

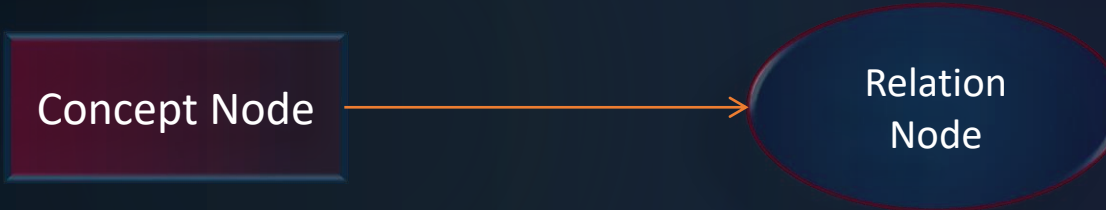
Knowledge Representation

Conceptual Graph (Part I)

Conceptual Graph: Description & Syntax

- Graph representation for logic based on the semantic networks & existential graphs

Syntax



Conceptual Graph: Arity of Relation

- Living things grow

1-ary relation

Living thing

Grow

- Color of Pen is Black

2-ary relation

Pen

Color

Black

- Person siblings brother & sister

3-ary relation

Person

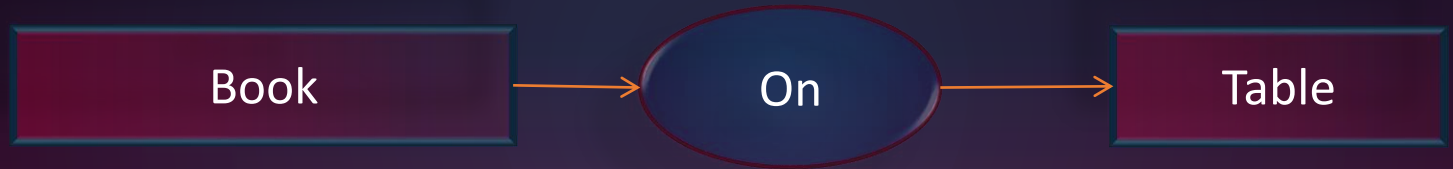
Sibling

Brother

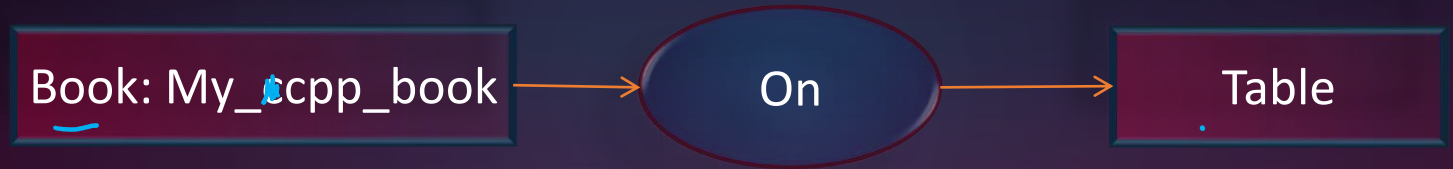
Sister

Conceptual Graph: Examples

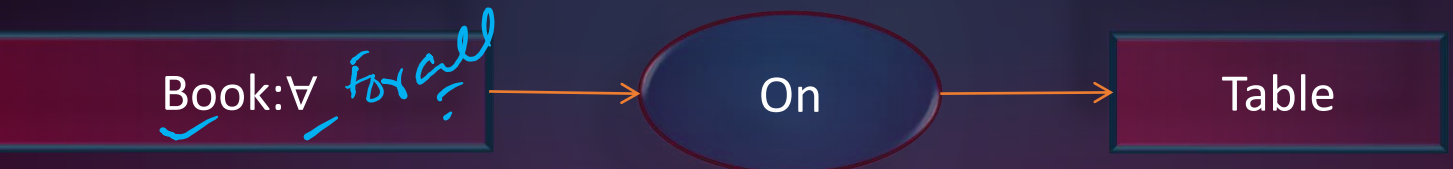
- Book is on Table



- My_cpp_book is on table



- Every book is on table



Conceptual Graph: Description & Syntax

- My_cpp_book with ISBN# 1234567 is on table

Concept: Ref # UID

Book: my_cpp_book# 1234567

or

table

Super Concept

Textbook

mycpp is on Table

is A

Text_Book

Textbook is A Book

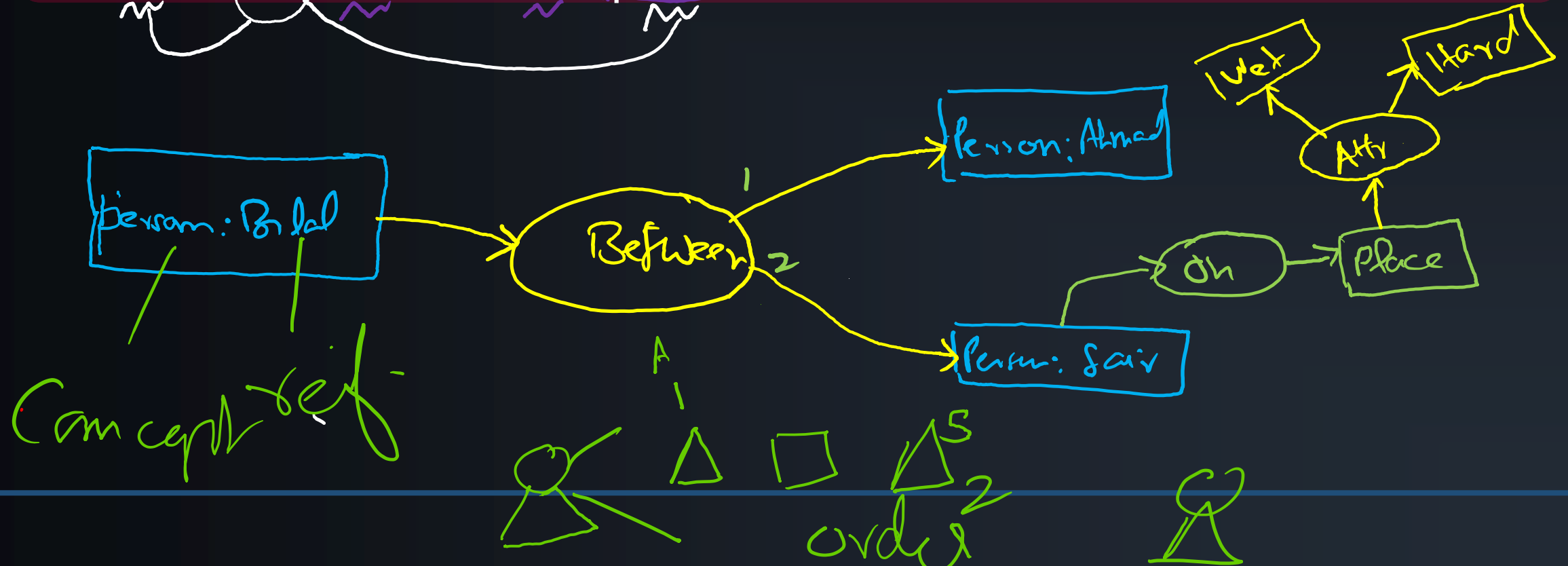
Book

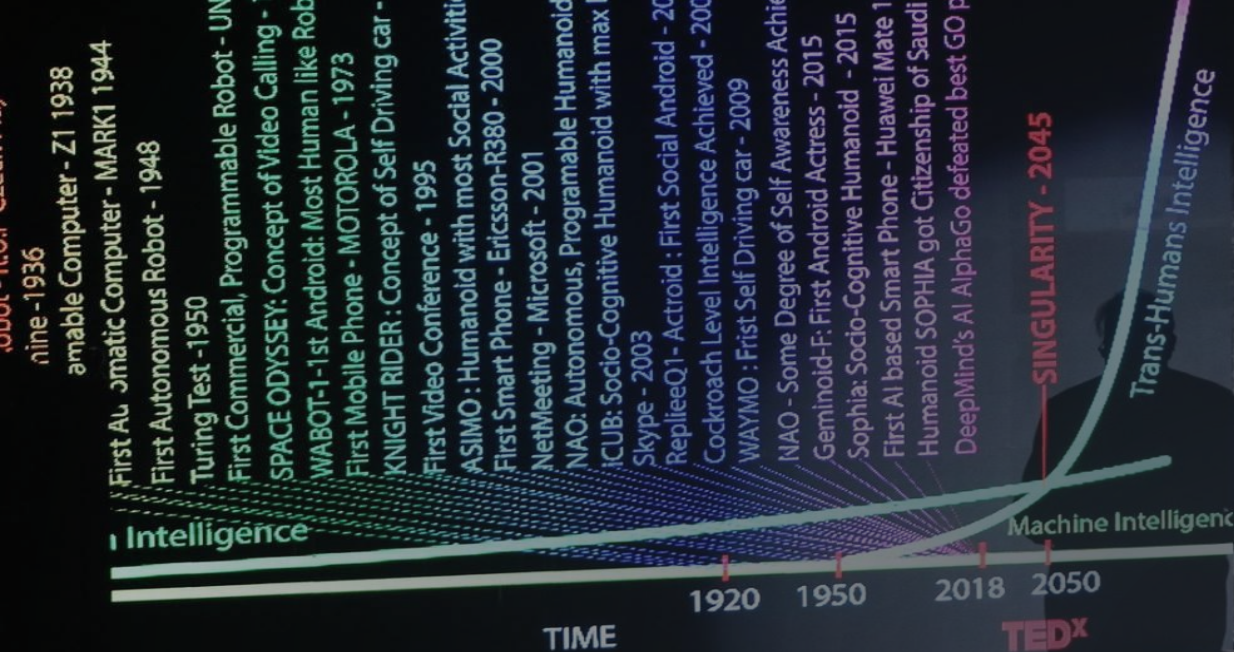
is A

Textbook

Conceptual Graph: Description & Syntax

- Bilal is standing between Ahmad and Sair.
- Sair is on Wet and hard place — Attr





Wajahat M. Qazi

PhD (Machine Consciousness)



- Assistant Professor |
- In-charge Intelligent Machines and Robotics
- Department of Computer Science, CUI Lahore
- Vice-Chair, IEEE Robotics and Automation Society
- Member, Technical Committee on Cognitive Robotics, IEEE-RAS
- Member, Technology Foresight Committee for Robotics for Vision 2025, PCST, Pakistan



Artificial Intelligence
Knowledge Representation

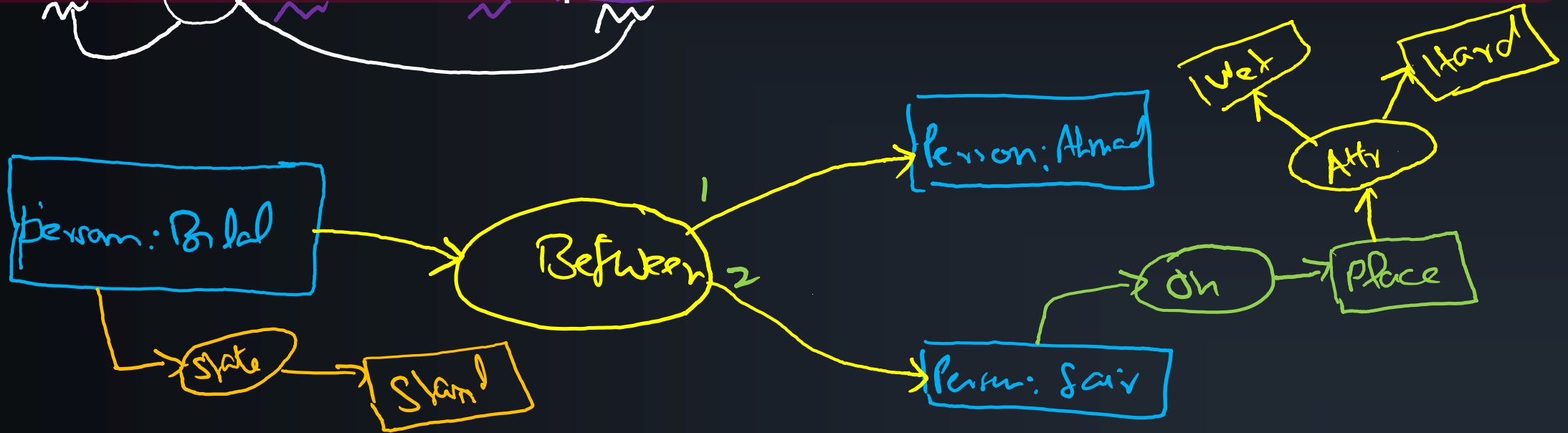


Knowledge Representation

Conceptual Graph (Part II)

Conceptual Graph: Description & Syntax

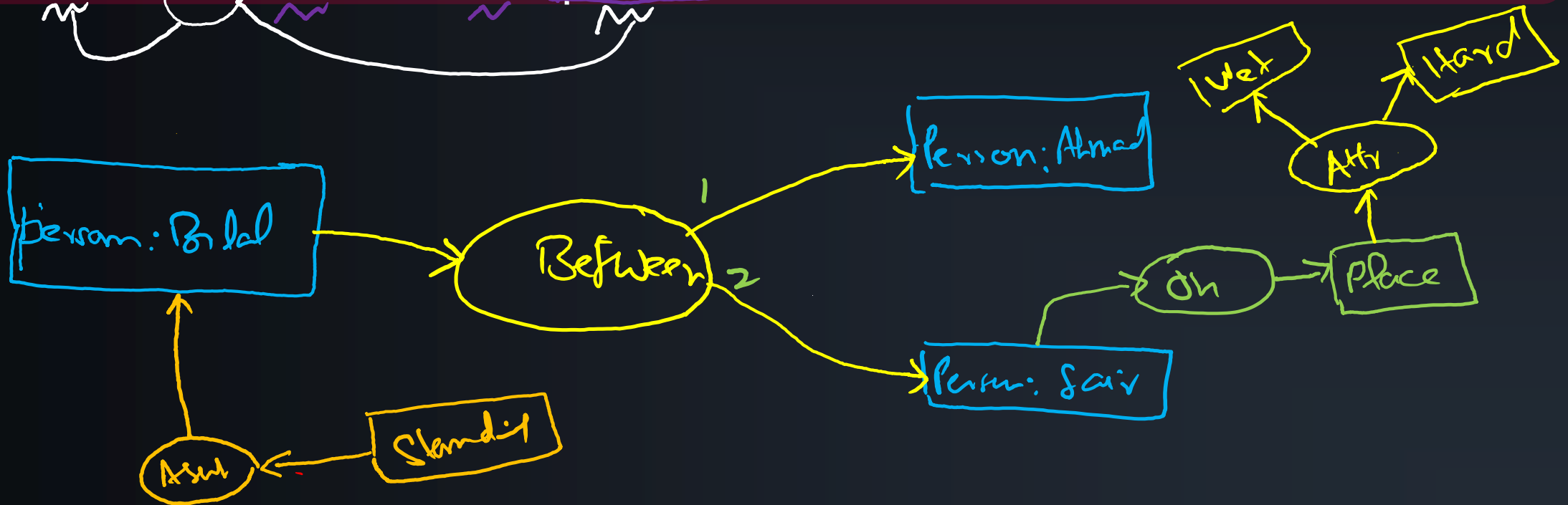
- Bilal is standing between Ahmad and Sair.
- Sair is on Wet and hard place — Attr



Conceptual Graph: Description & Syntax

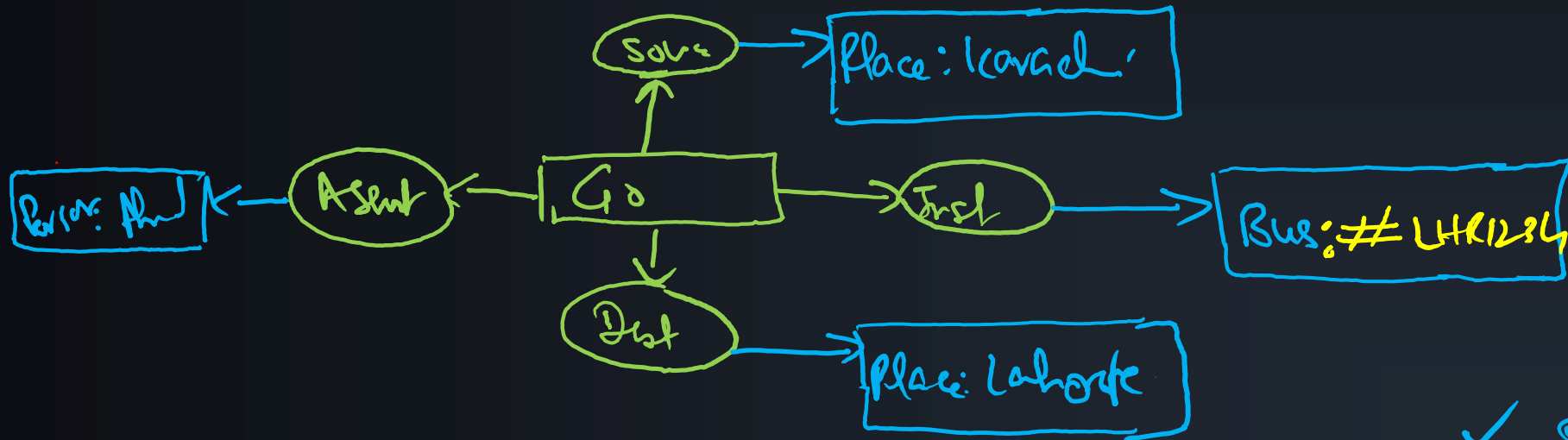
- Bilal is standing between Ahmad and Sair.
- Sair is on Wet and hard place — Attr

Action → Agent
performing



Conceptual Graph: Description & Syntax

- Ahmad is going to Lahore from Karachi on Bus



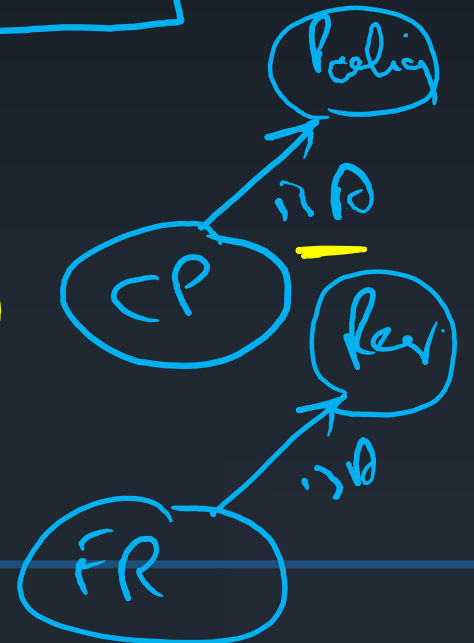
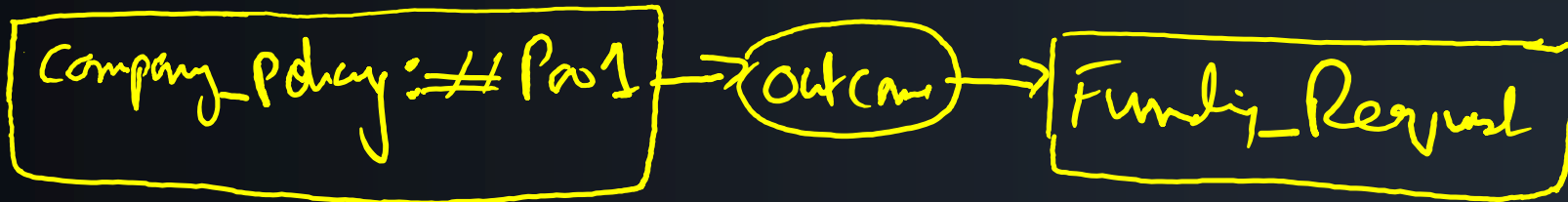
$Go(Agent, Source, Dest, Inst)$

Conceptual Graph: Description & Syntax

real: funding is a rev

- Outcome of a company_policy # Poo1 is a funding_request.

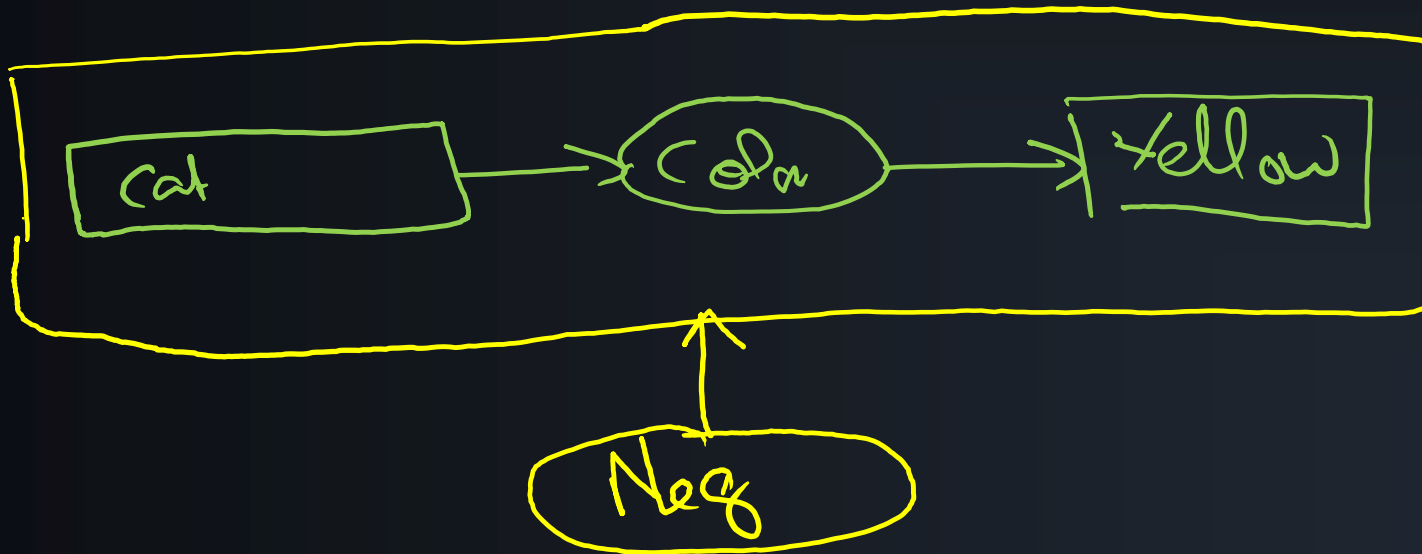
No Semant.
rev & isA



No Semant.
& isA

Conceptual Graph: Description & Syntax

- Color of cat is not yellow.



Conceptual Graph: Description & Syntax

- Ahmad believes that Bilal will give book to Sair