UNLOCKING
CONSCIOUSNESS

BRIAN MIND FORUM

Appendix 028

**Report of an experiment and demonstration to define and explore
the smallest measurable stable unit of memory in the brain.**

In the Sunley Room of the Royal Institution of Great Britain at 15.00 on the 25th July 2013, 40 invited guests of the Brain Mind Forum, participated in a proof of concept experiment and demonstration.

These experiments and demonstrations were designed to define and explore the *smallest stable measurable unit of memory* in the brain, which we have now referred to as a '*Neurand*'.

Much work is being conducted on the physical structure and operation of neurons, glia, hormones, messenger molecules and neurotransmitters, or the 'hardware' of the brain. This research is concerned with the associated electrochemical signals and electromagnetic fields or 'software' of the brain.

Two experiments were conducted.

1.   The participants were shown some fifty images which were displayed in sequence for two seconds each.

This experiment demonstrated conclusively that all the participants formed a minimal 'image', 'trace' or 'memory' of all fifty images, and so were able to 'recognise' more than 90% of the images when they were subsequently displayed. Similar experiments have shown that these 'images' persist for at least one month and probably much longer, possibly permanently.

2.   The participants were asked to list as many of the fifty images as they could 'recall'. The average number recalled was 10

This experiment demonstrated the fundamental systems difference between 'recognition' and 'recall'.

1. The first, and principal experiment demonstrated that the brain automatically forms a *neurand* every time a visual image is seen by the eyes even for as short a time as a couple of seconds.
    1.1. Method. The participants were asked to view a screen on which a series of fifty images were displayed at two second intervals.
    1.2. The participants were asked to suggest how many of these images they thought they could remember. The answers varied between 5 and 16. The average was 10.
    1.3. Then a series of two images were displayed, one repeated from the first series and another not previously displayed.
    1.4. The participants were surprised to find that they could identify the repeated images easily, and usually with more than 90% accuracy.
    1.5. The time taken for participants to select each repeated image was almost immediate in this first generalised experiment.
    1.6. This demonstrated that all the participants had recorded some kind of memory 'trace' or 'unit' of each image, which they were able to access to be able to recognise when the images were repeated.

2. The second experiment demonstrated that there is a fundamental systems difference between 'recognition', and 'recall'.
    2.1. Method. A series of images were displayed as before, but after ten of the pairs of images had been displayed, the participants were invited to list what some of the other images were: typically, the five images after forty, or the last five.
    2.2. Few participants could do this, although they could still recognise those images as ones they have seen when subsequently shown them.
    2.3. This demonstrates that the brain is capable of recording different levels of memory information; sophisticated or large enough for 'recognition', but not sophisticated enough, or too weak to be 'recalled' by other criteria.
    2.4. The conclusion is that neural process of recognition is different. The neural system for 'recognition' is only looking to compare one image trace with another. *In computing terms, the program is confirming a known entry is in a database where it is expected to be.*
    2.5. The neural system for 'recall' is trying to find a neural trace by some other criteria. *In computing terms, the program is looking for an entry in a database but has too little collateral information about where to search.*

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