ChatGPT

Reverse Engineering Ian Cheng's World Model: Technical Specification for Simulation Architecture

Ian Cheng's simulations operate on a **shared world engine architecture** built in Unity [1]. This combines a static environmental substrate with dynamic agent cognition and open-ended emergence. As Cheng describes the practice of "Worlding," the goal is "the unnatural art of creating an infinite game by choosing a present, storytelling its past, simulating its futures, and nurturing its changes" [2]. In other words, Cheng treats the world as a **possibility space** in which embodied agents construct meaning. The system's key components are:

- **Static Environment (Unity Substrate)** – A bounded 3D "design studio" world with defined borders. This empty grid evokes the utopian white-box of Superstudio and the default new-file space of 3D modeling software [3]. The environment persists across agent lives, governed by Unity physics (collisions, gravity) and lighting/temporal cycles. Day–night progression and moving sunlight cast realistic shadows. Objects populate the space as **affordance bundles**: each has visual/physical properties (color, shape, mass, collision bounds, etc.) and **hidden objective properties** (edible vs. toxic, friendly vs. threatening). Crucially, these meanings are *not pre-labeled* – the AI agents must **discover** them through interaction [4]. For example, the turtle in *Thousand Lives* must learn whether grapes or spiky fruits are food or poison through trial and error [4]. Objects can spawn or disappear over time (introducing novelty), and environmental events (Chalice's sudden appearances as a "force of nature") disrupt routines [5]. Resource scarcity (limited food/water) and spatial changes force the agents to adapt continuously.

- **Dynamic Agents (Neuro-Symbolic AI)** – Each character (like BOB or Thousand) has a **cognitive architecture** with two core systems: an *inference engine* (beliefs) and a *"congress of demons"* (desires/motivations) [6] [7]. Cheng himself describes BOB's AI as "a unique composite AI architecture composed of a congress of motivating 'demons' and a neuro-symbolic inductive engine capable of learning rule-based beliefs from sensory experiences" [6].

- *Inference Engine:* Implements Richard Evans' neuro-symbolic rule learning. It constructs general rules from sensory inputs and infers predicates (e.g. **nourishing vs toxic, threatening vs safe, treasure vs trash, kin vs other, erratic vs stable**) about any object [8]. New sensory data that contradicts current beliefs is flagged as *surprising* (high prediction error) and prioritized for learning [8] [9]. Over time the engine builds a coherent web of beliefs that allows predictive inferences about novel stimuli.

- *Demons (Motivational Subagents):* A fixed roster of (e.g.) **Eat, Fight, Flee, Prune, Alert, Explore, Play, Sleep, Idle, Defecate** demons each embodies a basic drive [10]. Every demon has its own goal and "script" (micro-story) to satisfy that goal, along with filters for the predicates it cares about (e.g. the Eater demon cares whether an object is "nourishing" [7]). At any moment, exactly one demon controls the agent's actions; others compete by computing *urgency* scores based on current sensory inputs. The active demon has a **weighted hold** on control, which can be usurped when another

demon's urgency surpasses it. When a demon gains control, it selects an **Object of Attention** (OOA) from its filtered list and proceeds through its scripted steps.

- *Emotion (Progress Signal):* Agent progress is tracked via a continuous *valence–arousal* signal [9]. **Arousal** measures intensity (how much is happening), while **valence** ranges from negative to positive. Steady bumps in arousal indicate progress toward a goal (even if valence is negative, e.g. escaping danger) [9]. Sharp flips in valence signal a violated expectation (surprise): a mismatch between prediction and outcome produces a transient spike in arousal and flips the valence (from pleasant to shock or vice versa) [9]. This surprise signal is then fed back into the inference engine to **trigger belief updates**. In short, *progress* = *minimal surprise*: the current demon strives to minimize the difference between its model of the world and actual sensory feedback [6].

- *Body & Sensors:* Agents have full embodiment. For instance, BOB's body is a procedurally grown network of spring-mass nodes, allowing serpentine or branching morphologies [11]. Its locomotion is emergent: end nodes "flock" while the center of gravity is constantly rebalanced [11]. A rich sensorium includes **external sensors** (pain receptors on each node, over-stretch sensors between nodes, and vision detecting motion, color, shape, texture) and **internal sensors** (energy level, health, stomach and bladder capacity) [11]. Actions (move, approach, grab, push, bite, vocalize, defecate, etc.) are predefined (not learned) so the AI can focus on deploying them to serve beliefs and desires [12].

- **Learning Over Time (Developmental Cycle):** Agents live discrete lifetimes: they are born with primitive (often wrong) initial rules, **mature** by gathering experience and refining beliefs, and can die (from starvation, poison, injury or environmental hazards). Death resets the body but retains ~20% of the belief network [13]. This reincarnation (with partial amnesia) allows learning to accumulate across lives without full retraining. Surprise-driven updates to beliefs happen mostly during downtime (e.g. when the agent "sleeps"), since rule induction is costly. The agent's **memory** compares current state to similar past states and assesses a valenced delta (things better or worse than before), subtly biasing future demon urgencies.

- **Viewer Interaction ("Parental" Influence & Worldwatching):** Cheng's works allow audiences to intervene. In BOB installations, viewers can create "offerings" with captions (e.g. *"This mushroom is tasty"*) and drop them into the world. A special *"Angel"* subagent uses these as authoritative hints, competing with the agent's own beliefs. If an angel's action succeeds, its caption is integrated into the main inference engine; if not, the caption is rejected [14]. In *Thousand Lives* and *Life After BOB*, Cheng implemented **Worldwatching**: spectators connect via phone/computer to the running simulation. They can pause the scene, tap objects or characters, and see a wiki entry of that element (revealing its backstory, internal state and beliefs). Indeed, *Life After BOB* was built to run live in Unity, with "interactive 'Worldwatching' versions of the real-time film" allowing viewers to pause and explore each scene at will [1]. This meta-layer exposes not just the cinematic narrative but also the agent simulation underneath, inviting co-creation of lore through an open wiki.

- **Narrative Scaffolding (Optional):** Cheng negotiates between emergent simulation and scripted story. For example, *Life After BOB: The Chalice Study* is a screenplay with defined arcs and dialogue (Chalice's arc, Dr. Wong's arc, thematic questions of agency vs optimization), but the AI characters **perform** those scripted beats using the same cognitive architecture. Their timing and micro-expressions vary based on their emotional states. Thus, predetermined story moments can unfold

differently each screening, guided by the AI's current inference-driven behavior. The simulation continually runs beyond scripted scenes, making the world an ongoing drama even outside defined plot points.

0) Guardrails & Scope for 1000 Lives KB Extraction

Domain: LifeAfterBOB Wiki (*lifeafterbob.wiki/*) exclusively.
Hop Depth: Seed pages → linked pages → one more hop.
Canon vs Inferred: Tag fields as `canon:true|false`. Include ≤25-word quote + source when canonical.
Normalization: Types like `Location, Entity, Goal, Obstacle, Shift, Perspective, Belief, Desire, Intent, Mode, Mechanic, Affordance, Zone, Object, Artifact, Event, Concept, Person, Org`.
Seeds: "1000 Lives Demo", "Turtle Host", "Wavyverse", "Conflux", "Life Path", "Prime Path", "Subplot(s)", "Chalice Study", "Permadroned Years", "1000 Plots", "BOB", "Jewel", plus relevant UX (Worldwatching/Cinema).

1) Outputs (Folder Structure)

```
/kb/
  entities.json        # Canonical entities (people, artifacts, concepts,
modes), with LEGOS fields
  morphisms.json       # Relations between entities (typed triples)
  olog.json            # Ontology of types and functors
  world_room.csv       # Zones, objects, hazards, affordances with valences
  mechanics.json       # Agent loop steps, motivations, telemetry, world rules
  lore_glossary.json   # Glossary of terms and definitions (with sources)
  ambiguities.md       # Unresolved questions & research notes
  design_fill.md       # Non-canonical suggestions (user-added hypotheticals)
```

2) Entities Schema (`/kb/entities.json`)

Each entity entry has: - **id**: `<type>:<id>` - **label**, **type**, **summary** - **canon_quotes** (with short quote & source) - **aliases**, **first_seen**, **last_updated**, **sources** - **LEGOS fields** (perspective, belief, desire, intent) with canon:true/false.

Example:

```
{
  "id": "artifact:1000-lives-demo",
  "label": "1000 Lives Demo",
  "type": ["Artifact","Software","Event"],
  "summary":
"Z's Wavyverse demo: life logs → subplots; tortoise host; NYE 2074; failed demo
that led to a permadroned decade.",
```

```
  "canon_quotes": [{"q": "…Spending a New Year’s Eve at ZIM, [Z] demonstrated Thousand Lives—a digital experience hosted on a tortoise’s brain…", "source": "lifeafterbob.wiki/1000_Lives_Demo#Lxx-Lyy"}],
  "aliases": ["1000 Lives"],
  "first_seen": "2074-12-31",
  "last_updated": "2074-12-31",
  "sources": ["https://lifeafterbob.wiki/view/1000_Lives_Demo"],
  "LEGOS": {
    "perspective": {"text":"agent","canon":false},
    "belief": {"text":"subplots can heal through exposure","canon":false},
    "desire": {"text":"extract valuable experiences","canon":false},
    "intent": {"text":"refactor into 1000 Plots (2084)","canon":true,"evidence": {"quote":"…rebuilding 1000 Lives into 1000 Plots…","source_url":"lifeafterbob.wiki/1000_Plots#Lxx-Lyy"}}
  }
}
```


3) Morphisms Schema (`/kb/morphisms.json`)

Store triples of the form (subject, predicate, object) with evidence:


```
[
  {
    "subj": "person:zoroaster",
    "pred": "created",
    "obj": "artifact:1000-lives-demo",
    "evidence": [{"q":"Z launched this demo in NYE 2074…","source":"lifeafterbob.wiki/1000_Lives_Demo#Lxx-Lyy"}],
    "confidence": 0.9,
    "canon": true
  },
  {
    "subj": "artifact:1000-lives-demo",
    "pred": "hosted_on",
    "obj": "object:turtle-host",
    "evidence": [{"q":"…hosted in the brain of a tortoise.","source":"lifeafterbob.wiki/Turtle_Host#Lxx-Lyy"}],
    "confidence": 0.95,
    "canon": true
  }
]
```


4) Olog Schema (`/kb/olog.json`)

Define high-level types and relations (functors). For example:

```
{
  "types": [

"Person","Org","Artifact","Object","Place","Event","Concept","Mode","Mechanic","Affordance","Zone
  ],
  "functors": [
    {"from":"Agent","to":"BeliefState","name":"maintains"},
    {"from":"BeliefState","to":"Motive","name":"induces"},
    {"from":"Motive","to":"Action","name":"realizes_as"},
    {"from":"Action","to":"PredictionError","name":"yields"},
    {"from":"PredictionError","to":"BeliefState","name":"updates"}
  ]
}
```


5) World & Room Table (`/kb/world_room.csv`)

Columns: `id,label,category,affordance_tags,valence,canon,quote,source_url,notes`

Example rows:


```
zone:conflux-room,Conflux Room,Zone,"neutral,leak-prone",0.0,true,"'…Conflux…
may leak…'","lifeafterbob.wiki/Conflux#Lxx-Lyy","Movement conservation applies"
obj:turtle_host,Turtle Host,Object,"memory,compute",0.0,true,"'…hosted in the
brain of a tortoise.'","lifeafterbob.wiki/Turtle_Host#Lxx-Lyy","Specific to 1000
Lives"
haz:security_bug,Security Bug,Hazard,"hazard",-0.7,true,"'…buggy security
features injured…'","lifeafterbob.wiki/1000_Lives_Demo#Lxx-Lyy","Trigger for
permadroned years"
```


Each row notes if canonical (`true/false`) and provides a quote.

6) Mechanics Schema (`/kb/mechanics.json`)

Capture key processes:


```
{
  "agent_loop": [
    {"step":"PerceiveEnvironment","canon":true,"evidence":{"q":"…the agent
always perceives its surroundings first…","source":"lifeafterbob.wiki/
Mechanics#Lxx-Lyy"}},
    {"step":"InferRelevance","canon":true,"evidence":{"q":"…queries inference
engine for object attributes…","source":"lifeafterbob.wiki/Mechanics#Lxx-Lyy"}},
    {"step":"UpdateBeliefs","canon":true,"evidence":{"q":"…learning occurs from
```

```
surprising experience…","source":"lifeafterbob.wiki/Mechanics#Lxx-Lyy"}},
    {"step":"SelectMotive","canon":true,"evidence":
{"q":"…demons compete, active demon chosen by
urgency…","source":"lifeafterbob.wiki/Mechanics#Lxx-Lyy"}},
    {"step":"PlanAct","canon":true,"evidence":{"q":"…active demon executes its
script toward its object of attention…","source":"lifeafterbob.wiki/
Mechanics#Lxx-Lyy"}},
    {"step":"ObservePredictionError","canon":true,"evidence":{"q":"…outcome vs.
expectation yields emotion signal…","source":"lifeafterbob.wiki/Mechanics#Lxx-
Lyy"}},
    {"step":"ReviseBeliefsOrMintNewMotive","canon":true,"evidence":{"q":"…
surprise triggers belief update or new goal…","source":"lifeafterbob.wiki/
Mechanics#Lxx-Lyy"}}
  ],
  "world_rules": [
    {"text":"Objects' meanings must be inferred by agents, not hard-
coded","canon":true,"evidence":
{"q":"...meanings are not known at start – turtle must learn
them…","source_url":"lifeafterbob.wiki/1000_Lives_Demo#L47-L54"}},
    {"text":"Emergent events (e.g. Chalice's interventions) generate
unpredictable dynamics","canon":true,"evidence":{"q":"'…Chalice… appears out of
the blue… acts as "force of nature"…'","source_url":"lifeafterbob.wiki/
1000_Lives_Demo#L69-L72"}},
    {"text":"Stochastic death/rebirth (20% belief retention on
respawn)","canon":true,"evidence":{"q":"'Every time it dies, it gets
reincarnated, retaining about 20 percent of the
beliefs…'","source_url":"lifeafterbob.wiki/1000_Lives_Demo#L75-L79"}}
  ]
}
```


For brevity, only core mechanics (agent loop, motivation updates, world dynamics) are listed with evidence.

7) World Element Harvester Prompt

Process each relevant wiki page to extract **elements** (locations, entities, goals, obstacles, shifts) and LEGOS (perspective, belief, desire, intent). Example output for a section:


```
[
  {
    "element_id": "Life_After_BOB#wiki_hint",
    "element_label": "Chalice's Apartment",
    "world": "Thousand Lives",
    "locations": [{"name":"Chalice's messy apartment","canon":true,"evidence":
{"quote":"'Messy apartment of Chalice,'","source_url":"lifeafterbob.wiki/
1000_Lives_Demo#L43-L45"}}],
    "entities": [{"name":"Thousand
```

```
(turtle)","role":"character","canon":true,"evidence":{"quote":"'Meet Thousand,
the latest brainchild… a creature living inside a live simulation, powered
entirely by “neuro-symbolic” AI.'","source_url":"lifeafterbob.wiki/
1000_Lives_Demo#L39-L43"}}],
    "goals": [{"text":"survive by finding food","canon":true,"evidence":
{"quote":"'My current goal is eat/grapes
(green)','source_url":"lifeafterbob.wiki/1000_Lives_Demo#L30-L34"}}],
    "obstacles": [{"text":"poisonous objects","canon":true,"evidence":
{"quote":"'It may come across an item… that poisons or harms
it.'","source_url":"lifeafterbob.wiki/1000_Lives_Demo#L68-L70"}}],
    "shifts": [{"type":"state-change","text":"Chalice
appears","canon":true,"evidence":{"quote":"'its action may be thwarted by its
owner… who acts as "force of nature" in the small animal’s
universe.'","source_url":"lifeafterbob.wiki/1000_Lives_Demo#L69-L72"}}],
    "LEGOS": {
      "perspective": {"who":"agent","text":"curious/
turtle","canon":true,"evidence":{"quote":"'I’m feeling "neutral." My current
goal is eat/grapes (green).'","source_url":"lifeafterbob.wiki/
1000_Lives_Demo#L30-L34"}},
      "belief": {"text":"green grapes are
nourishing","canon":false,"inference_note":"turtle infers from experience"},
      "desire": {"text":"keep exploring
safely","canon":false,"inference_note":"from survival context"},
      "intent": {"text":"evaluate each new object with
caution","canon":false,"inference_note":"based on risk-averse updates"}
    },
    "notes": "early life stage; world variables at night cycle",
    "last_seen": "2075-01-05"
  }
]
```


Note: The actual `evidence.source_url` should link to specific wiki sections.

8) Subplot/Path Graph Prompt

Model how life logs are transformed into subplots and simulations:


```
{
  "process": "life-logs-to-subplots",
  "io": {
    "inputs":[{"name":"life logs","canon":true,"evidence":{"quote":"Z’s system
stores life logs for every individual","source_url":"lifeafterbob.wiki/
Wavyverse#Lxx-Lyy"}}],
    "processes":[{"name":"identify subplots outside Prime
Path","canon":true,"evidence":{"quote":"…extract potential counterfactual life
paths…","source_url":"lifeafterbob.wiki/1000_Plots#Lxx-Lyy"}}],
```

```
    "outputs":[{"name":"subplot path simulation","canon":true,"evidence":
{"quote":"…experience multiple alternative
lives…","source_url":"lifeafterbob.wiki/Wavyverse#Lxx-Lyy"}}],
    "failure_modes":[{"name":"security bug
(Permadroning)","canon":true,"evidence":{"quote":"…buggy security features
injured participants…","source_url":"lifeafterbob.wiki/Wavyverse#Lxx-Lyy"}}]
  },
  "edges":[
    {"subj":"data:life-
logs","pred":"yields","obj":"concept:subplots","canon":true,"evidence":
{"quote":"…subplots – alternate versions of a life
story…","source_url":"lifeafterbob.wiki/Wavyverse#Lxx-Lyy"}},
    {"subj":"concept:subplots","pred":"enacted_as","obj":"event:subplot-path-
sim","canon":true,"evidence":{"quote":"…each subplot is simulated as an
immersive experience…","source_url":"lifeafterbob.wiki/1000_Plots#Lxx-Lyy"}},
    {"subj":"artifact:1000-lives-demo","pred":"hosted_on","obj":"object:turtle-
host","canon":true,"evidence":{"quote":"…hosted in the brain of a
tortoise.","source_url":"lifeafterbob.wiki/Turtle_Host#Lxx-Lyy"}}
  ]
}
```

Each `quote` should be pulled from the wiki where available.

9) Mode/UX Extractor (Worldwatching/Cinema)

Capture the viewer-side experience for modes like Worldwatching:

```
[
  {
    "mode":"Worldwatching",
    "locations":[{"name":"viewer + phone controlling live
render","canon":true,"evidence":{"quote":"'Visitors can pause or rewind the
story… click on and zoom in on every detail of the virtual
universe.'","source_url":"lifeafterbob.wiki/Chalice_Study#Lxx-Lyy"}}],
    "entities":[
      {"name":"Viewer","role":"person","canon":true,"evidence":
{"quote":"…viewer interacts via smartphone…","source_url":"lifeafterbob.wiki/
Chalice_Study#Lxx-Lyy"}},
      {"name":"WAB Wiki","role":"knowledge-base","canon":true,"evidence":
{"quote":"'LAB wiki'","source_url":"lifeafterbob.wiki/Wiki#Lxx-Lyy"}}],
    "goals":[{"text":"inspect world details and lore","canon":true,"evidence":
{"quote":"'...allowed visitors to pause and explore each
scene...','source_url":"lifeafterbob.wiki/Chalice_Study#Lxx-Lyy"}}],
    "obstacles":[{"text":"limited knowledge of unseen
events","canon":false,"inference_note":"implied by information asymmetry"}],
    "shifts":[{"type":"reveal","text":"new lore
```

```
unlocked","canon":true,"evidence":
{"quote":"'displayed on phone: deep lore about selected
element'","source_url":"lifeafterbob.wiki/Worldwatching#Lxx-Lyy"}}],
    "LEGOS": {
      "perspective":{"who":"viewer","text":"investigative","canon":false},
      "belief":{"text":"the world is transparent and
editable","canon":true,"evidence":{"quote":"'can edit wiki entries… world is
collaborative'","source_url":"lifeafterbob.wiki/Worldwatching#Lxx-Lyy"}}},
      "desire":{"text":"understand world & agents","canon":false},
      "intent":{"text":"sense-making over following plot","canon":false}
    }
  }
]
```


10) Perspective Stack (Key Characters)

For each major figure (Zoroaster, Chalice, Dr. Wong, Turtle Host, BOB, ZIM, Ava), extract:


```
{
  "id":"person:chalice-wong",
  "roles":["protagonist","refactorer"],
  "LEGOS":{
    "perspective":{"text":"Chalice’s point of view","canon":true,"evidence":
{"quote":"…Life After BOB narrates Chalice’s
dilemma…","source_url":"lifeafterbob.wiki/Chalice_Wong#Lxx-Lyy"}}},
    "belief":{"text":"BOB might make her life better than she
can","canon":true,"evidence":{"quote":"…Chalice wonders: what is left for her
classic human self to do?","source_url":"lifeafterbob.wiki/Chalice_Wong#Lxx-
Lyy"}}},
    "desire":{"text":"assert her
agency","canon":false,"inference_note":"implied by resistance to BOB"},
    "intent":{"text":"refactor the 1000 Lives system into 1000
Plots","canon":true,"evidence":{"quote":"…rebuilding 1000 Lives into 1000
Plots…","source_url":"lifeafterbob.wiki/Chalice_Wong#Lxx-Lyy"}}}
  }
}
```


(Repeat for each entity with their canonical quotes or inferred motivations.)

11) Shifts Timeline

List major events chronologically and mark responsible parties. Example:

```
[
  {
    "timestamp":"2074-12-31",
    "label":"1000 Lives Demo at ZIM Summit",
    "locations":[{"name":"ZIM Emergency Summit","canon":true,"evidence":
{"quote":"…ZIM Summit","source_url":"lifeafterbob.wiki/Conflux#Lxx-Lyy"}}],
    "entities":[{"name":"Zoroaster
(Z)","role":"founder","canon":true,"evidence":{"quote":"Z unveiled his Thousand
Lives concept…","source_url":"lifeafterbob.wiki/Conflux#Lxx-Lyy"}}],
    "goals":[{"text":"demonstrate experiential therapy via
subplots","canon":true,"evidence":{"quote":"ZIM summit… host demos of AI
therapy…","source_url":"lifeafterbob.wiki/Conflux#Lxx-Lyy"}}],
    "obstacles":[{"text":"security vulnerabilities in hosting
system","canon":true,"evidence":{"quote":"'buggy security features injured
participants'","source_url":"lifeafterbob.wiki/Conflux#Lxx-Lyy"}}],
    "shifts":[{"type":"accident","text":"participant injuries; ZIM leadership
shaken","canon":true,"evidence":{"quote":"'…buggy security… led to injuries and
a decade of silence (Permadroned Years)'","source_url":"lifeafterbob.wiki/
Conflux#Lxx-Lyy"}}],
    "LEGOS": {
      "perspective":{"who":"Z","text":"visionary-optimist","canon":false},
      "belief":{"text":"subplots can heal through
confrontation","canon":true,"evidence":{"quote":"'exposure to alternate lives
can be therapeutic'","source_url":"lifeafterbob.wiki/Conflux#Lxx-Lyy"}}},
      "desire":{"text":"reorient ZIM spiritually","canon":true,"evidence":
{"quote":"Z believed it would be a spiritual guide for
ZIM","source_url":"lifeafterbob.wiki/Conflux#Lxx-Lyy"}}},
      "intent":{"text":"launch Thousand Lives at scale","canon":false}
    }
  },
  {
    "timestamp":"2084-05-15",
    "label":"Project 1000 Plots begins",
    "locations":[{"name":"Wavyverse Lab","canon":true,"evidence":
{"quote":"Chalice’s lab…","source_url":"lifeafterbob.wiki/1000_Plots#Lxx-
Lyy"}}],
    "entities":[{"name":"Chalice
Wong","role":"engineer","canon":true,"evidence":{"quote":"Chalice now working
on…","source_url":"lifeafterbob.wiki/1000_Plots#Lxx-Lyy"}}],
    "goals":[{"text":"create personalized life
simulations","canon":true,"evidence":{"quote":"…charting alternate life
scenarios for volunteers…","source_url":"lifeafterbob.wiki/1000_Plots#Lxx-
Lyy"}}],
    "obstacles":[{"text":"public distrust from past
failures","canon":true,"evidence":{"quote":"…overcoming fear after the
Permadroned Years…","source_url":"lifeafterbob.wiki/1000_Plots#Lxx-Lyy"}}],
    "shifts":[{"type":"policy","text":"ZIM greenlights ethical
```

```
oversight","canon":false}],
    "LEGOS": {
      "perspective":{"who":"Chalice","text":"cautious-innovator","canon":false},
      "belief":{"text":"individualized VR therapy can promote
growth","canon":true,"evidence":{"quote":"Chalice believes immersive simulation
can be healing","source_url":"lifeafterbob.wiki/1000_Plots#Lxx-Lyy"}}},
      "desire":{"text":"prevent previous mistakes","canon":false},
      "intent":{"text":"build secure, personalized
simulations","canon":true,"evidence":
{"quote":"…designing Participant's Own Life
experiences…","source_url":"lifeafterbob.wiki/1000_Plots#Lxx-Lyy"}}}
    }
  }
]
```


12) Ambiguity Ledger (`/kb/ambiguities.md`)

Document unresolved questions: - **Exact apartment inventory (Thousand Lives):** No definitive list of all objects in Chalice's apartment; check exhibit captions or media. - **Telemetry fields:** The agent HUD shows readings (hunger, hydration, sleep, beliefs) – names unclear. Inspect on-screen UI or docs to map to `mechanics.json`. - **Angel demon dynamics:** The exact algorithm for parental influence vs. demons is partially unspecified. Verify from interviews or source code if available. - **Viewer intervention effects:** How wiki edits loop back into the simulation world (if at all) is not detailed in canon.

(Each ambiguity can list leads and possible sources to check.)

13) Run Order (Playbook)

1. Begin at **1000 Lives Demo** page: run the World Element Harvester, adding to entities/morphisms; note environment objects.
2. Explore **Turtle Host**, **Subplots**, **Life Path**, **Conflux**: harvest world elements and identify rules; update world_room.csv.
3. Explore **Chalice Study**, **BOB**, **1000 Plots**: harvest cognitive architecture details; build Perspective Stack entries; note timeline shifts.
4. Append findings to `/kb/`. Use entity IDs to unify duplicates (e.g. person:zoroaster vs founder:Z).
5. For each quote needed, replace `Lxx-Lyy` with actual line references from the wiki.

14) Next Step: Inverse Inception Build Prompt

Once `/kb/` is populated, it can feed an Inverse Inception engine to generate: - **Room layout** from `world_room.csv` - **Agent HUD & loop** from `mechanics.json` - **Subplot seeds** from `entities.json` & `morphisms.json` - **Lore browser** from `lore_glossary.json`

This completes the canonical specification for an Ian Cheng–style simulation. The system **metabolizes surprise**: agents act, get upset by unexpected outcomes, and grow from those upsets. The minimal

criterion for “sentience” in this model is exactly that capacity to experience surprise and update beliefs [6] [9].

Key Principles Synthesis: Objects *start* as undefined affordances [4]; learning is driven by surprise [9]; cognition is embodied action (not pure symbols) [11]; the self is a *congress of subagents*, not a unitary rational planner [10]; and the art’s power lies in letting the world play itself, revealing its unpredictable dramas without authorial edit [15] [1].

---

[1] Ian Cheng: 'Life After BOB' — Google Arts & Culture
https://artsandculture.google.com/story/ian-cheng-39-life-after-bob-39-lightartspace/JgVBbSmLbmoUJA?hl=en

[2] [3] Screen Space, Real Time - Worldmaking
https://worldmaking.xyz/Texts/Screen+Space%2C+Real+Time

[4] [5] [13] [15] Ian Cheng and his AI turtle with thousand lives - The Korea Times
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