

## The Cognitive Approach

### Problem solving

We have seen that Tolman believes a cognitive map is formed as an aid to escaping from a maze. Like other behaviourism, in Tolman's **purposive behaviourism** no reference is made to 'mind' as distinct from behaviour. Instead Tolman (1925) says that terms like purpose, memory and expectation refer to nothing more than objective pieces of behaviour. To say that a rat 'remembers' the maze or any non-present object is just to say that its current behaviours 'casually dependent' on the maze or object. In order to understand this casual dependence we need to look further than the 'knee-jerk' S-R kind of behaviourism proposed by Watson and to analyse the variables that intervene between S and R. In his later writings Tolman came to see these intervening variables as 'cognitions', a term which refers to psychologically real entities and is not just a kind of shorthand description of pieces of behaviour. A 'cognitive map' is a representation of the environment that a rat, person or any other organism consults in order to guide intelligent behaviour towards a goal.

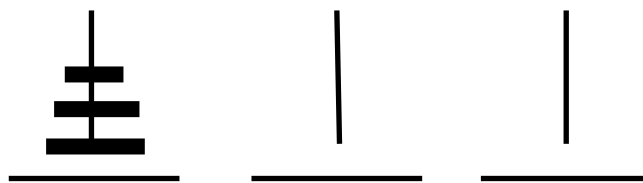
One of the most obvious and straight-forward ways of attempting to understand intelligent goal-directed behaviour is to look at the cognitions involved in problem solving. In order to make this even easier, often the solution to the problem is very specific, the starting point is well-defined and the number of possible choices towards the solution is very limited. Here we will look at some of the ways we solve problems and what that adds to cognitive psychology.

### Problems

#### 1. *Measure for measure*

Two Irish folk are stranded on a desert island and manage to divide their final 1 gallon (8 pints) keg of Guinness equally between them, using nothing ut a 3 pint jug and a 5 pint jug, How do they do this?

#### 2. *Tower of Hanoi*



Move the three discs from one post to another. You can move only one at a time and a larger disc cannot go on top of a smaller disc.

Write down a list of the steps taken to reach the solution.

#### 3. *The Chinese Tea Ceremony*

A most civilised and refined tea ceremony is practised in the inns of certain Himalayan villages. The ceremony involves a host, two guests and no other

people. One of the guests is more senior in rank to the other guest. When the guests have arrived and seated themselves at the tea table, the host performs three services for them. These services are listed below in order of nobility which the Himalayans attribute to them:

Stoking the fire (least noble task)

Pouring the tea (medium nobility)

Reciting poetry (noblest task)

During the ceremony, any of those present may ask another person, "Honoured Friend, may I perform this onerous task for you?" However, a person may ask to do only the least noble of the tasks which the other is currently performing. Further, if a person is currently performing any tasks, then that person may not ask to do a task which is nobler than the task he or she is already performing. Custom requires that, by the time the tea ceremony is over, all the tasks will have transferred from the host to the more senior of the guests. How may this be accomplished?

#### 4. *Chess and Dominoes*

Here is a chessboard with two of the opposite corners missing. You have 31 domino pieces which are white in one half, black in the other. Can all the squares on the chessboard be covered with just the 31 dominoes?

#### 5. *Suspicious Circumstances*

Torellini, a small-time casino boss, gets his throat slit when he refuses to pay his 'insurance'. The police round up five suspects, each of whom utters two truths and one lie. They make the following statements.

**Theo**                    *I didn't kill Tortellini. I never use a blade anyhow. Razorface did it.*

**Razorface**                    *I'm innocent. Any of those schmucks who says I did it is lying.*

*Must have been that hooker Roxane who done it.*

**Roxane**                    *I never wipe out Tortellini. I was with Mustafah at the time.*

*Wally pulled the job.*

**Mustafah**                    *I didn't touch the guy. I never saw no Roxane before.*

*Razorface exited the scum.*

**Wally**                    *I most certainly have not touched the man. I've never even been to a*

*casino. I'm a distinguished psychologist.*

Who cooked Tortellini?