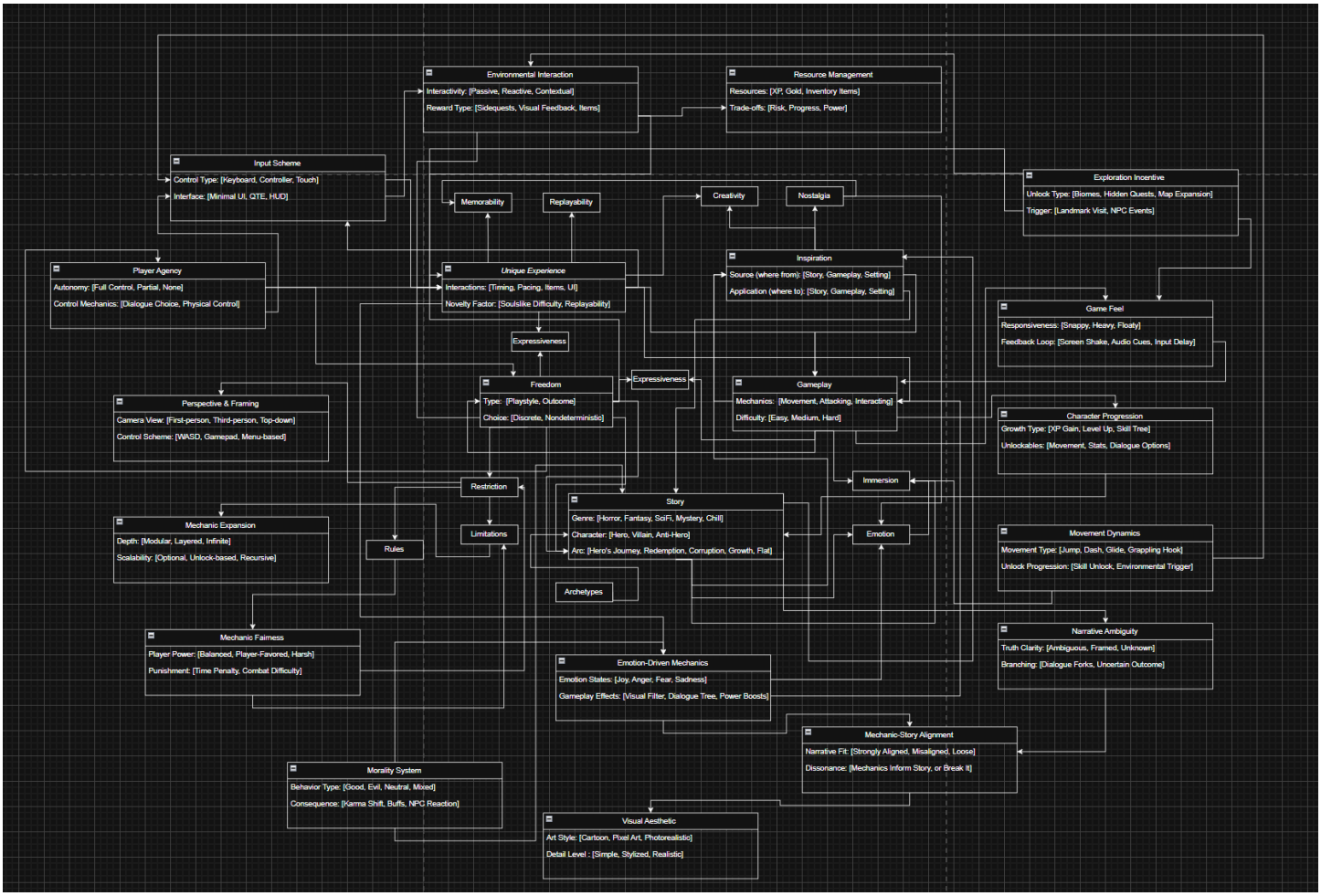
Domain Description: Video game design engages a diverse set of cognitive abilities, from technical systems thinking to artistic creativity. Central to any game's identity is the core mechanic – the interactive system that defines how players engage with the game world. These mechanics not only shape player experience but often serve as the foundation for broader game design and innovation. Given their central role, the cognitive processes behind mechanic creation require a closer examination.

In this study, we investigate how aspiring game designers generate and evaluate game mechanics. We hypothesize that (1) participants will predominantly generate mechanics by analogically mapping from familiar genres or narrative media stored in long-term memory, and (2) they will assess the quality or feasibility of their ideas using subjective heuristics (fun, novelty, aesthetics).

Concept	Attributes (Slots)	Qualitative Values (Fillers)	Citations
Unique Experience	Novelty Factor, Interactions	Soulslike Difficulty, Replayability; Timing, Pacing, Items, UI	Interview 1: "Gives replayability and unique experience"
Inspiration	Source, Application	Music, Anime, Manga, Other Games; Story, Gameplay, Setting	Interview 1: "Music... anime/manga... Blasphemous... market-based approach"
Freedom	Type, Choices	Playstyle, Outcome, Customizability; Discrete, Nondeterministic	Interview 1: "Giving the player more freedom is most important"
Story	Genre, Character Arcs	Horror, Fantasy, SciFi, Cozy; Hero's Journey, Redemption, Flat	Interview 4: "Start with compelling story... story-mechanic alignment"
Gameplay	Mechanics, Difficulty	Movement, Attacking, Interacting; Easy, Medium, Hard	Interview 9: "Satisfying core mechanics... low skill floor, high skill ceiling"
Perspective & Framing	Camera View, Control Scheme	First-person, Third-person, Top-down; WASD, Gamepad, Menu-based	Interview 2: "3rd person..."; Interview 9: "Top-down like Hades..."
Player Agency	Autonomy, Control Mechanics	Full Control, Partial, None; Dialogue Choice, Physical Control	Interview 3: "Choices affect outcome"; Interview 9: "Control over your own movement..."
Mechanic Expansion	Depth, Scalability	Modular, Layered, Infinite; Optional, Unlock-based, Recursive	Interview 9: "Iterate... not throw too many mechanics at once"; Interview 2: "If growth to the idea..."
Emotion-Driven Mechanics	Emotion States, Gameplay Effects	Joy, Anger, Fear, Sadness; Visual Filter, Dialogue Tree, Power Boosts	Interview 3: "Different emotions... different filters..."
Resource Management	Resources, Trade-offs	XP, Gold, Inventory Items; Risk, Progress, Power	Interview 2: "Weapon gives buffs in exchange for destiny"; Interview 7: "Collect treasures..."
Character Progression	Growth Type, Unlockables	XP Gain, Level Up, Skill Tree; Movement, Stats, Dialogue Options	Interview 6: "Learn how to run and fly"; Interview 7: "HP can increase..."
Visual Aesthetic	Art Style, Detail Level	Cartoon, Pixel Art, Photorealistic; Simple, Stylized, Realistic	Interview 1: "Cartoonish style..."; Interview 6: "Photorealistic... ray tracing"
Environmental Interaction	Interactivity, Reward Type	Passive, Reactive, Contextual; Sidequests, Visual Feedback, Items	Interview 6: "Sprouting flowers with button..."; Interview 3: "Interact with animals..."
Morality System	Behavior Type, Consequence	Good, Evil, Neutral, Mixed; Karma Shift, Buffs, NPC Reaction	Interview 4: "Karma system... innocent/guilty meter"
Input Scheme	Control Type, Interface	Keyboard, Controller, Touch; Minimal UI, QTE, HUD	Interview 9: "WASD and mouse..."; Interview 8: "Quicktime events, UI slows down"

Mechanic Fairness	Player Power, Punishment	Balanced, Player-Favored, Harsh; Time Penalty, Combat Difficulty	Interview 9: “People hate NPCs… punished unfairly”; Interview 3: “Design for average player”
Narrative Ambiguity	Truth Clarity, Branching	Ambiguous, Framed, Unknown; Dialogue Forks, Uncertain Outcome	Interview 4: “Framed… switching perspectives”; Interview 9: “Doesn’t define whether you did it”
Exploration Incentive	Unlock Type, Trigger	Biomes, Hidden Quests, Map Expansion; Landmark Visit, NPC Events	Interview 6: “Big map with different areas… side quests”; Interview 3: “Free roam between stories”
Movement Dynamics	Movement Type, Unlock Progression	Jump, Dash, Glide, Grappling Hook; Skill Unlock, Environmental Trigger	Interview 6: “Run/jump/dash/grapple…”; Interview 7: “Unlock movement…”
Mechanic-Story Alignment	Narrative Fit, Dissonance	Strongly Aligned, Misaligned, Loose; Mechanics Inform Story, or Break It	Interview 4: “Game of Thrones + Candy Crush doesn’t make sense”; Interview 9: “Narrative concept comes first…”
Game Feel	Responsiveness, Feedback Loop	Snappy, Heavy, Floaty; Screen Shake, Audio Cues, Input Delay	Interview 9: “Indie developers fail with movement feel… gameplay should feel intuitive”

UML Diagram:



4. A 2-page narrative explaining how the schema supports decision making in your domain, in other words, describe the heuristics people use to think about your domain, using the data in the conceptual schema.

Early-stage game development is an exercise in navigating complexity. It is not a linear, step-by-step process but rather a dynamic web of interconnected ideas where a single decision can have cascading effects on the entire project. The provided conceptual schema serves as a map of this complex mental landscape. It illustrates the network of concepts, goals, and constraints that designers subconsciously or explicitly use to make decisions. More importantly, it reveals the heuristics—the mental shortcuts and rules of thumb—that guide their creative process. By breaking down the components of a game into nodes like Story, Gameplay, and Unique Experience, the schema provides a framework for thinking, allowing a designer to ground their abstract vision in a tangible structure and make more deliberate, coherent choices.

One of the most fundamental heuristics in any creative field is to "start with what you know," and the schema places this concept at the very beginning of the process with the Inspiration node. Designers rarely create in a vacuum. As the schema shows, Inspiration is fueled by external factors like Creativity

and Nostalgia, but its practical application comes from identifiable sources: an existing Story, a compelling Gameplay mechanic from another game, or a rich Setting. A designer might be inspired by the narrative arc of a classic film or the satisfying movement mechanics of a beloved platformer. This initial Inspiration then directly informs the two foundational pillars of their own project: Story and Gameplay. This heuristic allows a designer to anchor their project to a proven concept, giving them a solid starting point from which to innovate rather than attempting to invent something entirely from nothing.

With an initial spark of inspiration, the designer must then begin to define the world and the player's role within it, employing a heuristic of "establishing a coherent world." This is represented by the Story box. The schema shows that this involves making several key, high-level decisions that provide structure. The designer chooses a Genre (e.g., Horror, Fantasy, Sci-Fi), which immediately sets expectations for tone and content. They define the main Character, who may fit into established Archetypes like a Hero or Anti-Hero. Finally, they map out a narrative Arc, such as a Hero's Journey or a story of Redemption or Growth. By making these choices, the designer isn't just writing a plot; they are building a stable narrative foundation. This foundation then informs other parts of the design. A Horror genre, for instance, naturally suggests certain gameplay mechanics and emotional goals, demonstrating the direct arrow from Story to Gameplay and Immersion.

Simultaneously, the designer uses the heuristic of "defining what the player *does*." This corresponds to the Gameplay pillar. The schema details this as decisions regarding core Mechanics (like Movement, Attacking, Interacting) and Difficulty (Easy, Medium, Hard). These are the verbs of the game—the actions the player will perform over and over. The schema correctly shows a bidirectional arrow between Story and Gameplay, illustrating that this is not a one-way street. A story about a fragile protagonist might inspire gameplay mechanics focused on stealth rather than combat. Conversely, developing a fun and fluid movement mechanic might inspire the designer to create a story and world that encourages exploration and verticality. This constant dialogue between the two pillars is a core heuristic for ensuring that what the player does feels connected to the world they inhabit.

Perhaps the most sophisticated heuristic illustrated by the schema is the act of "balancing freedom and constraint." A game without rules is a sandbox with no purpose; a game that is too restrictive is a lecture. The schema models this critical balance through the interplay of the Freedom and Restriction nodes. Freedom stems from the Story and is expressed through player Choice, which can be Discrete (A or B) or part of a more Nondeterministic system. This Freedom is what allows for player Expressiveness. However, this is held in check by Restriction, which is composed of the game's Rules and Limitations. A designer constantly makes decisions that weigh these two factors. They might give the player freedom to choose their path through a level, but restrict them with limited resources. They might allow for a nondeterministic outcome in a conversation, but the rules of the world mean that certain choices will always lead to conflict. It is through the careful calibration of these two nodes that choices become meaningful and gameplay becomes challenging and engaging.

Ultimately, all these decisions are made in service of a single goal: crafting a Unique Experience. This node is the culmination of the entire design process, a synthesis of all the other elements. As the schema shows, the Unique Experience is composed of the game's minute-to-minute Interactions (its Timing, Pacing, and use of Items) and its overall Novelty Factor. This novelty might come from a unique combination of genres, a compelling story, or a defining feature like "Souls-like Difficulty." The arrows show that Gameplay and Expressiveness (the result of Freedom) are the primary inputs to this experience. A truly Unique Experience is what leads to the ultimate desired outcomes for a designer: Memorability and Replayability. Furthermore, the schema illustrates a crucial feedback loop: a successful Unique Experience can feed back into the designer's Creativity, providing inspiration for future projects.

In conclusion, this schema is far more than a simple flowchart; it is a model of a designer's thought process. It validates the heuristic-driven nature of game design, showing how creators build upon Inspiration to define the core pillars of Story and Gameplay. It visualizes the essential tension between Freedom and Restriction that creates meaningful choice. And finally, it charts the path toward the ultimate goal of synthesizing these elements into a Unique Experience that generates Immersion, Emotion, and Memorability. For a designer lost in the fog of infinite possibilities, this schema acts as a compass, allowing them to understand where they are, where they need to go, and how the countless individual decisions they make connect to form a single, coherent whole.