisions. Often, decisions have an impact on the nature of the information that is available. For decision theorists [6], a decision is a move in a game taken in the light of information available to them. However, this position is criticised for being overly rationalistic.

A way of addressing the overly-rationalistic approach to decision-making is to consider the ‘meta-game’ [7]. Metagames present a way of thinking about decisions by considering that there is a “game about a game”, and successive “games about games”. The challenge in decision-making within the context of metagames is deciding which strategy to play in the context of insight into how that strategy might unfold across the levels of metagames.

As learners learn they have to behave strategically. There may be strategies related to passing a qualification, or gaining the favour of a teacher, or gaining the favour of other students. In a metagame, all the possible repercussions of a particular act must

be considered. Here then, there is a need to think about what information is available about others, and the nature of that information.

#### 4. Formalising the metagame in TRAILER

In using the TRAILER system, users had to make decisions about choosing resources and labelling them with competencies. Such decisions can often result in dilemmas for people as they try to decide what they should say, fearing the consequences of each option, and (sometimes) either settling for the least damaging option, or not saying anything at all. A metagame of a dilemma situation like the “prisoner’s dilemma” [8] is a game about the game. The recursion down a level of thought can be notated in game theoretical terms as a next level of moves. The notation in Table 1 indicates the probability of success of P1’s strategy against the probability of P2’s strategy (so, if P1 plays a against P2’s b, the outcome is notated  $P_a, P_b$ ). The probability of a successful communication depends on anticipation of likely future communications of others. Table 1 shows a 1<sup>st</sup> level metagame of a simple 2-strategy game (like the prisoner’s dilemma), where player 1 considers all the strategic possibilities of whether to play a or b. Using Howard’s notation, these are represented as xly, which means “play x if P2 plays a, and play y if P2 plays b”.

**Table 1.** Normal form meta-game on a simple two-strategy game

	P1	ala	blb	alb	bla
P2					
A		$P_a, P_a$	$P_b, P_a$	$P_a, P_a$	$P_b, P_a$
B		$P_a, P_b$	$P_b, P_b$	$P_b, P_b$	$P_a, P_b$

What’s important here is that the probabilities do not change. For example, a meta-strategy which says “play a if P2 plays a, and b if P2 plays b” ultimately has no effect on the probability of the particular move a or b actually taking place. In short, it doesn’t matter how much we might think about a move, the chances of success are unaffected. What does happen is that thinking about meta-strategies helps us to make a better choice. However, another implication of this is that if all options are unaffected by the depth of recursion, there is no way of distinguishing one option from another, and no way of determining the ‘equilibrium point’ for decision-making.

In conventional game-theory, options are ‘ordinal’ which means that they carry a calculated value of cost/benefit. Without this, what is to determine a decision? This is fundamentally a question about the role of information, and it has been suggested [9] that information acts as a constraint on the construction of the meta-game tree, so that the metagame tree is never complete. As a result, those options that are more present in the metagame are preferred over those that are not. The implication of this is that it is not what we can think about that determines our decisions; it is what we cannot think about.

## 5. Information, Shared Absences and Concepts within TRAILER

Information, in the context of a metagame, is the context within which the game is played. It conceals some options and accentuates others. Information, seen in this way, is not immediately visible to the decision-maker, although they will be shaped by it. This idea of the “absence” of information has a cybernetic pedigree. First proposed by Bateson [10], “information as constraint” has been presented recently in a number of guises [5]. Deacon suggests that absences relating to information are ‘autocatalytic’: in other words, they contribute to the growth of structures. A contribution to the growth of structures for meaning-making has recently been suggested by Leydesdorff and Ivanova [11].

In TRAILER, users are asked to reveal information about themselves. The revealing of information is a strategic move, taken in the knowledge of the effect it may have on the decisions (reactions) of others. The question as to reveal much or little information about oneself depends on many factors. What ‘much’ or ‘little’ means in this context is an important question in information theory, but according to Shannon’s theory the ‘amount’ of information is proportional to the departure from expected norms of communication. To reveal an interest in football is (in most contexts) less informative than the revealing of sexual preferences!

In TRAILER, the two items of information that make up a submission are a “resource” demonstrating a competence, and a competency statement about that competence. Much can be gleaned from this data about the strategic thinking of the individual submitting it. Internet resources like videos can be mined for additional texts and ways in which they are described. Similarly, a competency statement may be mined for richer contextual information about it. Using data mining techniques, the ‘topics’ of these resources can be calculated. Consequently, with both a competency statement, and a resource, a two-dimensional dynamic involving the relationship between corpuses of descriptive text around both resources and competencies can be created. A document-term matrix is easily created for these two corpuses, and text-mining tools can produce deep comparisons between the document-term matrices of the two corpuses. In cases where individuals choose to submit little information about themselves, we would expect a close fit between the document-term matrices at a low level (i.e. immediately). In cases where individuals choose to reveal more information about themselves, the fit at the basic level will be less. Repeating the process of identifying topics and generating corpuses can indicate the fit at subsequent levels. The further down the levels of recursion in the analysis, the more generic the terms become and the more likely a fit is made. The level of recursive depth in producing a fit is an indication of the amount of information a learner has decided to reveal.

In TRAILER, users performed the submission of competencies with resources a number of times with different resources. With a sequence of competency statements, there is more analysis that may be performed. On the one hand, we might expect to see a reduction in the difference between a competency statements and the resources chosen. Typically in the use of the TRAILER system, a variety of competencies are selected and a variety of resources chosen. Taken as a totality for an individual person, emerging patterns can be analysed. The coincidence of resources creates a new region of “coherences of coherences” where the difference between the

coherence of the document-term matrices for one competence and the coherence between the matrices for another can be inspected by further recursing into the key topics which relate the two.

Most of the data submitted in TRAILER was shallow in the sense that there was little information exposed by users. But this fact raises the question as to why this was the case. How much does this reveal about the individuals? How much does it reveal about the context (including the system and the situation within which it is used)?

## **6. Relating the Depth of Match with the Metagame**

By measuring the depth at which a recursive data mining operation most closely matches the resource and the chosen competency, we can gain an assessment of the metagame strategizing that went into making the particular information submission. This is indicative of the information environment within which a decision was taken. For example, if a resource and competency are matched at a level 5 in recursive depth (where everything else is matched at level 0 or 1), we can assume a desire on the part of the individual to reveal more information about themselves. Why might they choose to do this?

The decision to reveal deeper information is to examine the meta-game tree in more depth. Here the consideration of the likely actions of others entails a consideration of the absences bearing on others (and the likely responses that they might have) which further entails a deeper inspection of the absences that are shared. The process of making an utterance with more information is therefore a process of determining an absence which is shared amongst the group. The determination of a new absence entails the production of new redundancies of communication, which in turn can transform the communicative situation. With a determined shared absence, a strategic move which causes fundamental change in the communication dynamics of those around the individual can be made.

## **7. What does this mean for businesses?**

The dynamics of business are complex. Individuals possess different talents, but within any organisation, the shared goals of the business, social cohesion and wellbeing amongst workers, freedom to self-expression, etc all remain key components of ‘learning organisations’ [12]. Managers may ask the kind of fundamental questions addressed by techniques like ‘Balanced Scorecard’ [13], but without a grasp of the social dynamics of the institution (part of what Senge calls ‘systems thinking’) and consultation with other employees at all levels to build ‘shared visions’ and ‘team learning’, few decisions arising from these questions, including target setting and the monitoring of metrics are likely to be effective.

The competency agenda in TRAILER aims to provide information about skills, and a rationalistic identification of ‘skills needs’ is envisaged to be generated by the use-cases for the TRAILER system. In reality, however, there is little to indicate that data

collected by TRAILER will give much information about individual skill beyond attaching a few labels to individuals. What it may do, however, is provide insight into the extent individuals are willing to reveal rich information about themselves, the extent to which individuals have integrated their skills into their personas, the extent to which individuals can be creative in conceiving themselves and their skills in rich contexts (and how flexible they might be), and the extent to which individuals have capacity for transformative agency in the organisation. To what extent is this useful for employers?

The information that businesses have access to in making decisions is a constraint on those decisions. Political behaviour in business can create situations where information is selected in order to justify decisions made on the basis of favour or prejudice. Data from TRAILER indicating the depth of engagement with skills, and confidence in revealing information can provide a way in which deep competencies relating to transformational potential of individuals, creativity and integrity can be more objectively discerned. Potentially this could produce a way of identifying those individuals whose skills profiles and communicative competence are demonstrably better than those who might otherwise have been selected on the basis of favour or prejudice. Since the latter management situation can lead to institutional failures, there is a strong argument for suggesting that deeper insight into the personal qualities of individuals revealed through rich analytics may be more significant than tick-box competency profiles.

## **8. Conclusion**

Lifelong learning and meritocracy are abstract ideas. The realities of business and personal life involve daily challenges for each person and dilemmas that must be addressed. “Merit” measured by abstract indicators is unlikely to be an effective way to run organisations, nor is it likely to encourage the kind of rich personal development that engenders personal and professional integrity. Instead, developing the techniques that individuals have at their disposal for dealing with dilemmas, overcoming fear, increasing confidence and pursuing strategically valuable personal and organisational goals is a more potent recipe for personal, social and professional success.

TRAILER has both exposed some of the problems of a metric-based, competency oriented approach, and revealed potential for new developments which can exploit the power of ‘big data’, data analytics and new discoveries in information theory and semantics. Understanding the relationship between metagames for decision-making and the dilemmas faced by individuals, particularly in the absences that constrain decision-making can provide insights into the underlying constraints behind those decisions. This may provide deeper and valuable information for businesses in understanding the deep social dynamics of their organisation.

In place of ‘competencies’, it may be possible to proceed with analysis based on a “personal corpus”. Analysing and understanding the communicative patterns of employees may well be more important than labelling competencies. The TRAILER exercise of labelling competencies appears to have been powerfully revealing of

patterns of decision-making amongst employees. For recruitment and staff development processes to pursue deeper revealed personal qualities, may, in the final analysis be of greater organisational value in producing powerful social ecologies within the business than trying to fit bureaucratically-oriented descriptions of ‘skills gaps’ with equally abstract labellings of competence.

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