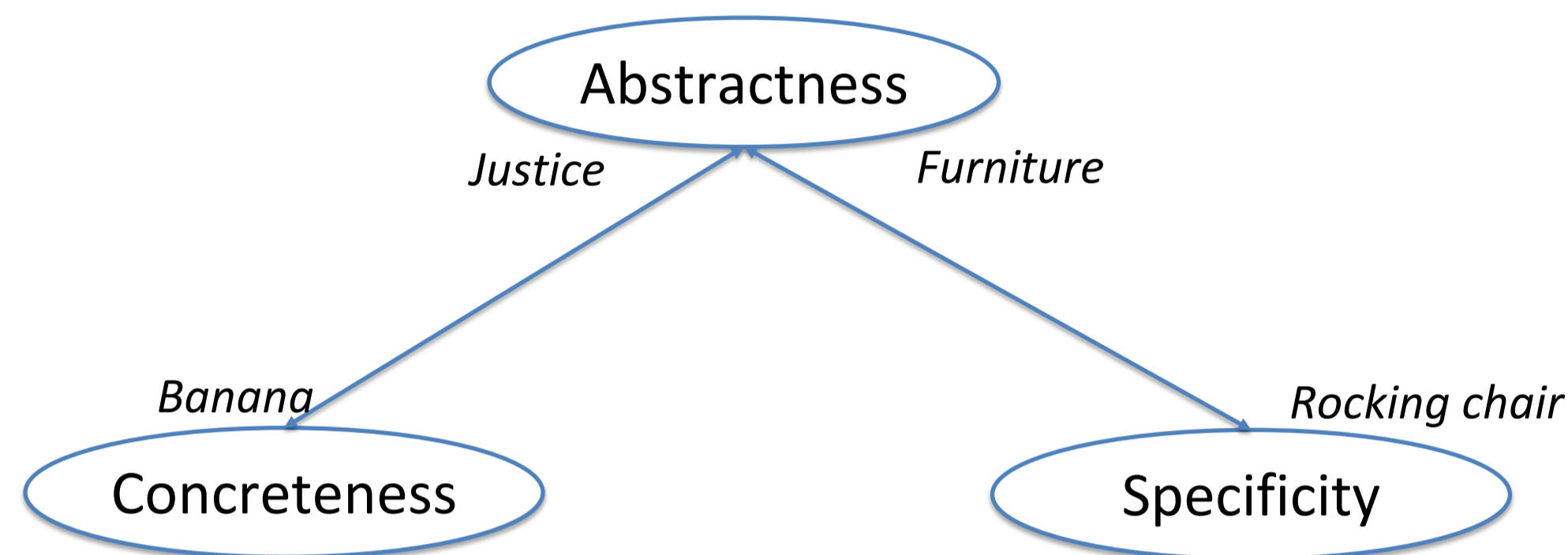**Tarun Tater**
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Multimodal and Multilingual Abstractness

Abstractness, Concreteness & Specificity

- Concrete concepts refer to things that can be seen, heard, felt, smelled, or tasted as opposed to abstract words.

- **Degree of Abstractness** – Different concepts have different degrees of abstractness and concreteness.
    - *Idea* – Highly Abstract
    - *War* – Somewhere in between
    - *Banana* – Highly Concrete

- **Conceptual concreteness** and **categorical specificity** are two continuous variables that allow distinction from abstractness.
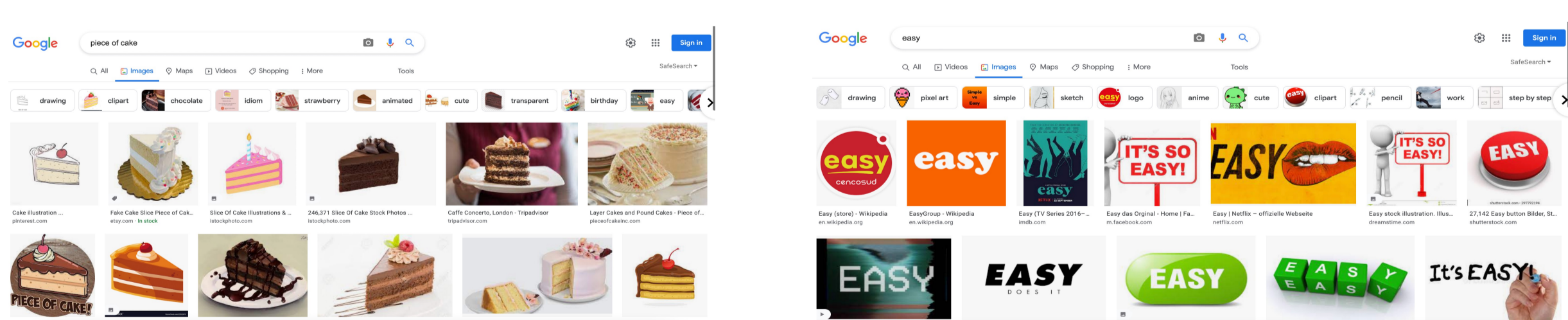

	Generic	Specific
Abstract	Belief, Commitment	Mankind, Cakewalk
Concrete	Ground, People	Glucose, Petroleum

Context and Disambiguation

- ✓ **RQ1** – What questions should we ask while annotating datasets?

- ✓ **RQ2** – How does it matter upon the user?

- A word can have multiple senses each with varying abstractness scores.
    - Physics is Alice's research *field*.
    - In summer, wheat *fields* are colored in yellow.
    - Magnetic *field* attracts iron.

- User/Context dependent
    - *develop* - For an architect, this may be more concrete than for a software developer
    - People with disabilities - Can this understanding benefit them?

- ✓ Annotation and usage of norms and abstractness scores need context!
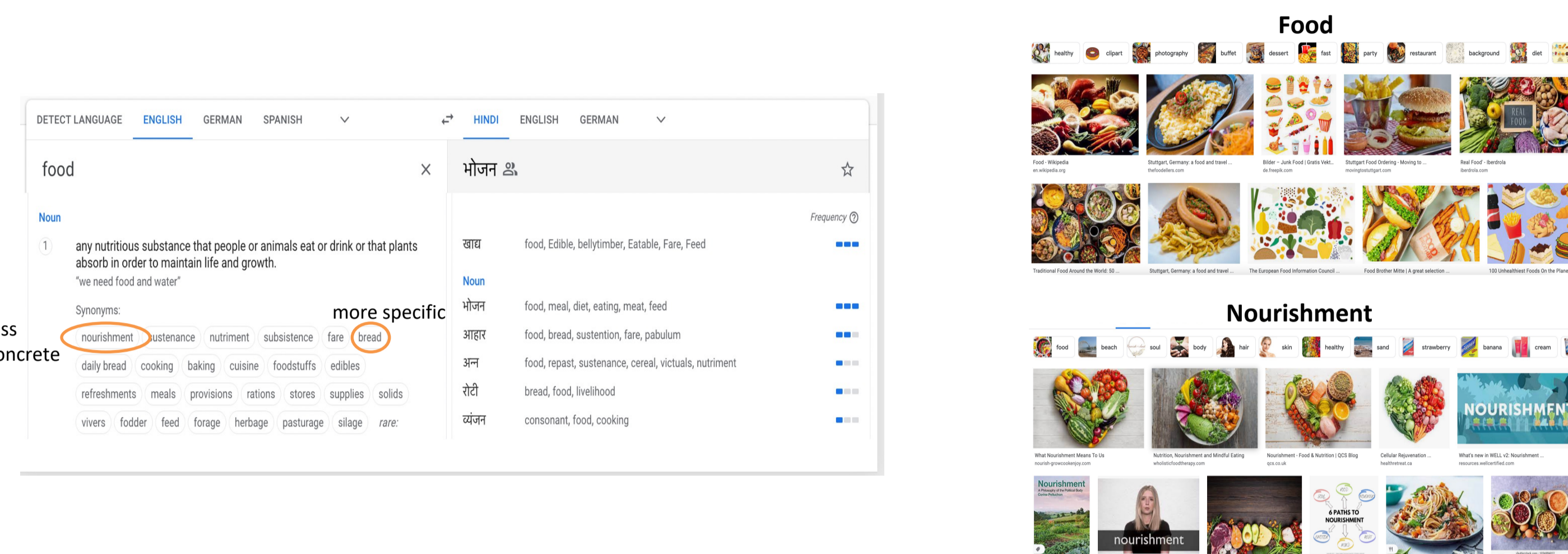
What About MWEs/Phrases/Sentences?

- ✓ **RQ1** – What properties should be encoded for phrases/sentences w.r.t. understanding abstractness?

- ✓ **RQ2** – How imaginable is a sentence?

- Understanding different senses i.e., literal or metaphorical/idiomatic w.r.t abstractness.

    - *piece of cake*

Multi-lingual Abstractness

- ✓ **RQ1** – Is Abstractness transferable across languages? If so, how?

- ✓ **RQ2** – Would all synonyms have the same abstractness score? What about similar words?
    - *Joy vs Happy* – How do you perceive them?

- ✓ **RQ3** - Are abstractness norms transferable from one language to another? Is machine translation the answer? Or does some concepts get lost in translation?

- ✓ **RQ 4** – Can we semi-automatically generate ratings for multi-lingual norms?
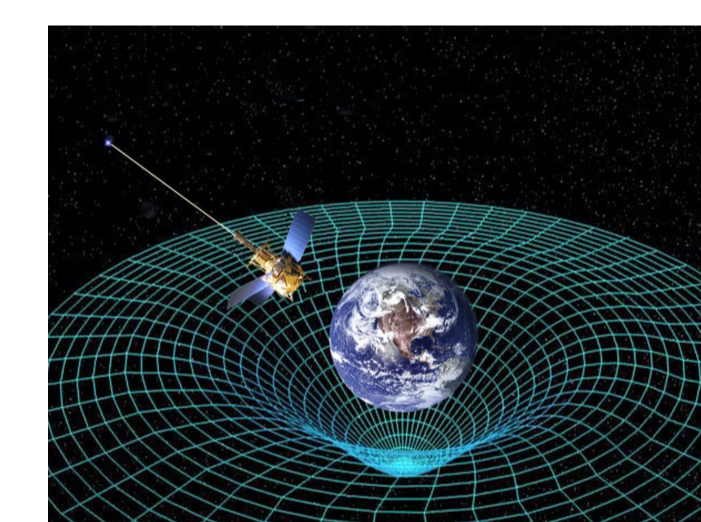
Multimodal Abstractness

- ✓ **RQ1** – How is abstractness modelled in images?

- ✓ **RQ2** – How does context affect abstractness in Images?

- ✓ **RQ3** – How to construct joint image-text embeddings? How is visual and textual information connected w.r.t abstractness?

Travelling   Travelling/ Travelling by road   Travelling through time

Downstream Applications

- Modelling abstractness across modalities and languages is important for downstream applications like:
    - **Machine Translation**
    - **Caption Generation**
    - **Figurative Language Identification** – e.g. - Metaphor Detection.
    - **Style Transfer** – Converting an abstract sentence into a concrete sentence.
    - **Code Switching** – When people use multiple languages, understanding the role of concrete/abstract concepts.
    - **Stance Detection** – Less/more specificity from the text and arguments.
    - **Image Retrieval Systems** – Better modelling of imageability using abstractness would improve image retrieval systems.

Is Time Abstract or Concrete?