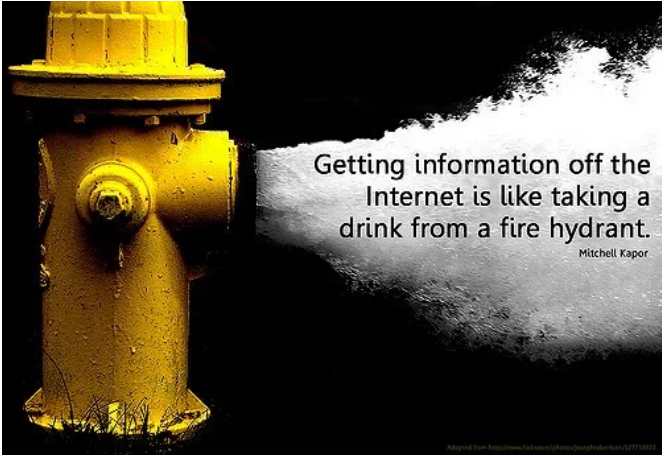
What is...the skeleton?

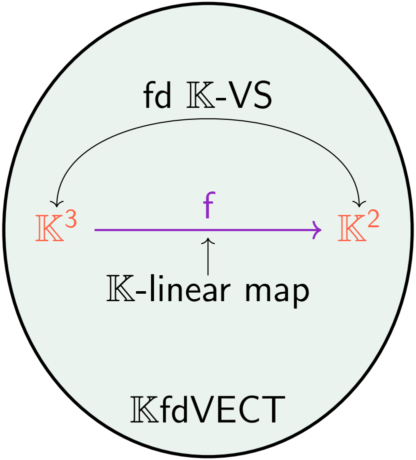
Or: The bare minimum

TMI



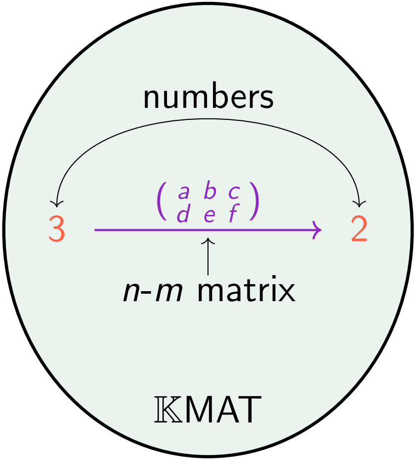
- It is not always preferable to have a lot of data
- It is sometimes a good strategy to ignore finer structures
- Skeletons are part of this philosophy

Too big



- $\mathbb{K}$fdVECT Objects finite-dimensional $\mathbb{K}$-vector spaces, arrows $\mathbb{K}$-linear maps
- $X, Y \in \mathbb{K}$fdVECT are isomorphic if and only if they have the same dimension

Good size



- $\boxed{\mathbb{K}\text{MAT}}$ Objects $\mathbb{N}$, arrows $\mathbb{K}$-valued matrices
- $X, Y \in \mathbb{K}$MAT are isomorphic $\boxed{\text{if and only if}}$ $X = Y$

For completeness: A formal definition

- A category S is skeletal if no two distinct objects are isomorphic
- A skeleton of C is a skeletal category S equivalent to $C \simeq S$
- Theorem Skeletons exists (requires AoC) and are unique up to isomorphism
- Thus, we can say that S is the skeleton of C (non-canonical)
- Two categories are equivalent $\Leftrightarrow$ they have isomorphic skeletons

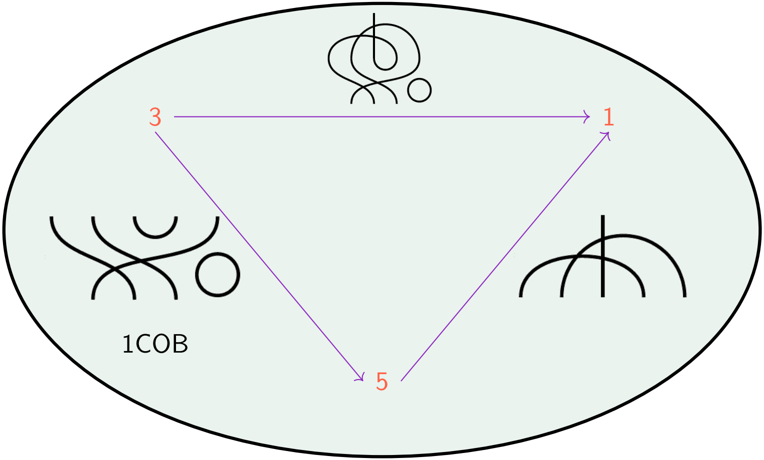
Example

- $\mathbb{K}$fdVECT is not skeletal
- $\mathbb{K}$MAT is skeletal
- $\mathbb{K}$MAT is the skeleton of $\mathbb{K}$fdVECT
- An equivalence $\mathbb{K}$fdVECT $\to$ $\mathbb{K}$MAT is sending

X to its dimension, f to its associated matrix

Useful or not?

Skeletal:



- The skeletal form of a category is both always useful and never useful
- Roughly If the skeleton is nice, great, if its artificial, probably ignore it

Thank you for your attention!

I hope that was of some help.