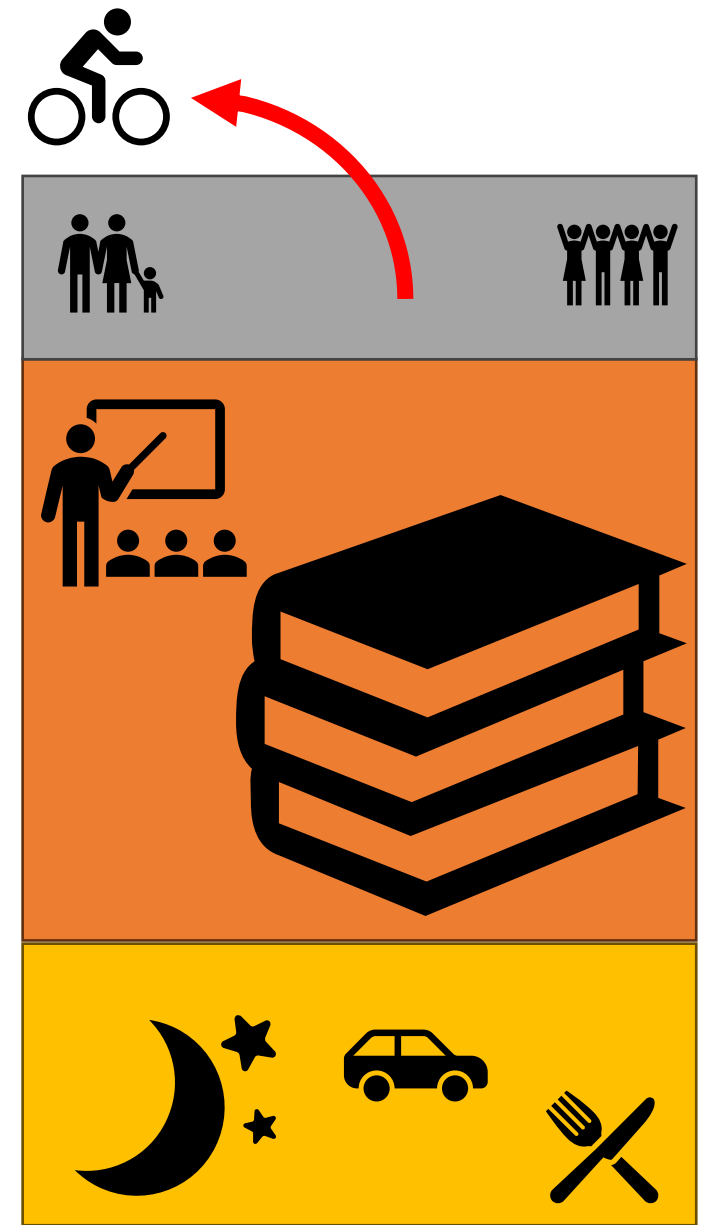
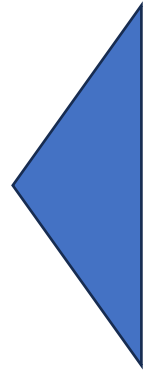
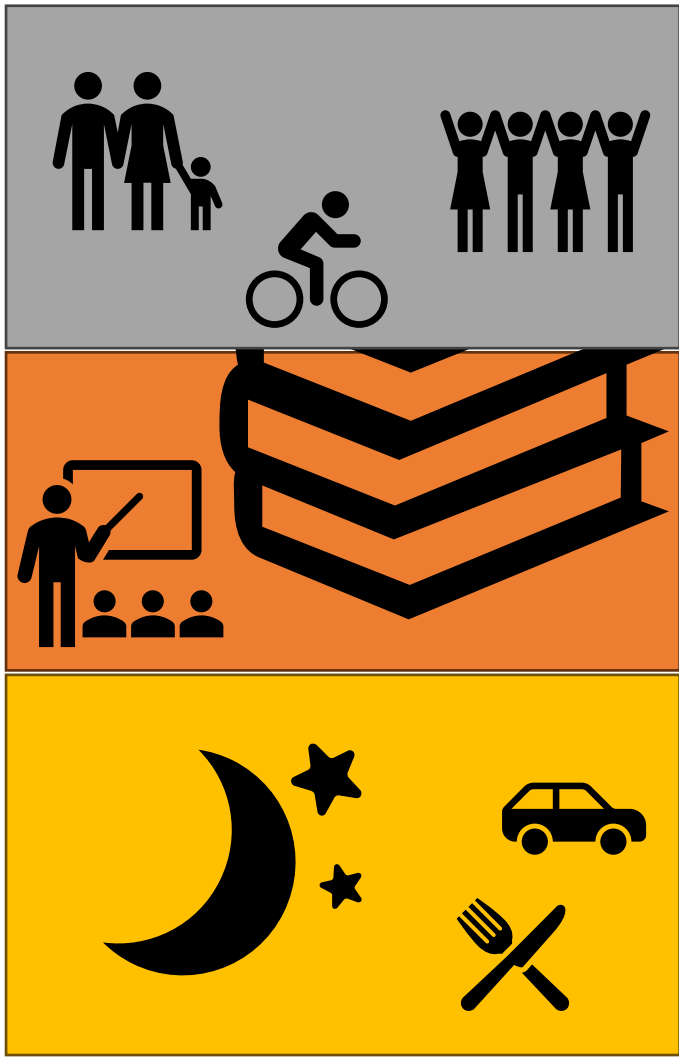


How to learn effectively

Ziemowit Dworakowski
AGH University of Krakow



**The mountain to climb in some
video games appears to be just as
high as learning for tests.**

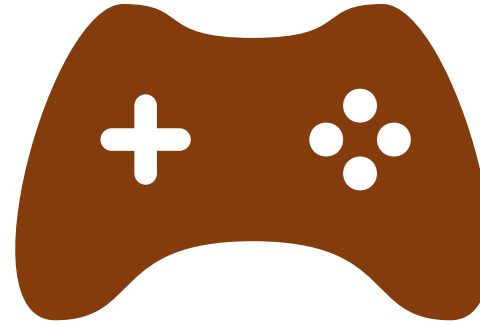
And yet we climb it and call it „fun”

Why?

And its not actually reserved for games vs school.
Most hobbies have very high skill ceiling...



VS



Understanding is difficult

Learning stuff for the sake
of learning feels empty

Mostly reading

Boring!

Interesting problems

Clearly defined goals /
progress tracking

Using (almost) all senses

Emotional investment

Powerful idea no 1:

GAMIFICATION



~~Understanding is difficult~~

Understanding is a challenge

~~Learning stuff for the sake
of learning feels empty~~

You need a bit of grind

~~Mostly reading~~

You need to diversify

~~Boring!~~

Learn how to flow

And also:

- Set your own goals
- Create „builds”
- Track your progress
- Give yourself „achievements”

Powerful idea no 2:

MNEMOTECHNICS



What are we actually memorizing easily?

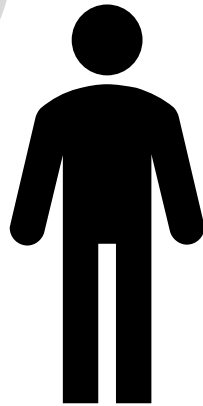
Where food?

Where lion?

Where home?

Who friend?

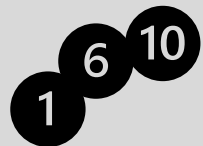
How use tool?



Our brain easily memorizes:

- Places
- Images
- People
- Relations and actions
- Stories

*Just make use of the mechanisms that
are already in place!*








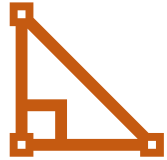








Number memorization

476 c.e..

- *Fall of Roman Empire*



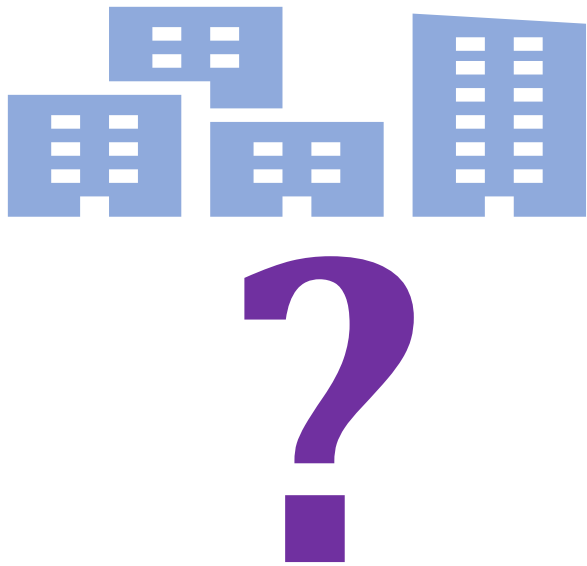
0				5	
1				6	
2				7	
3				8	
4					9

Pro-tip: Have more than one anchor for each number



Word memorization

Nyquist stability criterion

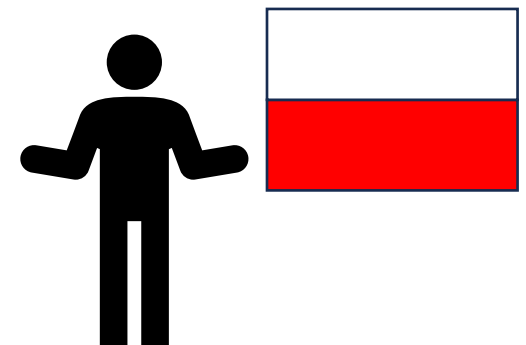
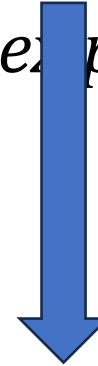
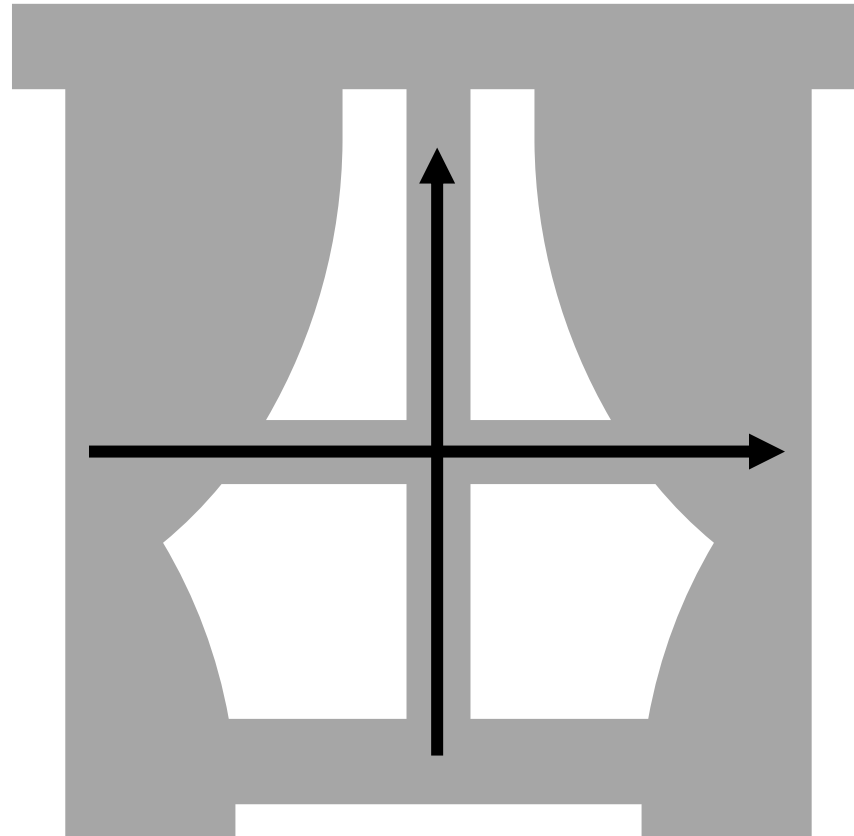


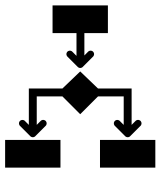
Pro-tip: The more absurd the anchors – the better!



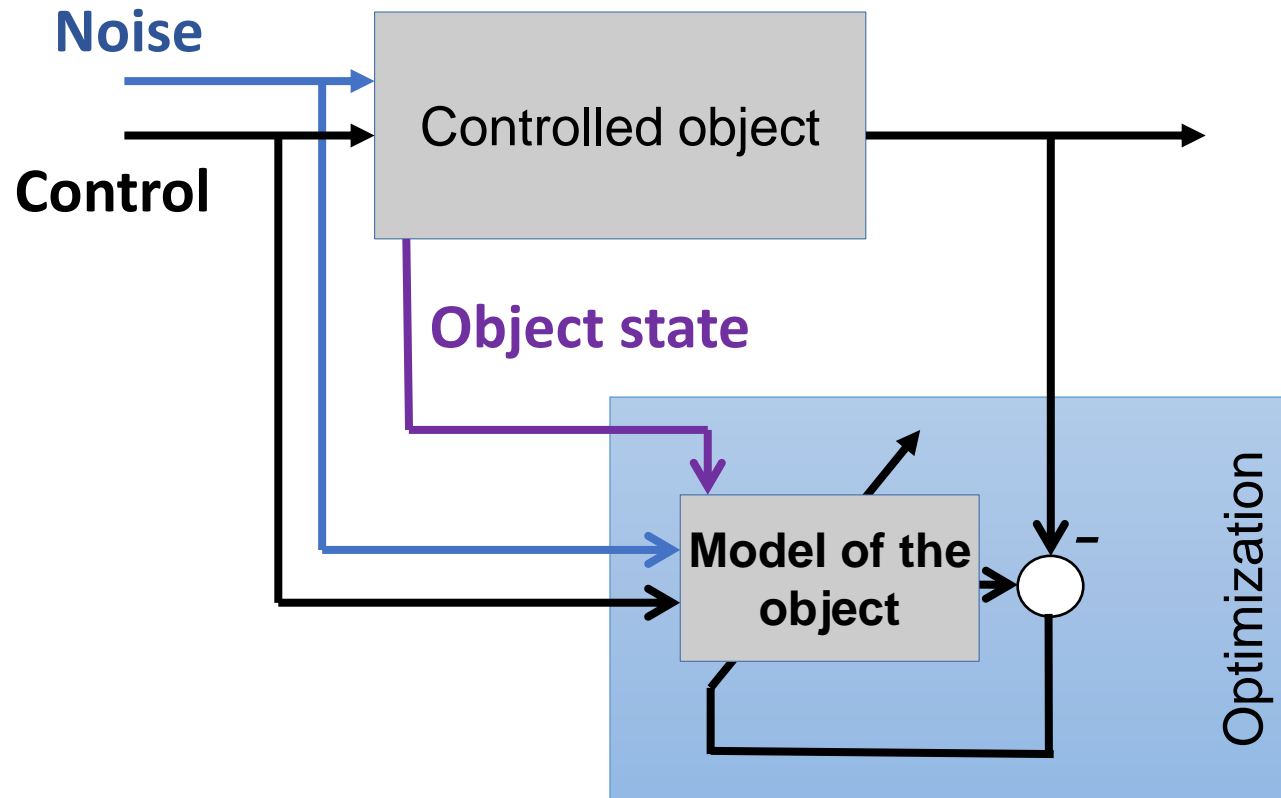
„Interesting image”

*„An automatic continuous-time system is stable if **all the poles** of its transfer function **are located in the left half** of the complex plane”*





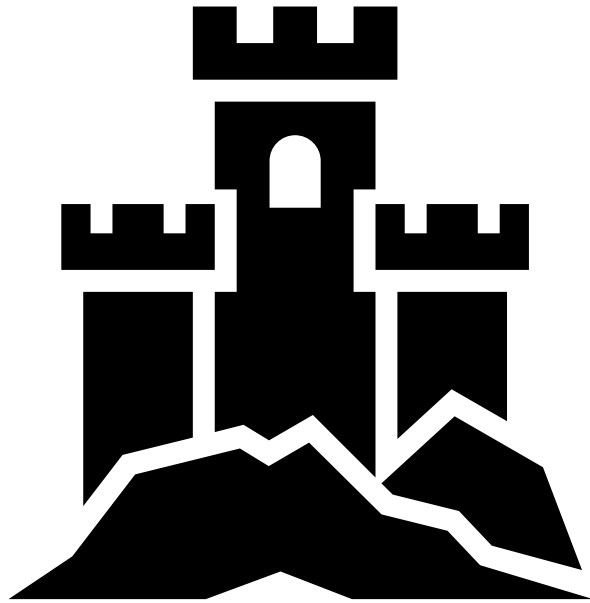
Schemes memorization





Knowledge organization

Memory palace



This is an advanced technique, once you get familiar with simple ones – google this one.

Note – memory palace is a perfect tool for long-term memorization. Don't use it for something that you need to memorize briefly and forget at once.

The point is not to learn some
„guide to mnemotechnics”

The actual point is to learn how to design
your own solutions to memorize stuff

Remember:

Places



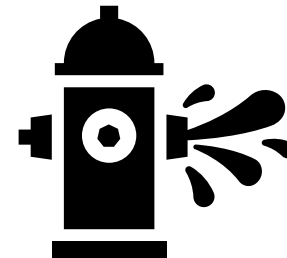
Images



People



Relations/Actions

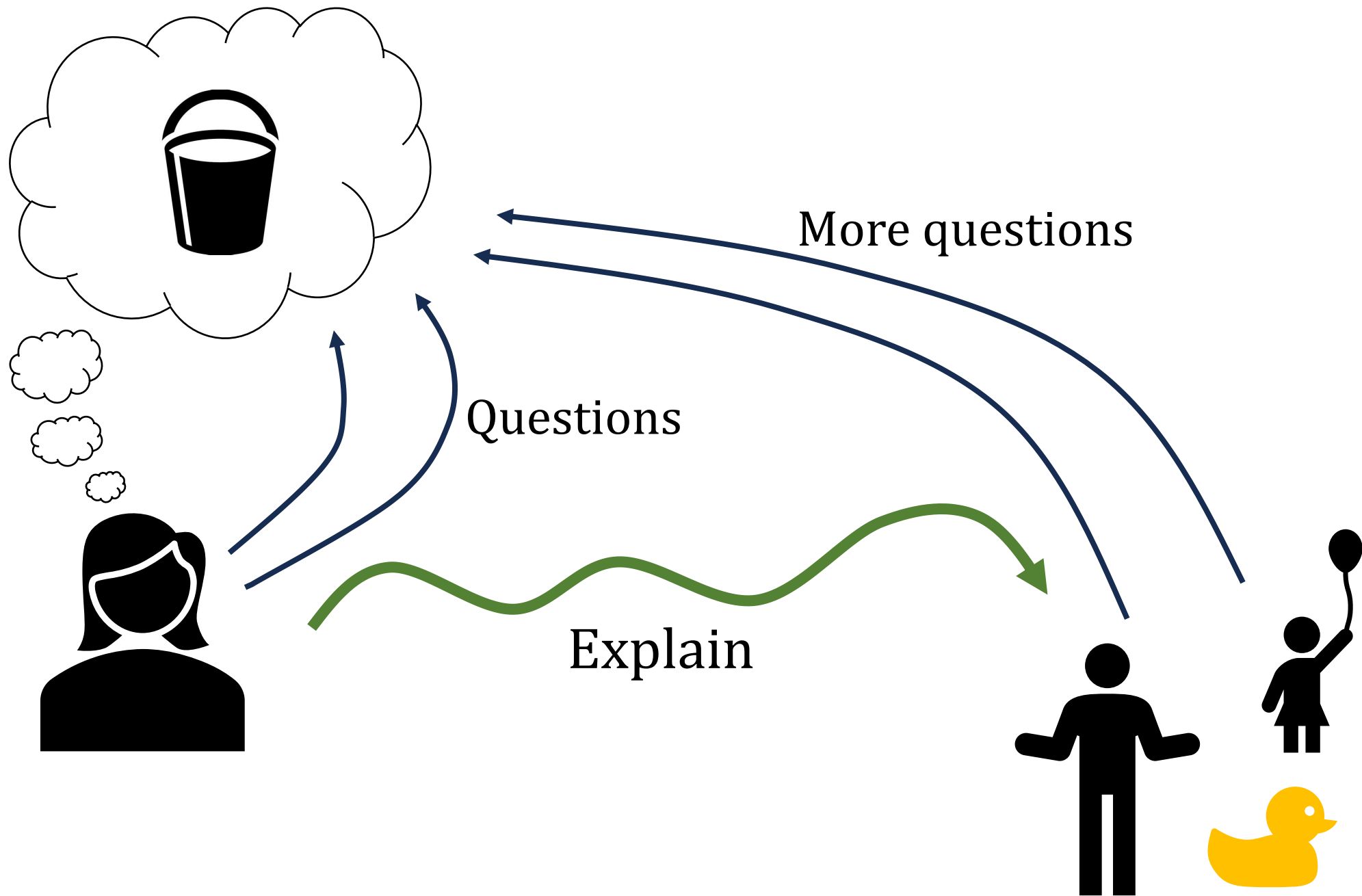


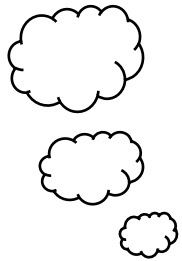
Stories



Memorization or understanding?







Use knowledge



When to memorize?



No time

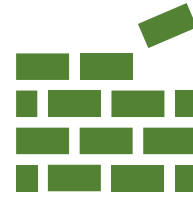
Unnecessary stuff



Just need to
recall knowledge
long-term

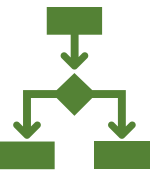
„what” question

When to understand?



We will build
on this knowledge

We need to draw
conclusions



We are learning
About relations

„how” question

1. All the lectures at AGH are free to attend – you can look for other points of view on the same problem
 2. There are external sources of brilliant lectures: for instance **MIT Open Course Ware**
3. Tutorials and documentations on the internet can be a very good source as well
 4. There are different books on each subject. If one doesn't „feel right” – look for another one!
5. **Ask questions, use office hours, contact colleagues at higher years**

Work regularly
*(pending assignments tend to
cumulate in a bad way)*

But also...

Set reasonable goals
Exercise and rest regularly!
**Maintain relations with people
that are important for you**