

Arne's transient hypofrontality hypothesis: A bridge between flow and meditation

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Abstract

Recent neuroscience evidence indicates that a particular type of transient hypofrontality, increased synchronization between limbic and cortical brain regions, is a common factor in both flow (optimal experience) and meditation (a contemplative experience). A novel research program is proposed to pinpoint how to cause this synchronization, and in turn, to examine its effects. Crucial is the development of measures of this type of transient hypofrontality. Hypotheses are freely drawn from research on both meditation and flow, breaching traditional categorical boundaries. Preliminary correlational data is presented along with a plan for longitudinal evaluation.



Meditation

Need a crisp theoretical model!

Carrington (1977, pp. 8–9 & 91)

From Delmonte (1987)
to Bond et al. (2009) → little progress



Neuroscience to the rescue



Arne Dietrich (2003, 2004) synthesized the evidence

- ▶ Brain anatomy
- ▶ Altered states of consciousness



Theory construction team

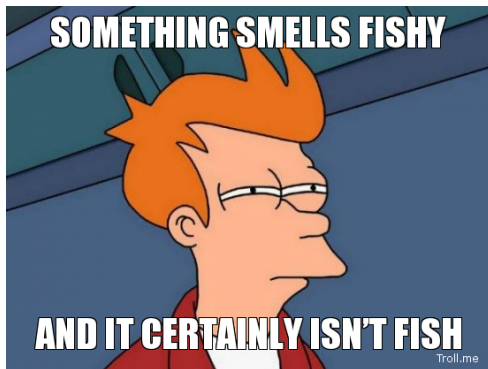


http://www.allposters.co.uk/~sp/Manhattan-Bridge-under-construction-Posters_i9113302..htm

- ▶ Charles Driver (MPI Berlin)
- ▶ Karen Schmidt, Steve Boker, UVa grad students
- ▶ Ramesh Manocha (University of Sydney)
- ▶ Mom (Joshua's) and colleagues whom I forgot to mention



Don't let me off easy



Challenge me. Ask questions. Play devil's advocate.



Hierarchy of consciousness

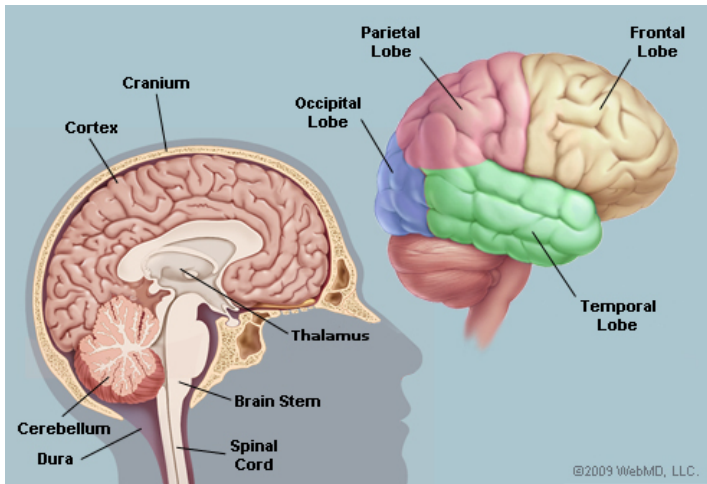


<http://www.abc.net.au/catalyst/stories/2364899.htm>

- ▶ Brainstem
- ▶ Thalamus
- ▶ Limbic system (hippocampal formation, cingulate cortex, amygdala)
- ▶ Cortical level (temporal, occipital, and parietal cortex; ventromedial)
- ▶ Dorsolateral prefrontal cortex



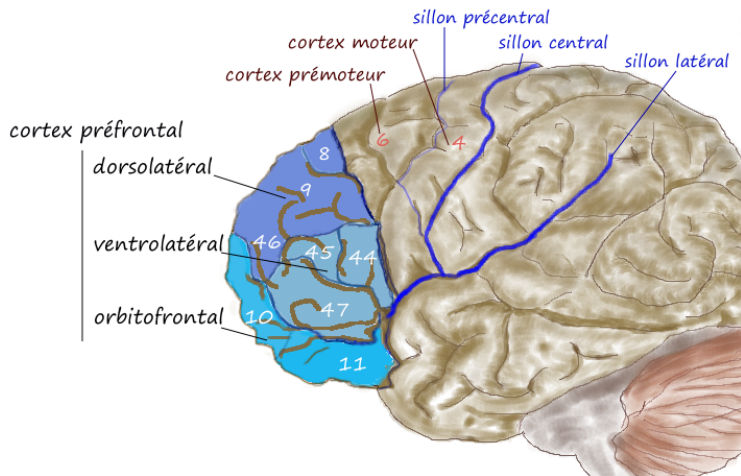
Brain anatomy



<http://www.webmd.com/brain/picture-of-the-brain>



Brain anatomy



https://en.wikipedia.org/wiki/Dorsolateral_prefrontal_cortex



Phenomenology

Study of the 1st person

Phenomenological
subtraction

#5 - THE PHENOMENOLOGY OF PERCEPTION: CHOCOLATE



<http://irez.me/2012/07/13/descartes-imagination/>

Phenomenology

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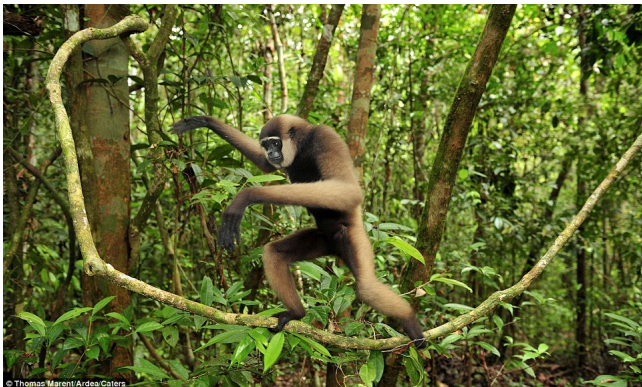
Meditation reconceptualized



<http://www.free-meditation.ca/archives/5984>



Flow, neuroscience perspective



<http://www.dailymail.co.uk/news/article-2054109/Gutsy-gibbon-ditches-monkey-bars-tightrope-walking-skills.html>

Explicit processing reduced; implicit processing increased



How?

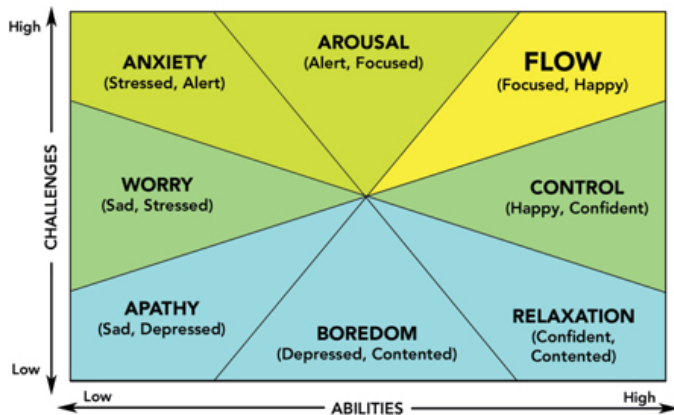


<http://bizbraininterpreter.com/when-you-are-over-thinking-it/>

Self-actualization, peak experience, optimal human functioning, flow



Flow triggers



<http://blog.readytomanage.com/getting-away-from-fight-or-flight-and-into-the-flow/>

Flow as related to challenge and ability.¹

Social flow triggers

- ▶ shared clear goals
- ▶ serious concentration
- ▶ good communication
- ▶ equal participation
- ▶ element of risk
- ▶ familiarity
- ▶ blending egos
- ▶ sense of control
- ▶ close listening
- ▶ always say yes²



(Images retrieved from³)



Flow triggers, summary

Individual

- ▶ clear goals
- ▶ challenge/ability ratio
- ▶ immediate feedback



<https://www.futurlec.com/SwRocker.shtml>

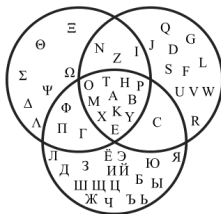
+ maybe more

Group

- ▶ shared clear goals
- ▶ serious concentration
- ▶ good communication
- ▶ equal participation
- ▶ element of risk
- ▶ familiarity
- ▶ blending egos
- ▶ sense of control
- ▶ close listening
- ▶ always say yes



Meditation & flow



https://en.wikipedia.org/wiki/Venn_diagram

Berkovich-Ohana and Glicksohn (2014) identified common phenomenological and neurological properties:

1. greater availability of the implicit system
2. integration of implicit and explicit knowledge systems

We name this particular type of prefrontal hypofunction *transient implicit-explicit synchronization* (TIES).



Reconciliation \rightarrow TIES



<http://www.enoughmagazine.org/the-zone/>



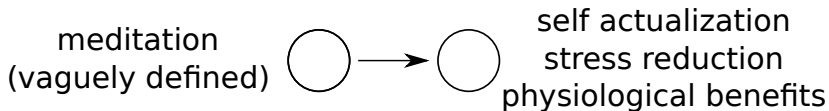
<http://www.freemeditation.com/news/2011/12/04/sahaja-yoga-meditation-at-schools-in-dubai/>



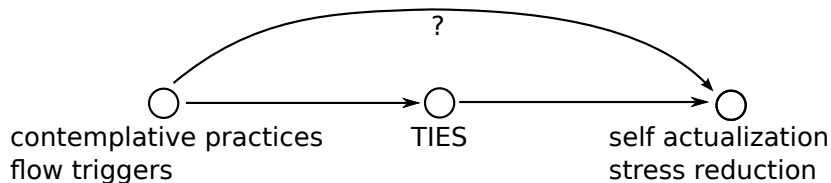
Old model



https://www.healthypetnetwork.org/images/photo_contest/RelaxedCat.jpg



New model



Candidate measures of TIES

function	anatomical correlate	absence of the function
interpreter ⁴	left orbitofrontal cortex	mental silence
distinguish self from other ⁵	right parietal lobe	sense of oneness
conscious will ⁶	frontal lobe	spontaneity
duration accounting ⁷	working memory	timelessness



http://respect-discussion.blogspot.com/2012_09_01_archive.html



Measures

triggers

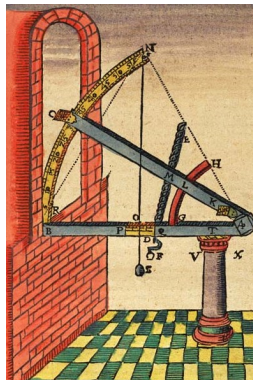
- ▶ contemplative training
- ▶ barrier
- ▶ spontaneity (intervention)
- ▶ object of attention
- ▶ social flow triggers

TIES

- ▶ mental silence
- ▶ sense of oneness
- ▶ timelessness
- ▶ spontaneity (experience)

outcomes

- ▶ self actualization
- ▶ (mental) health



<http://en.wikipedia.org/wiki/Science>



Measures

triggers

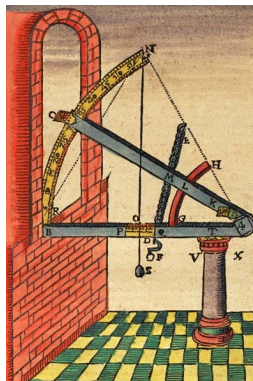
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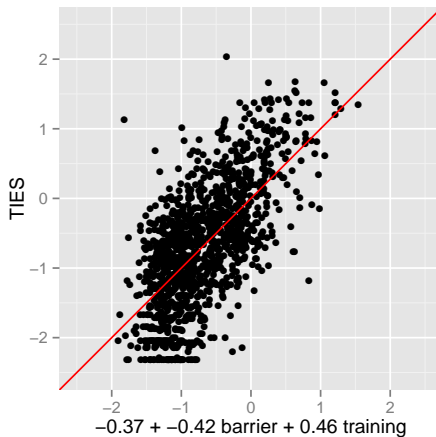
- ▶ self actualization
- ▶ (mental) health



<http://en.wikipedia.org/wiki/Science>



Training, barrier \rightarrow mental silence



Measures

triggers

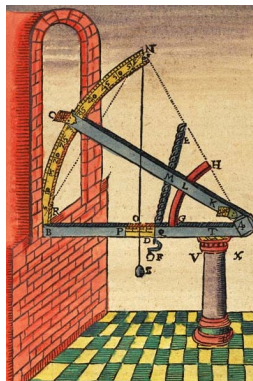
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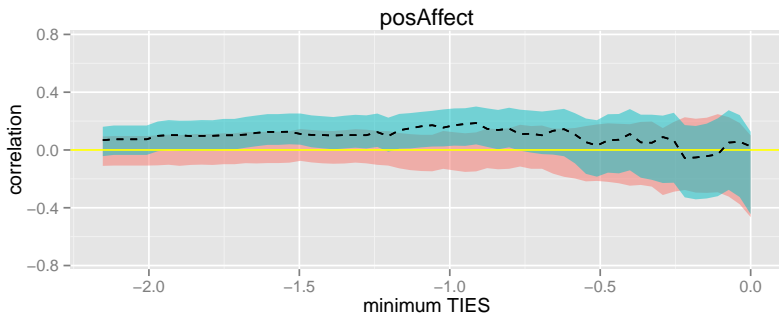
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<http://en.wikipedia.org/wiki/Science>



Training, mental silence \rightarrow positive affect



The shaded area shows the 95% confidence interval of the correlation. Blue is TIES. Pink is training. Dash line is TIES minus training.



Measures

triggers

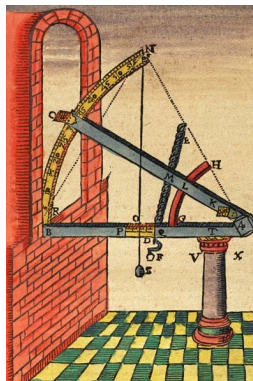
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outcomes

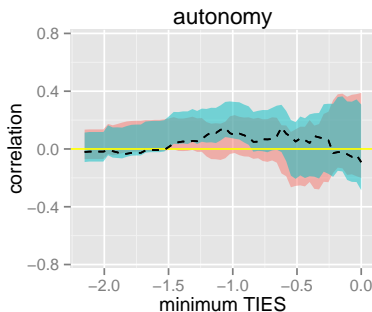
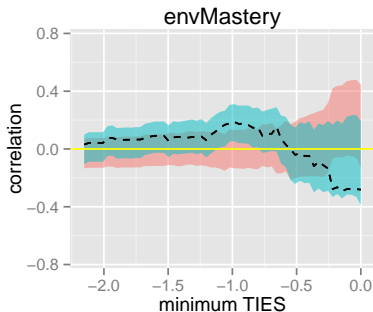
- ▶ self actualization
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<http://en.wikipedia.org/wiki/Science>



Training, mental silence \rightarrow self-actualization



The shaded area shows the 95% confidence interval of the correlation. Blue is TIES. Pink is training. Dash line is TIES minus training.



Measures

triggers

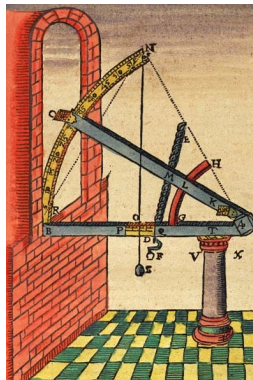
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Measures

triggers

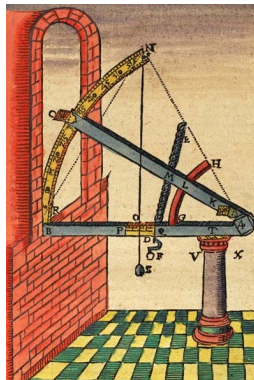
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outcomes

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- ▶ (mental) health



<http://en.wikipedia.org/wiki/Science>



Sense of oneness

Proposal: “During the session, to what extent were you aware of your physical location?”

Responses:

- ▶ I was sitting in the room and that’s how I felt.
- ▶ I lost track of the boundaries of my physical body.
- ▶ I felt a sense of oneness with the whole.
- ▶ The sense of oneness was profound and persisted for a few hours after the session.



Measures

triggers

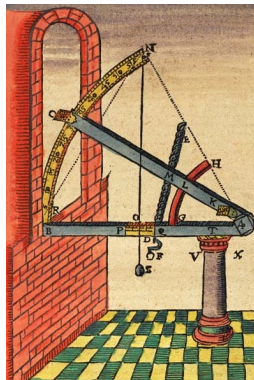
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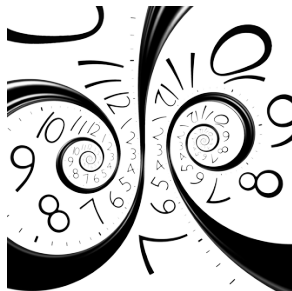
<http://en.wikipedia.org/wiki/Science>



Timelessness

Problems:

- ▶ time can compress or elongate
- ▶ individual differences in baseline attention to time
- ▶ time distortion is commonplace—people don't consider it noteworthy



<http://www.mascotlaw.com/>

Q: “During recent sessions, I think about how much time is remaining in the session ...”

A: continuously, frequently, occasionally, or not at all



Measures

triggers

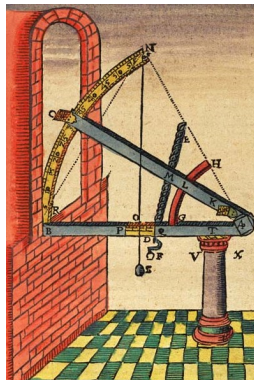
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- ▶ barrier
- ▶ **spontaneity (intervention)**
- ▶ object of attention
- ▶ social flow triggers

TIES

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- ▶ sense of oneness
- ▶ timelessness
- ▶ **spontaneity (experience)**

outcomes

- ▶ self actualization
- ▶ (mental) health



<http://en.wikipedia.org/wiki/Science>



Spontaneity

	Feeling of doing	No feeling of doing
Doing	normal voluntary action	spontaneity
Not doing	illusion of control	normal inaction

How to ask about it?

Needs basic research in social psychology?



Measures

triggers

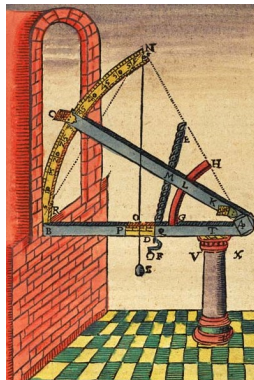
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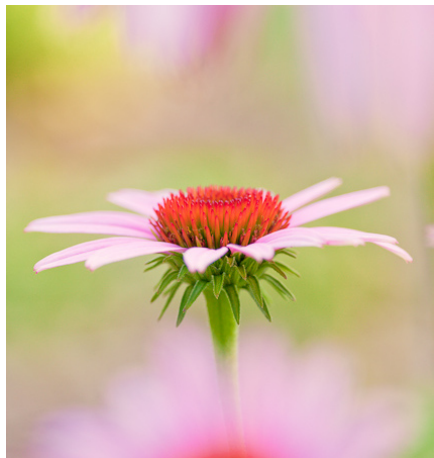


Object of attention

“attentional resources are used to actively amplify a particular event”⁸

Which event? Does it matter?

Proposal: “During the session, where is it most important for you to focus your attention?”



<http://sceneinadifferentlight.com/shooting-through>



Measures

triggers

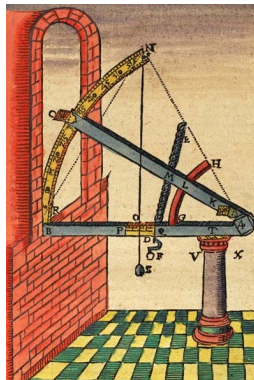
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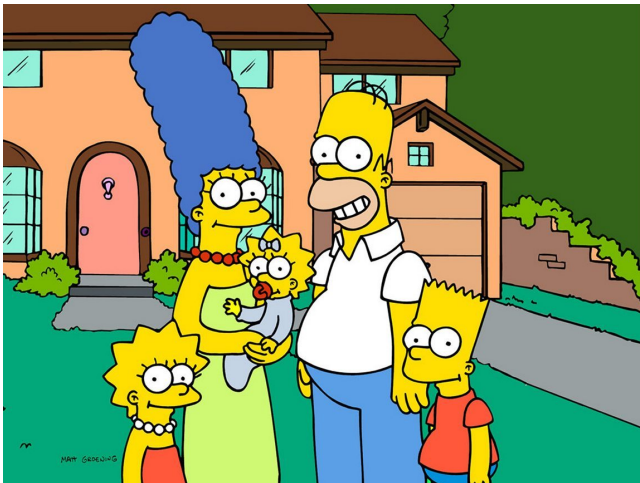
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<http://en.wikipedia.org/wiki/Science>



Family is an obstacle?



<http://tvvtastic.files.wordpress.com/2011/10/simpsons-family.jpg>

One of Shri Mataji's ideas



<http://shrimataji.org/site/in-her-words/shri-mataji-reading-room.html>

Maternal scholarship and expression



Conclusion

longitudinal (May/June 2015)

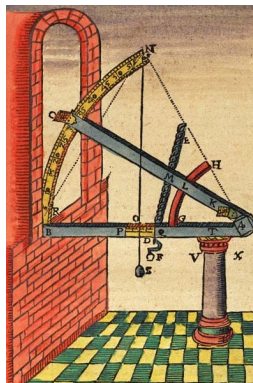
- ▶ contemplative training
- ▶ barrier
- ▶ mental silence
- ▶ environmental mastery

short term

- ▶ sense of oneness
- ▶ timelessness
- ▶ object of attention

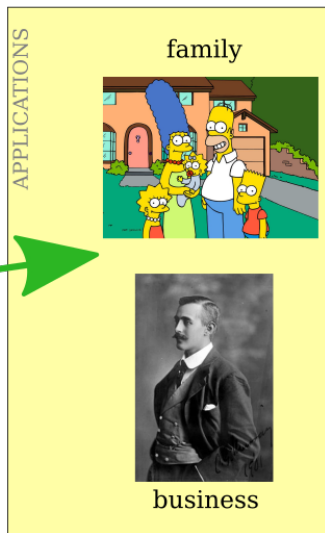
long term

- ▶ spontaneity (intervention & experience)
- ▶ social flow triggers
- ▶ more outcome measures



<http://en.wikipedia.org/wiki/Science>





Endnotes

¹Csikszentmihalyi (1988)

²Sawyer (2007)

³<http://aztecpressonline.com/2011/04/arts-briefs-7/> and http://photos.mlive.com/flint-journal/2011/09/pickup_basketball_at_kennedy_p.html

⁴Gazzaniga (1989)

⁵Goldberg, Harel, and Malach (2006); Newberg et al. (2001)

⁶Wegner (2002, pp. 84, 333); Mulla and Krishnan (2006)

⁷Rammsayer (1999)

⁸Dietrich (2003, p. 243)



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