

The Importance of the Aha! Moment

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What is an Aha! Moment?

- Eureka effect or eureka moment
- Can be defined as a moment of:
 - sudden, triumphant discovery, inspiration or insight
 - a person realising or solving something
- A form of creative thinking



What makes an Aha! Moment?

- Four main characteristics:
 - Suddenness
 - Ease
 - Positive effect
 - Confident perception of truth



The Element of Surprise

- What is surprise?
- Personal expectations
- Isaac Newton and the apple



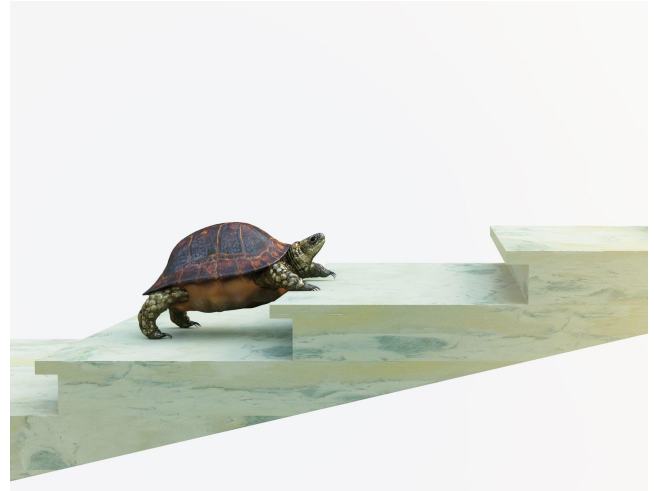
The Struggle Ahead of the Moment

- Positive effects of struggle
- Negative effects of struggle
- The “Eh, fuck it!” Moment
- A learner’s struggle
- Progress versus momentum



The Reality of the Aha! Moment

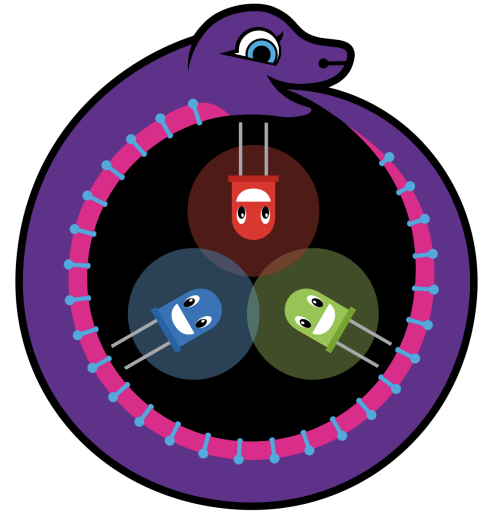
- Patience required
- Happens organically
- Not for everyone
- Always a different moment



Real Aha! Moments

My Aha! Moment

- Python programming
- Tried and failed to learn
- Ended up with a microcontroller
- Made an LED blink using Python
- Found clarity and a connection



Tammy's Aha! Moment

- Music theory
- The rules felt arbitrary and illogical
- Explanation of one part
- Started to see patterns
- It made sense and became fun



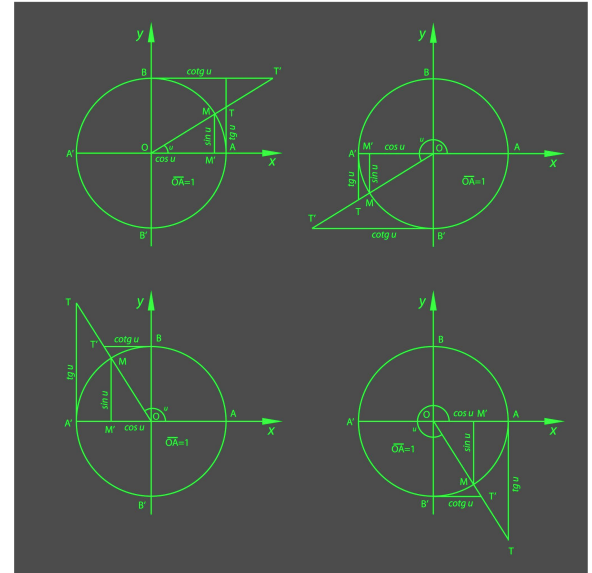
Alec's Aha! Moment

- Python programming
- Interacting with certain objects and not others
- Found dunder (or “magic”) methods
- System behind the scenes
- Uses this functionality regularly



Tod's Aha! Moment

- Trigonometry
- sine and cosine
- An animated diagram
- Able to use them automatically
- Still helps to this day



John's Aha! Moment

- Programming
- Learned as a kid
- Career in animation
- Made it exciting and relevant
- Able to apply to other concepts

```
class BigFile:
    def __init__(self, datadir, ndims):
        idfile = os.path.join(datadir, "id.txt")
        self.names = [x.strip() for x in str.split(open(idfile).read())]
        self.name2index = dict(zip(self.names, range(len(self.names))))
        self.ndims = ndims
        self.featurefile = os.path.join(datadir, "feature.binary")
        print "[BigFile] %d features, %d dimensions" % (len(self.names), self.ndims)
        print "    binary: %s" % self.featurefile
        print "    txt: %s" % idfile

    def read(self, requested, isname=True):
        if isname:
            index_name_array = [(self.name2index[x], x) for x in requested]
        else:
            assert(min(requested) >= 0)
            assert(max(requested) < len(self.names))
            index_name_array = [(x, self.names[x]) for x in requested]
            index_name_array.sort()
        vecs = seq_read(self.featurefile, self.ndims, index_name_array)
        return [x[i] for x in vecs]

    def shape(self):
        return (len(self.names), self.ndims)
```

Finding an Aha! Moment

Cultivating the Aha! Moment

- Recognise your strengths
- Conducive environment
- Validate, ask, listen
- Appropriate guidance
- Maintain self-awareness



Increase the Potential for an Aha! Moment

- Take a break
- Let your mind wander
- Boost your mood
- Get some sleep
- Experience new things



Following the Aha! Moment

- Sense of clarity
- Focus on the positive
- Be open to change
- Use the momentum
- Revisit your successes



Not Finding Your Aha! Moment

- “This will never happen to me.”
- May not happen
- All journeys differ
- Stay open to it
- Celebrate your successes



References

References available on GitHub:

- [https://github.com/kattni/PyCon2023/tree/main/Education Summit Talk Content/
The Importance of the Aha Moment References.md](https://github.com/kattni/PyCon2023/tree/main/Education_Summit_Talk_Content/The_Importance_of_the_Aha_Moment_References.md)

More information:

- https://en.wikipedia.org/wiki/Eureka_effect (at your own risk)
- <https://www.scientificamerican.com/article/the-aha-moment/> (requires a free account)

To My Contributors

To Bruce: Thank you for help putting this all together.

To Tammy, Tod, Alec and John: Thank you for contributing your Aha! Moments to my talk.

Thank you for attending!

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