

**NEUROSCIENCE AS A SOURCE OF GNH
MEASURES: THE CHALLENGES AHEAD**

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International Conference

on

“Happiness and Public Policy”

United Nations Conference Center (UNCC)

Bangkok, Thailand

18-19 July 2007

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Within the past twenty years, a growing body of research from neuroscience laboratories has examined how the experience of happiness or "well being" is reflected in brain states. Recent innovations in functional magnetic resonance (fMRI) have allowed these studies to be more precise.

Much of the richest data has evolved from early studies of the impact of meditation on the mind and brain. Over the past thirty years nearly 1,000 of such scientific studies have been published. Initially, the focus was to understand the role of meditation on stress. More recent studies using fMRI look beyond the "relaxation response" to reveal how specific parts of the brain may be activated or inter-related through meditation. Many researchers now hypothesize that the healthy brain -- especially the brain trained through the rigors of meditation and ethical disciplines -- may be not merely more relaxed but also more flexible, a concept referred to as "Neuroplasticity" Some studies show that happiness can be more sustainable through mind training methods because the "neuroplastic" individual is capable of responding openly and successfully to challenges that arise in the environment. In other words, the happy brain may not merely be relaxed but also engaged. Furthermore, the happy brain may have resolved the tension that normally arises between the cognitive prefrontal lobes and the more primal emotional inner core of the brain which in evolutionary terms is far more ancient. In other words, heart and mind do not work at cross-purposes but seem closely integrated in the happy person.

Though such insights are becoming known in neuroscience, they have not yet been applied to public policy innovation. But this development seems inevitable. Thailand could serve as a staging ground for neuroscience studies tied to public policy. One way to achieve this goal is for GNH researchers in Thailand to build relationships with neuroscience labs, such as University of Wisconsin-Madison or MIT Media Lab. Doing so would encourage research into

new noninvasive ways of measuring the impact of happiness on the brain. Such research would allow public policy makers to draw data from fMRI studies which compare the brain states of happy and unhappy persons, and then measure the difference. In this way, public policies could be shaped to encourage happiness as measured by neuroscience.

A problem with this approach is that so far fMRI studies are scarce, expensive and cumbersome. They are not easily applied to the variety of circumstances in which measurements of happiness are needed. A solution may be emerging from the field of "neuroengineering." Companies such as Omneuron are generating simpler measures technologies which may be incorporated into field-based research conducted by governments and universities.

Another new opportunity comes from the field of "spiritual computing" (spiritualcomputing.com), which encourages researchers in the field of human computer interaction to generate operational definitions for subtle spiritual experiences such as "renunciation," "compassion," and "empowerment." Such definitions could make possible measurements that tell us objectively how different types of happiness become sustained or diminished through in different cultural and spiritual traditions. Thus, government policy makers operating in various cultural settings may soon be able to work with neuroscientists and anthropologists to objectively determine which methods enhance and which diminish one's sense of well being. When such measures arise, governments could employ the "carrots and sticks" of public policy to encourage the former and discourage the latter.