Design for the Unconscious

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The subliminal aspects of everything that happens to us may seem to play very little part of in our daily lives, but they are the almost invisible roots of our conscious thoughts.

Carl Jung 1875-1961

Founding father of modern psychology.
Cultural & Society

 Attitudes
 Norms
 Values
 Beliefs
 Etc.

conscious

Attitudes
Norms
Values
Beliefs
Etc.

unconscious

Human Control

- **Brain** - THOUGHTS & FEELINGS
  - e.g. Challenges

- **Spinal Cord** - REFLEXES
  - e.g. Dangerous Stimulus

- **Somatic System** - SENSATIONS & ACTIONS
  - e.g. Challenges

- **Autonomic System** - EMOTIONS & FEELINGS
  - e.g. Stimulus & body intake

- **Endocrine System** - MOODS
  - e.g. Long term Stimulus & behaviour

- **Genetic System** - DRIVES
  - e.g. Sex

Kansei Mediation

- Mind games
  - Narrative Puzzles

- Skin stimulations
  - Reflex Triggers

- Actuators
  - Tracking system

- Multimedia
  - Food drink intakes

- Habits
  - Day long events

- Life long beliefs
  - Fulfilments

consciousness
  * propositional representation
  * synchronization via workspace

phenomenal consciousness
  * internal processing

unconsciousness
  * parallel processing in modular subsystems

multi modal sensory input

verbal behaviour

nonverbal behaviour

multi modal actuator output

Daniel KAHNEMAN
Map of Bounded Rationality: A Perspective on Intuitive Judgement and Choice.
Nobel Prize, 8 December 2002

Note that this chapter has two sections: the first is an autobiography (with a eulogy for Amos Tversky), and the second is a transcript of his Nobel lecture, which is what the title refers to. The autobiographical portion has been republished as: Kahneman, D. (2007). Daniel Kahneman. In G. Lindzey & W.M. Runyan (Eds.), A History of Psychology in Autobiography, Volume IX (pp. 155–197). Washington, DC: American Psychological Association.
How to relate consciousness and unconsciousness?

Dualist view

Emergent view

REF: Nakatsu, R. (2002). What is the ultimate form of communication? Artificial Life and Robotics, vol. 6, no. 4, pp. 210–214. [IF=0.486]
Brain Structure & biology
- Subcortical structures, assessing brains' attention and orienting systems
- Cortical mirror neurons
- State of autonomic nervous system
- Measure of integration within brain's action sequence control system

Human Honest Signals (unconscious)
- Influence
- Mimicry
- Activity
- Consistency

Measurement/Physical Behaviors
- Causing other to match speaking pattern
- Reflexive copying of smiles, etc.
- Increased activity level indicates interest/excitement
- Emphasis and timing: focus or variability

Business results
- Business plan approval
- Job interview
- Salary negotiation
- Sales

Sociometer
- Wearable badge
- Infrared transceiver
- Microphone
- 2-axis accelerometer

Warning: Mok's interpretation of "Honest Signals" article by Alex (Sandy) Pentland and Tracy Heilbeck in SMR, Fall 2006. There is no validation with authors. Interpretation has Copyright ©2009 by Waming Mok.
After 1910 the discoveries of Carl Gustav Jung about the collective unconscious and the related archetypes were challenging.

Jung dreamt a great deal about the dead, the land of the dead, and the rising of the dead. These represented the unconscious itself -- not the "little" personal unconscious that Freud made such a big deal out of, but a new collective unconscious of humanity itself, an unconscious that could contain all the dead, not just our personal ghosts. Jung began to see the mentally ill as people who are haunted by these ghosts, in an age where no-one is supposed to even believe in them. If we could only recapture our mythologies, we would understand these ghosts, become comfortable with the dead, and heal our mental illnesses.
The Hero Journey is a concept introduced by Campbell J. (1949/2008) in his book, *The hero with a thousand faces*. It outlines a journey of twelve stages that a character undergoes during their mythological adventure. The stages include:

1. **The Call to Adventure**
2. **Meeting the Guide**
3. **The Threshold of Adventure**
4. **The Unknown World**
5. **The Known World**
6. **The Call to Return**
7. **Return Journey**
8. **Return and Rebirth**
9. **The Hero's Journey**
10. **Refusing to Return**
11. **Discovery and Reward**
12. **Dark Night of the Soul**
13. **Tests, Trials, and Allies**
14. **Heroic Reflection**
15. **Home Ground Safe Area**
16. **Withdrawal**

Campbell's theory is foundational in the study of archetypal symbolism and is widely recognized in literature, mythology, and the arts.
Do archetypes have an effect on humans?

A collaborative project between two PhD students

Leonid IVONIN
- Processing of physiological signals and application of data mining methods
- Development of technical infrastructure for the experiments
- Sensing application (ArcheSense)

Shared activities
- Generation of ideas
- Statistical analysis
- Writing of articles

Huang-Ming CHANG
- Identification, selection, and preparation of audiovisual stimuli for elicitation of psychological states
- Selection of appropriate questionnaires
- Moodboard application (ArcheBoard)
Rain drops down

“God is in the rain.”

Reborn from Fire

Reborn from Fire and Thunder Strom

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Eindhoven University of Technology
## Study - results

Comparison of the classification accuracy achieved using the self-report questionnaires and the physiological data (between-subject classification).

<table>
<thead>
<tr>
<th>Categories of the film clips</th>
<th>Number of states</th>
<th>Self-reports</th>
<th>Physiological data</th>
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<td>Anima, hero departure, hero initiation, hero rebirth, hero return, mentor, shadow</td>
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<td>42.0</td>
<td>53.3</td>
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<tr>
<td>Anima, hero initiation, mentor, shadow</td>
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<td>43.1</td>
<td>57.1</td>
</tr>
<tr>
<td>Anima, hero rebirth, mentor, shadow</td>
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<td>38.4</td>
<td>52.9</td>
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<tr>
<td>Anima, hero return, mentor shadow</td>
<td>4</td>
<td>40.6</td>
<td>56.1</td>
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<tr>
<td>Active-pleasant, active-unpleasant, neutral, passive-pleasant, passive-unpleasant</td>
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<td>50.4</td>
<td>50.7</td>
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<tr>
<td>Active-unpleasant, neutral, passive-pleasant, passive-unpleasant</td>
<td>4</td>
<td>64.9</td>
<td>57.2</td>
</tr>
</tbody>
</table>

### Classification methods:
- k-nearest neighborhood (kNN)
- support vector machine (SVM)
- naïve Bayes
- linear discriminant analysis (LDA)
- Adaptive Boosting with decision trees (AdaBoost)

Only the best accuracy is reported.

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Thank you for your attention.

A door opens for new design challenges…