

ISD7

The Image Schema Day 2023

Proceedings of The Seventh Image Schema Day 2023
Rhodes, Greece, September 2, 2023

co-located with
The 20th International Conference on Principles of Knowledge
Representation and Reasoning (KR 2023)

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Preface

The Image Schema Day Workshop Series

Highly interdisciplinary, research on image schema takes inspiration from the background in cognitive linguistics where Johnson (1987) described an image schema as “... a recurring, dynamic pattern of our perceptual interactions and motor programs that gives coherence and structure to our experience.” Today, the research area encompasses several disciplines interested in embodied cognition, spatiotemporal reasoning and abstract thinking.

Often thought of as cognitive patterns describing spatial relations and movements, image schemas are studied in psychology and linguistics as a format of thought, and applied in computer science and robotics as a means to represent complex concepts and model behaviour. Simultaneously, studies in visualisation, art and human-computer interaction use image schemas as a mental shortcut to capture meaning and produce incentives to action.

Being an interdisciplinary research field allows for a level of research emergence that rarely takes place in more traditionally focused disciplines. Building on that premise, the Image Schema Day (ISD) workshop series was introduced to provide a venue for people of any discipline to discuss their work. Since 2015, when the first ISD was held in Bozen-Bolzano as an invite-only experiment, the workshop series has grown in both size and disciplinary variance as each edition has consisted of a plethora of topics that all centred on that one central notion: image schemas and conceptual primitives.

The first five instances of the ISD were yearly held in Bozen-Bolzano, Italy. The first two as independent invite-only. ISD3 took part in the *Joint Ontology Workshops* (JOWO 2017) (see <https://www.iaoa.org/jowo/2017/>) and editions ISD4 and ISD5 were part in the first two instances of the umbrella event *TriCoLore: Creativity, Cognition and Computation* (see <https://tricolore.inf.unibz.it>). Spreading its wings, perhaps as a response to the pandemic travel restrictions, ISD6 was held in Jönköping, Sweden, for a 2-day independent workshop.

The Seventh Image Schema Day (ISD7)

This year, ISD took part in the workshop program of The 20th International Conference on Principles of Knowledge Representation and Reasoning (KR 2023) (see <https://kr.org/KR2023/>). Not only did this allow for a cross-“*flirtisation*” of the formal sciences of modelling complex phenomena, it also allowed the members of the workshop to enjoy the turquoise waves of the Mediterranean Sea, as the venue was located in Rhodes, Greece.

As one of the larger workshops at KR, the workshop filled the full day on the 2nd of September with 14 accepted papers for presentation and publication in the proceedings (listed below).

In addition, Brandon Bennett, spatiotemporal *researcher extraordinaire* from the University of Leeds (UK), was invited as a keynote speaker. In his talk “*Conceptions of Concepts: Frege vs Lakoff/Johnson, are they reconcilable?*” he elegantly balanced the scientific background of the logical foundation of epistemology and knowledge representation with the embodied notions from cognitive linguistics.

Within the ISD7 agenda, we also included a call-to-action in which we committed to update, rearrange and expand on the current Wikipedia page devoted to image schemas.¹

¹See https://en.wikipedia.org/wiki/Image_schema

The papers in this volume are divided into three segments. The first *Part I: Design, representation and metaphors*, covered topics from design, HCI and philosophy. Here, *Baur et al*'s paper presented by Huber, described the in-depth work on using image schemas in data physicalisations. *Heidrich et al* presented work on using image schemas as visualisation tools for software development. *Huber et al* continued his work from ISD6 by introducing further results from the involvement of image schemas in the design of Air Traffic Control panels. *Romand* proposed a unique epistemological perspective arguing that image schemas should not be considered part of cognitive semantics, but rather affective semantics.

The second presentation segment, *Part II: Formalisations, computation and application*, focused on computer science and applications in intelligent systems. *Bourou et al*, presented by Plaza, discussed the importance of using image schemas when making sense out of diagrammatical representations. *Peñaloza and Pinkosova* presented a formal method to look at beats or cyclic repetitions, by extending linear temporal logic. *Hedblom* presented a study in conceptual primitives based on comparing pushing synonyms using the formal languages of Image Schema Logic (ISL) and the Diagrammatic Image Schema Language (DISL). *Pomarlan et al* presents an outline of the use of image schemas in cognitive robotics for more reactive agents. *Melzi et al*, presented by Peñaloza, stepped outside the traditional image schema sphere by discussing concepts and their composition from the perspective of visual combinations in stable diffusion.

The third segment, *Part III: Language, concepts and ontological analysis*, returned to the more traditional setting of analysing image schemas in language and conceptualisation. First up was *De Giorgis and Gangemi* discussing the image-schematic aspects of the notion of “substance” and its extensions in the ImageSchemaNet ontology. *MacBeth et al* talked about the conceptually overlapping relationship between image schemas and conceptual dependency theory. *Wachowiak et al*, presented by Chao, provided a deep-dive into the image schema notion of “verticality” by providing some annotations guidelines for the concept to be used in linguistic studies. Finally, *Righetti and Kutz* used the Leuven Concept Database as a foundation for coring out image-schematic notions in selected concept attributes.

Contributions in this volume

Keynote

- *Brandon Bennett.*
Conceptions of Concepts: Frege vs Lakoff/Johnson, are they reconcilable?

Part I: Design, representation and metaphors

- *Cordola Baur, Carolin Wienrich, Stephan Huber and Jörn Hurlienne.*
Image Schemas as Tools for Exploring the Design Space of Data Physicalisations
- *David Heidrich, Jörn Hurlienne and Andreas Schreiber.*
Image-Schematic Metaphors in Software Visualizations

- *Stephan Huber, Andreas Balser, Patrick Schulz, Cordola Baur and Jörn Hurtiene.*
Image Schemas vs. VAKOG: Designing for Intuitive Communication in Air Traffic Control
- *David Romand.*
Image Schemas as Epistemic Feelings. The Shift from Cognitive to Affective Semantics

Part II: Formalisations, computation and application

- *Dimitra Bourou, Marco Schorlemmer and Enric Plaza.*
An Image-Schematic Analysis of Hasse and Euler Diagrams
- *Rafael Peñaloza and Zuzana Pinkosova.*
Walk Me to the Moon: Representing Image Schemas with Abstract Time Measures
- *Maria M. Hedblom.*
When Push Comes to Shove: A Formal Analysis of the Conceptual Primitives in Pushing
- *Mihai Pomarlan, Kavia Dhanabalachandran and Michael Beetz.*
Towards Reactive Robotics with a Pinch of Image-Schematic Reasoning
- *Simone Melzi, Rafael Peñaloza and Alessandro Raganato.*
Does Stable Diffusion Dream of Electric Sheep

Part III: Language, concepts and ontological analysis

- *Stefano De Giorgis and Aldo Gangemi.*
Emotions, Money and Other Amorphous Things. An Initial Exploration of “Substance”
- *Jamie MacBeth, Alexis Kilayko, Zoie Zhao, Sophie Song and Winnie Zheng.*
Image Schema Decompositions of the Conceptual Dependency INGEST Primitive: A Study of Paraphrases
- *Lennart Wachowiak, Dagmar Gromann and Chao Xu.*
The Image Schema VERTICALITY: Definitions- and Annotation Guidelines
- *Guendalina Righetti and Oliver Kutz.*
The Moving Apple: An Image-Schematic Investigation into the Leuven Concept Database

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