

On the role of tacit knowledge in expertise

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Tacit knowledge is something which is hard, or even impossible, to codify. Hence, it is closely related to the ability to do something without consciously being aware of how the task is being executed. Tasks which are relatively mundane, like riding a bicycle or speaking a language with fluency, are instances where the knowledge is tacit and the learning is implicit.

The issue of relating implicit learning to expertise is quite interesting. On the face of it, there hardly seems to be any connection between expertise, which is achieved by only the selected few in the society, and tacit knowledge, which is largely universal. Fundamentally, however, many of the expert tasks can be broken into elements whose interaction can lead us to understand the linkage between expertise and implicit learning, and subsequently, between expertise and tacit knowledge.

I take the example of the game of minesweeper. The logic behind the game is not very difficult. One only has to overlap the information obtained from the positions of nearby cells to decide whether a cell contains a mine. Novices in the game have considerable difficulty in doing the same as many of them are appalled by the sheer amount of information, which rises exponentially with the number of cells, that has to be processed. However, experts seem to play the game effortlessly and uncover the mines at a very high speed.

The trick in the previous case seems to be grounding the information that has been obtained from a large number of games that one has played. One cannot describe the knowledge. Moreover, the player has almost no conscious understanding of the moves he is making in the game, or otherwise his response will be much slower [Reber, 1996]. This is a hint that implicit learning is working behind the scene in the game. One can also find certain indications of the involvement of implicit learning in developing the key concepts central to the domain, as the explicit production of these concepts is not easy.

The previous example also points at the fluidity and flexibility of an expert, which supports the involvement of tacit knowledge and implicit learning in gaining expertise. The expert can quickly adapt to a variety of challenges in the domain. If the adaptation were attributed to explicit knowledge, it would not be very difficult to train a robot to do fluid tasks like playing football. Explicit coding of instructions brings about rigidity, which in turn makes it difficult for the subject to gain expertise.

But if implicit knowledge is so important for expertise, why do people have different levels of expertise? The difference lies in the encoding of knowledge around concepts. While experts centre their knowledge around domain related concepts, novices use very general concepts [Ericsson, 1999]. The question that comes up here is whether this grounding is done through implicit learning. If the answer is yes, then the difference might be accountable to the amount of dedicated practice and training involved in gaining expertise as implicit knowledge is gained primarily by experience and exposure. However, there are domains where hard work does not seem to bring much change in the level of expertise. The question therefore cannot be answered with certainty.

My view is that when a novice begins learning, he uses some algorithm obtained from observation for executing tasks with perfection. This algorithm can be crudely sketched. The inherent rigidity makes the attainment of perfection very difficult. Gradually, though, the algorithmic component vanishes and task execution is taken over by tacit knowledge. This is demonstrated by the dexterity with which experts perform their tasks. Hence, it seems safe to conclude that expertise might be the result of implicit learning, and to a great extent, might be tacit.

References

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