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brain

To do or not to do

[SARA ABDULLA](#)

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The frontmost part of the front of the brain is much better developed in humans than in primates. For a while now, researchers have known that this region – the so-called fronto-polar prefrontal cortex (FPPC) – is active when people are planning or solving complex problems. But what exactly the FPPC contributes to these tasks has only now come to light.

The FPPC, announce Jordan Grafman and colleagues from the National Institutes of Health, Bethesda, Maryland is the brain's time and resource manager. It holds and prioritises our 'things to do' list, enabling us to keep in mind one set of goals while exploring and processing another. This ability, known to neuroscientists as 'branching', because of the tree-like dividing up of mental resources that it entails, is vital not only to decision-making but to any form of multitasking such as talking while cooking, or driving and listening to the news at the same time.

The researchers reached this conclusion using functional magnetic resonance imaging (fMRI), a technique that yields real-time 'movies' of brain activity, thus indicating which brain areas are likely to be involved in a particular job. As they explain in the [13 May issue of Nature](#), they used fMRI to scan the brains of 6 subjects who were carrying out simple reading and memory tasks.

The researchers found that the only parts of the brain that were active when subjects' attention had to depart, temporarily, from the main task, in order to carry out a second task concurrently, were the sides of the FPPC. In single task situations that did not require branching, however, the FPPC did not appear to get involved. Nor was this mental management region influenced by the difficulty of the tasks in question.

"These branching-specific regions may have a key role in processing goal-tree sequences," the researchers conclude, "which frequently requires the temporary interruption of a current plan to achieve a subgoal or to respond to new environmental demands or intrusive thoughts".

This work adds to the growing body of evidence about the highly specific decision-making tools located in the brain's frontal lobes. Only last month in *Nature*, another study reported that preference neurons, which are another key part of the time-, activity- and energy-allocation rubric, are also located in this intriguing section of the brain.

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