Synopsis of Reported Neuromarketing Studies

Below is a summary of the studies reported - some only in the trade press and not in scientific journals so it pays to view them somewhat dubiously. (Clarification of the scanning methods used, PET, fMRI, EEG and SSPT, can be found on my weblog at Brain-imaging Methods.)

- **NeuroVu points to the posterior, left frontal cortex.**
  Rossiter, Silberstein et al using steady-state probe topography (SSPT) found in a surprise 7 day recognition test that correct recognition of scenes from previously exposed TV commercials was due to a faster brain electrical activity initial response (shorter latency) at the time of exposure in the C3-F7 site of the **posterior region of the left frontal cortex** (not in the right).[1] This SSPT method of measuring brainwaves from electrodes on the scalp, I reported on three years ago (see Hi-Tech Method of Pre-testing Ads).

- **London Business School team points to 'the location of brand equity'.**
  Asking people which of 3 brands they would purchase, Ambler et al using MEG found that brands that are more familiar stimulate the **right parietal cortex**. The researchers have their fingers crossed that this will turn out to be where brand equity resides. In the 1 second interval after stimulus presentation four stages emerged:
  1. at 90 msecs the primary visual cortex (at the back of the head) was activated;
  2. at around 325 ms the left temporal cortex (just above and forward of the left ear) was activated;
  3. at around 510 ms the left inferior frontal area was activated;
  4. at around 885 ms the **right parietal cortex** (above and slightly behind the right ear) was activated.

  At these latter two stages, the effect of familiarity showed up. Low familiarity brands evoked stronger responses in the left frontal cortex in stage 3 and high familiarity brands elicited stronger signals in right parietal cortex later in stage 4.[2]

- **Brighthouse & Emory University point to 'liking centre'.**
  People looking at familiar products were asked to envision themselves using them while their brains were scanned using fMRI. When they saw images of fruits, cars, sports or hobbies that they especially liked, increased activity in the **medial prefrontal cortex** was reported. When they viewed images of products they disliked, activity was observed in different brain areas. The researchers pointed out that the medial prefrontal cortex has been linked in other research to self-identity and "is superior to the more ventral areas associated with reward expectancy" that also showed significant activation to strongly preferred items. The Scientist :: Frontlines | Selling Directly to the Mind, Dec. 1, 2003. The results suggest that strong individual preferences for certain items reflect not only an expectation of reward but also engagement of self-referential thought. "Human Brain Mapping 2004" conference in Budapest June 13-17, 2004)

- **Lieberman and Caltech point to a 'liking' and 'anticipation' center.**
  Lieberman Research, a Los Angeles marketing firm collaborated with Steven Quartz, a neuroscientist at the California Institute of Technology in using fMRI to market-test film trailers for movie studios. Quartz believes that the **orbitofrontal cortex** (a part of the prefrontal cortex) underlies liking or anticipation. Zap2it.com MOVIES | MOVIE NEWS | STORY

- **Baylor points to a 'reward centre' deeper in the brain.**
  Read Montague, a professor at the Baylor College of Medicine in Houston Texas, gave subjects the "Pepsi Challenge" in an fMRI scanner. In blind taste tests, activation in the **ventral putamen** increased more when people drank Pepsi than when they drank Coke. (The researchers points to the ventral putamen as one of the brain's "reward centres".) By contrast, when the brands were not masked and people knew what they were drinking, the majority said they preferred Coke, suggesting that identification with Coke's brand image over-rode Pepsi's more pleasant taste.
  http://www.economist.com/printedition/PrinterFriendly.cfm?Story_ID=2724481
  Time. The Why of Buy. 8 March, 2004

- **Northwestern points to separate motivational system when hungry.**
  Dana Small, neuroscientist at Northwestern University, Illinois, took Positron Emission Tomography (PET) scanned peoples brains while feeding them pieces of chocolate. When they were hungry, five areas in their brains were activated compared to only three different regions activated when they had eaten too much. She concluded that the brain has separate motivational systems - one that's active when a person is hungry and the other for when he or she is full.
  http://www.centredaily.com/mld/centredaily/news/politics/9002800.htm?template=contentModules/printstory.jsp

- **DaimlerChrysler & Ulm University Germany point to a sports-car 'fusiform face area'.**
  Neuroscientists working with DaimlerChrysler in Germany scanned the brains of a number of men as they looked at pictures of cars and rated them for attractiveness. They report that the most popular vehicles -- the Porsche- and Ferrari-style sports cars -- triggered activity in a section of the brain called the fusiform face area, which governs facial recognition. "They were reminded of faces when they looked at the cars," says Henrik Walter, a psychiatrist at the University of Ulm in Germany who ran the study. "The lights of the cars look a little like eyes." [3] There's a Sucker Born in Every Medial Prefrontal Cortex

- **Ford Europe explores 'emotional connections' area.**
  Ford of Europe reportedly used "neuromarketing" techniques to better understand how consumers make emotional connections with their brands. Newsweek International March 22, 2004.

- **University of Los Angeles points to where the brain processes brand names.**
  Eran Zaidel and colleagues found that brand words trigger more activity in the right brain than is the case for other (non-brand) words.[4]

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[1] Rossiter J. R., Silberstein R. B., Harris P. G., and Nield G. (2001) Brain-imaging Detection of Visual Scene Encoding in Long-term Memory for TV Commercials. *Journal of Advertising Research*, 13-21.
[2] Ambler T., Stins J., Braeutigam S., Rose S., and Swithenby S. (2002) Salience and Choice: Neural correlates of shopping decisions. *London Business School, Centre for Marketing Working Papers No 01-902*.
[3] Clive Thompson, New York Times, There's a Sucker Born in Every Medial Prefrontal Cortex. October 26, 2003.
[4] Possidonia Gontijo, Janice Rayman, Shi Zhang & Eran Zaidel. *How Brand Names are Special: Brands, Words and Hemispheres*. Psychology Department, Anderson School of Management University of Los Angeles, California. 2002