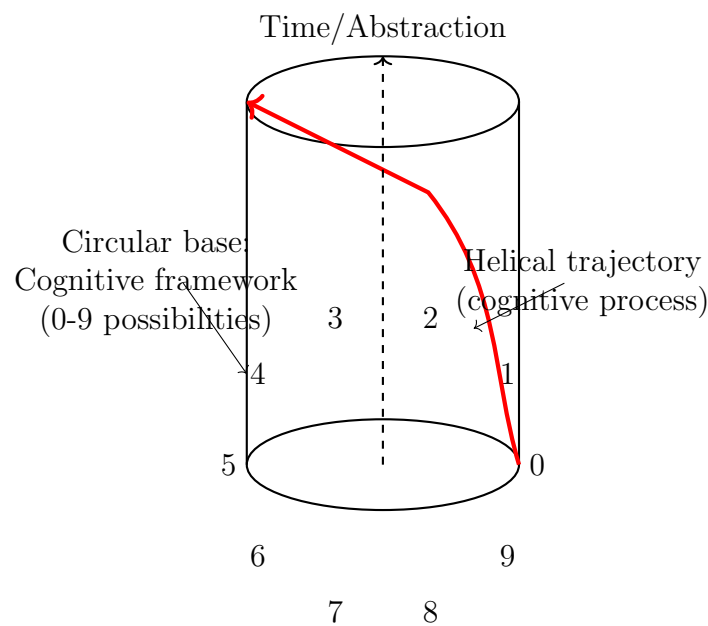# Core Models of Dynamic Generative Theory

Chen Zihao

Introduction to the Cognitive Models

These four models represent the cognitive tools developed during the 80-hour cognitive storm. They serve as both explanatory frameworks and "weapons" for challenging static formalisms.

1 Model 1: Infinite Helix Cylinder

Time/Abstraction

Circular base:
Cognitive framework
(0-9 possibilities)

Helical trajectory
(cognitive process)

3   2

4

1

5   0

6   9

7   8

**Infinite Helix Cylinder v4.0**
Dynamic Meta-Framework Coordinate System

Figure 1: Infinite Helix Cylinder: From static list to dynamic cognitive coordinate system.

Key Components:

- **Base Circle (0-9)**: Represents the finite set of possibilities at any given cognitive moment

- **Vertical Axis**: Temporal/abstract progression

- **Helical Spiral**: Actual cognitive trajectory through possibility space

1

- **Rotation Operation**: The "twist" that generates new perspectives

2 Model 2: Power-Access Dimensionality Model

Specific point = Complete permission address
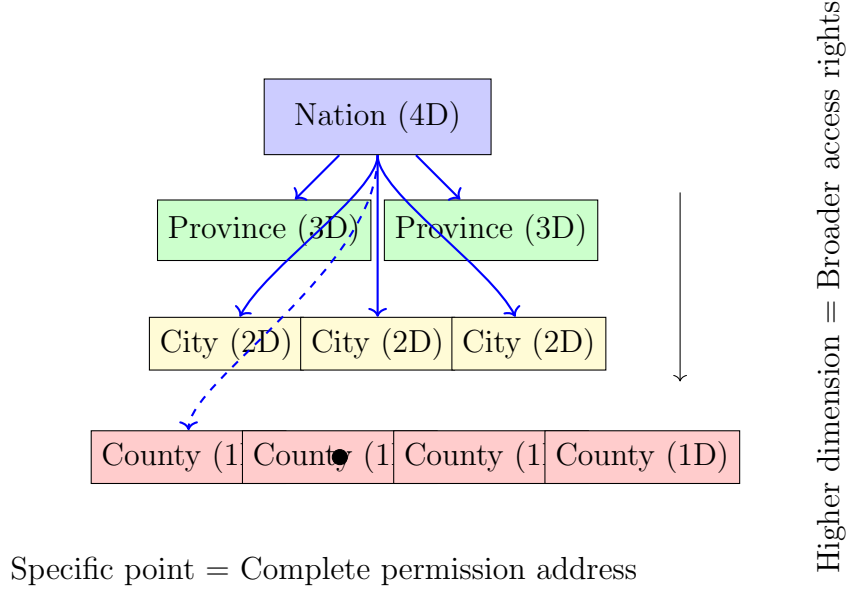
Power-Access Dimensionality Model
N-dimensional space as nested permission hierarchy

Figure 2: Power-Access Dimensionality: High-dimensional space as permission hierarchy.

Key Components:

- **Nested Levels**: Each dimension adds a new coordinate/access key
- **Top-Down Access**: Higher dimensions can directly access lower ones
- **Address as Point**: A specific location is a complete permission set
- **No "Distance"**: Only relative containment and access rights

3 Model 3: Homological Radar Detection Model

Key Components:

- **Detection Chains**: Finite algebraic probes sent into space
- **Echo Analysis**: Boundary operator computations (∂)
- **Global Inference**: From local algebraic relations to global topology
- **Step-Whole Distinction**: Clear separation between computational steps and inferred reality
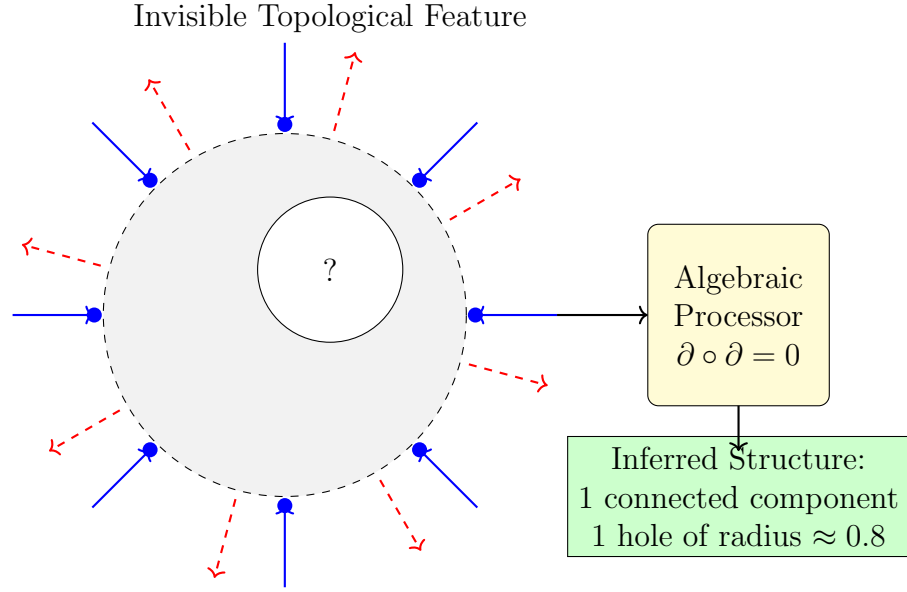
Homological Radar Model
Using finite algebraic chains to detect invisible topological wholes

Figure 3: Homological Radar: Finite chains detect infinite topological features.

4 Model 4: Distributed Network-Structure Group Model

Key Components:

- **Trivial Fibers**: Individual nodes/simple components

- **Structure Group**: Coordination protocol/consensus algorithm

- **Global Section**: Consistent state across network

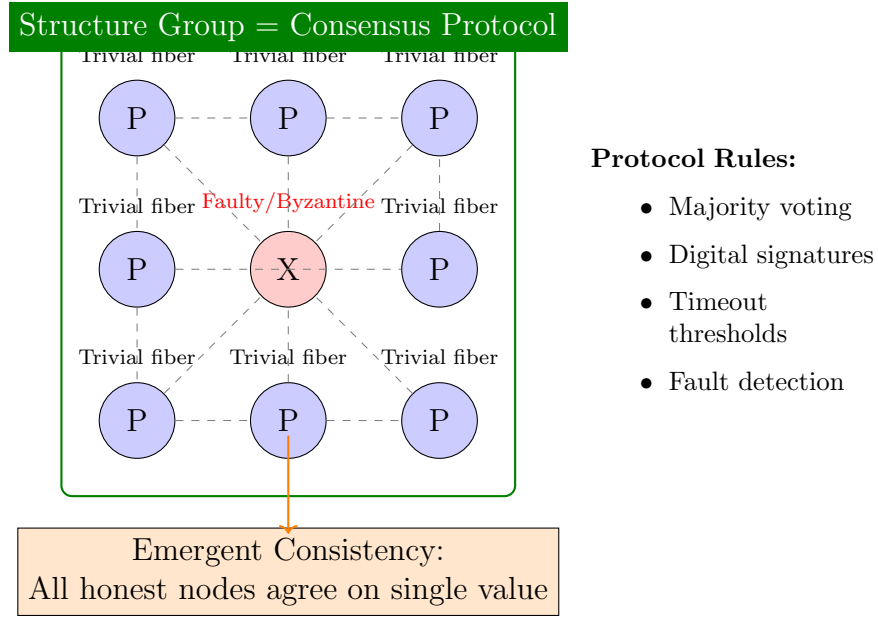- **Fault Tolerance**: Byzantine generals problem as coordination challenge

Synthesis: The Model Ecosystem

How to Use These Models in Your GitHub Repository

1. **Save each figure separately**:

   - Compile this LaTeX document to PDF
   - Use PDF editing tools to extract individual figures
   - Save as PNG/SVG: `helix_cylinder.png`, `power_access.png`, etc.

2. **Add to GitHub**:

Distributed Network-Structure Group Model
Global coordination as structure group in fiber bundle

Figure 4: Distributed Network-Structure Group: Local triviality with global coordination.

Model Ecosystem
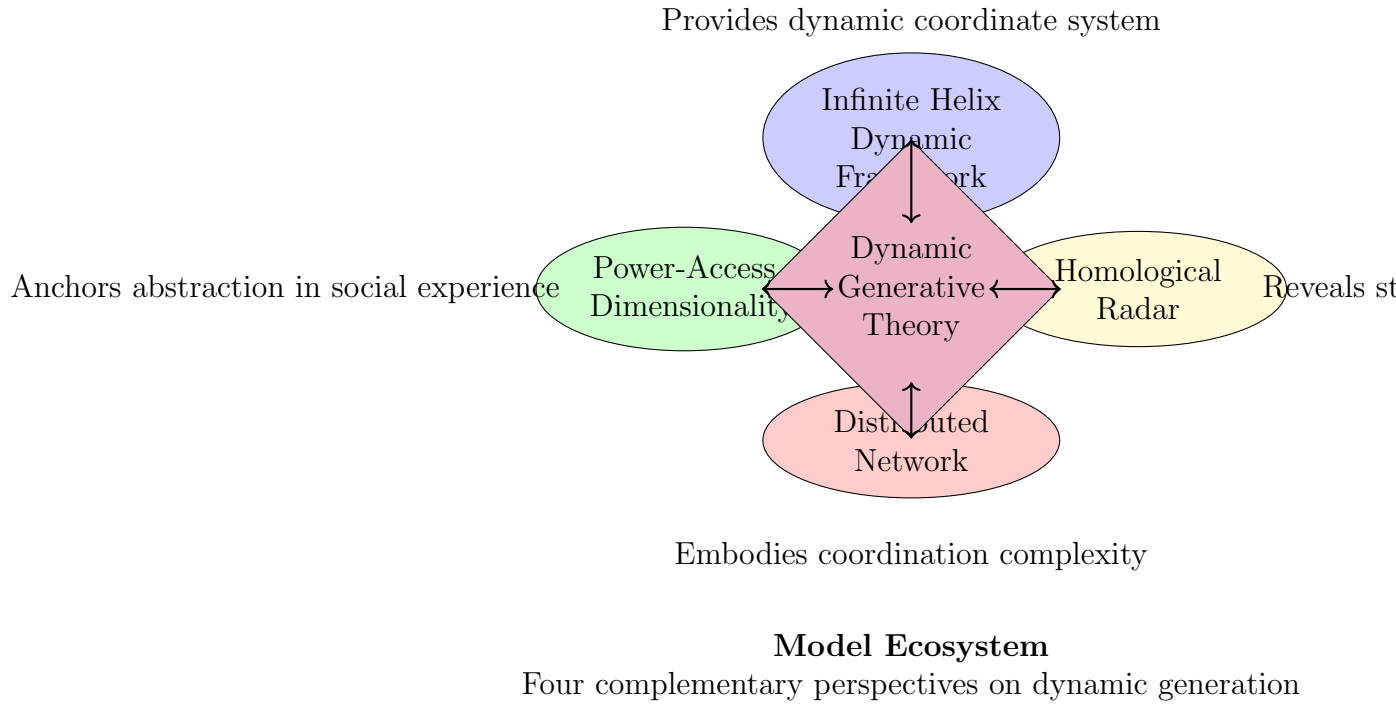Four complementary perspectives on dynamic generation

Figure 5: The four models form an ecosystem around Dynamic Generative Theory.

```
/models/visualizations/
|-- helix_cylinder.pdf
|-- helix_cylinder.png
|-- power_access_dimensionality.pdf
|-- homological_radar.pdf
|-- distributed_network.pdf
'-- model_ecosystem.pdf
```

3. **Caption files**: Create `model_descriptions.md` with:

   - Key insights from each model
   - Connection to six predictions
   - Cognitive evolution of the models