


**Better Problem-Solving and  
Decision-Making with  
absolutely no mention of  
architecture or design or  
quantum physics – sorry ☹️!**

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**Disclaimer: This provocative presentation is ideally the beginning of a conversation. It won't take long for me to tell you everything I know about cognitive psychology, although I have been reading in the area for several years now. I'm an amateur who has sufficient interest in weird topics and a strange way of connecting ideas that might or might not be of interest to you. Thank you for your tolerance and understanding of my meanderings and I hope you learn a little that might help you in your life.**

**This is not an “academic” presentation, but those interested in more information are invited to ask me for references for any part of this talk and I will be happy to make them available.**

**Scientists and journals prefer positive findings and bury negative studies. Always be a little skeptical!**



# **Call for insights!**

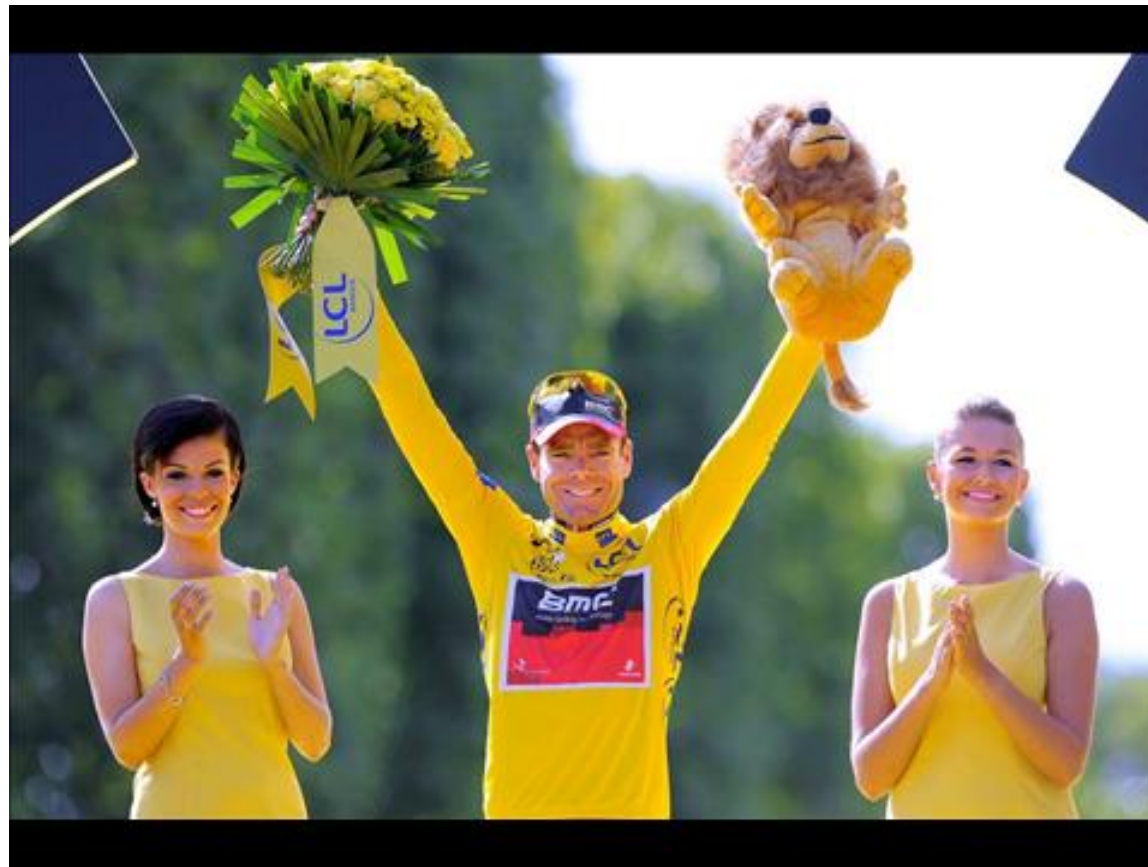
**An article series in IEEE Software  
Stories, case studies, experiences**

**More informal review process**

**Shepherds available for writing**

**Send ideas to: [linda@lindarising.org](mailto:linda@lindarising.org)**

# Cadel Evans!






# What is thinking?



**Any thinking or decision-making happening here?**





# **Are there similarities in these two settings?**

**Sitting**

**Focused attention**

**Inside – no connection with Nature**

**Drab, probably noisy surroundings**

**Individuals probably tired, over-caffeinated**



# **My goal: useful tips and techniques**

**Cognitive science is fast growing, uses controlled experiments, on-going re-testing, explosion in results**

**Our field is slow growing, few, if any controlled experiments (mostly anecdotes, case studies)**

**We should pay attention – it might help us do our work better 😊!**





# **Move!**

**Blink, look at the horizon, turn your head,  
move your eyes from side to side, look  
around, look outside**

**Stand up, stretch – companies  
experimenting with stand-ups**

**Lie down**

**Exercise – even 5 minutes**

**Sitting kills ☹!**

# Treadmill Desk






# Take a Break

**Bio break, coffee break (caffeine is the subject of another talk), smokers' edge ☺!**

**Walk – effective persuasion technique – walk sideways or backward**

**Take a nap (subject of another talk)**

**Work on a different hard problem - multi-tasking is ineffective (can you listen to two songs at the same time?) but shifting focus can help**



**When Arianna Huffington is looking for inspiration, she goes to sleep. "There are many, many great ideas locked inside of us," she says. "We just need to close our eyes to see them."**

**There are three nap rooms in the offices of the Huffington Post Media Group.**





# **Do “Nothing”**

**When people constantly bombard their brains with digital input, they are forfeiting downtime that could allow them to better learn and remember information, or come up with new ideas.**

**Processing a barrage of information leaves people too fatigued to learn.**

**The brain needs downtime.**

**We think we’re relaxing by distracting ourselves, but we’re fatiguing our brains.**



**“My commute is my most productive  
creative time when I’m not focusing on  
anything.”**

**Chris Cox, Facebook’s Product Chief**



# **Drink, Eat**

**Even mild dehydration affects the brain –  
always have water on hand – watch the  
caffeine**

**Decision-making requires energy, if tired  
and hungry people are forced to make  
decisions, they look for the easy way out**

**Study of judges granting more favorable  
verdict after breaks**



# **Nature Nurtures**

**Plants (must be the real thing, not photos or displays) improve innovative and creative thinking**

**Looking outside improves health**

**Walking outside, even for a few minutes, improves decision-making (better than walking in urban areas)**





# **Cardboard consultant**

**Explain the problem out loud to something or someone else – a stuffed animal, a photo, or another person who does not have to understand what you are talking about 😊!**

**Use this technique in meetings – have proposers of different solutions explain their version of the problem (not the solution!) to others**



# **Write, Draw, Sketch**

**Typing is the least effective means for description**

**Writing by hand is useful for solving problems of all kinds**

**Drawing, sketching are also helpful – research shows that doodlers remember more information than note-takers – encourage doodling at meetings!**



# **Happy people are more productive**

**Posture – sit up, both feet on the floor,  
arms open, pull work toward you, nod  
your head**

**Smile – research shows this to be as  
effective as anti-depressants 😊! Fake it!**

**Language – choose affirming words “like,”  
“positive,” find areas of agreement, “yes,  
and”**



# **Be mindful of the environment**

**New research suggests that we are sensitive to our environment – sitting in a hard vs. soft chair or the weight of a document influences how “hard” or “weighty” we believe an issue to be**

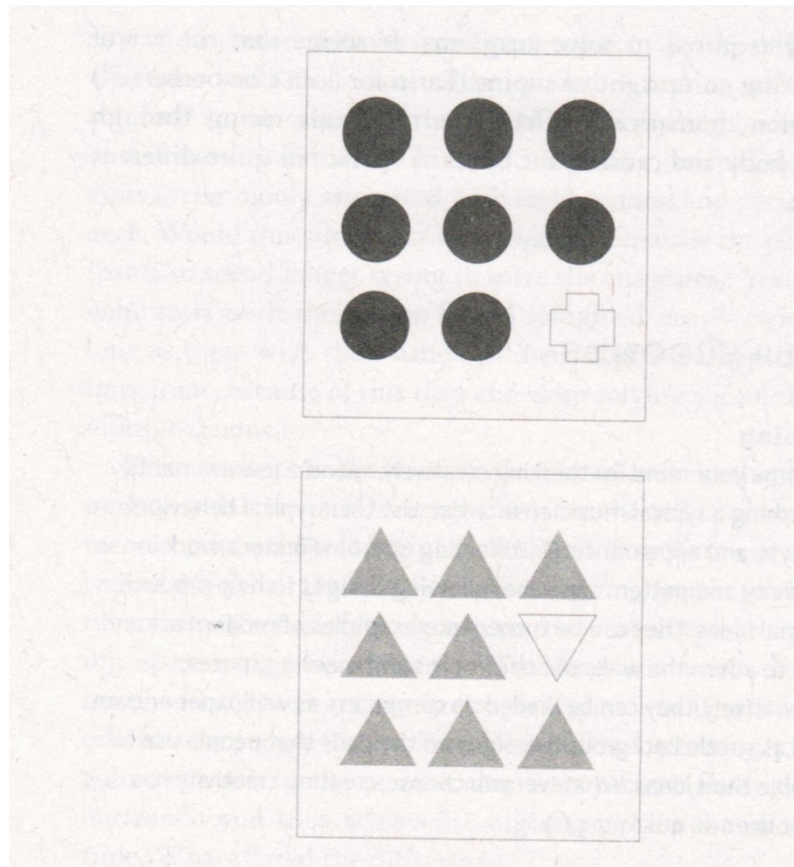
**Temperature of the room or drinks influences how we feel about others around us.**

**Higher ceilings increases innovation. Lower ceiling concentrates on details.**

**Noisy environments are harmful.**



# Art spurs innovation





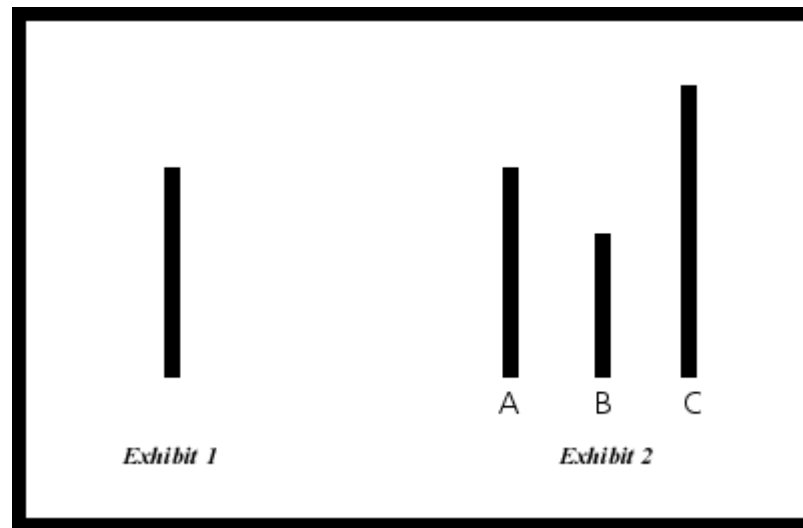
# **Brainstorming**

**Brainstorming “invented” in the 1940s – is intuitively appealing – we all get together and follow some simple rules to generate innovative ideas**

**Research shows that individuals working on their own produce a higher quantity/quality of ideas than those in groups and avoids “social loafing” and “groupthink”**

**Stressed people tend to conform more to social opinion.**

# Solomon Asch Experiment





## **More effective than brainstorming**

**Quiet storming after preparation**

**Independence is a requirement for  
individual action**





# **Diversity!**

**Have more women on the team or involved somehow.**

**Preliminary research shows higher quality collaboration, changes the behavior of the male members, increases group intelligence and overall performance.**

**<http://hbr.org/2011/06/defend-your-research-what-makes-a-team-smarter-more-women/>**



# **Small Steps**

**We have a sense that large, complex problems require large, complex solutions.**

**Organizations and software are examples of complex systems where the impact of any change is difficult to predict**

**The often-overlooked approach of Small Steps (it's a pattern!) is a better road to success where the result of each small experiment can be seen before the next step is taken.**

**Implementation intention**



# **Cutting edge suggestions**

**Singing reduces stress and lowers blood pressure**

**Avoid buyer's remorse - hand washing -  
bring a sense of closure to the decision,  
don't continue to debate**

# Animals!



**Research shows dogs in the workplace result in better collaboration within teams.**



# Try your own experiments

Use these patterns from *Fearless Change*:

- Test the waters
- Time for Reflection
- Small Success
- Step by Step

Thanks for listening!