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BA COMPUTER GAMES DESIGN

GAME THEORY & DESIGN

Commonly Used Challenges: Part 2



Commonly Used Challenges: Part 2

- Conflict
- Strategy
- Tactics
- Logistics
- Survival and Reduction of Enemy Forces
- Defending Vulnerable Items or Units
- Stealth
- Economic Challenges
- Accumulating Resources
- Achieving Balance
- Caring For Living Things
- Conceptual Reasoning and Lateral Thinking Puzzles



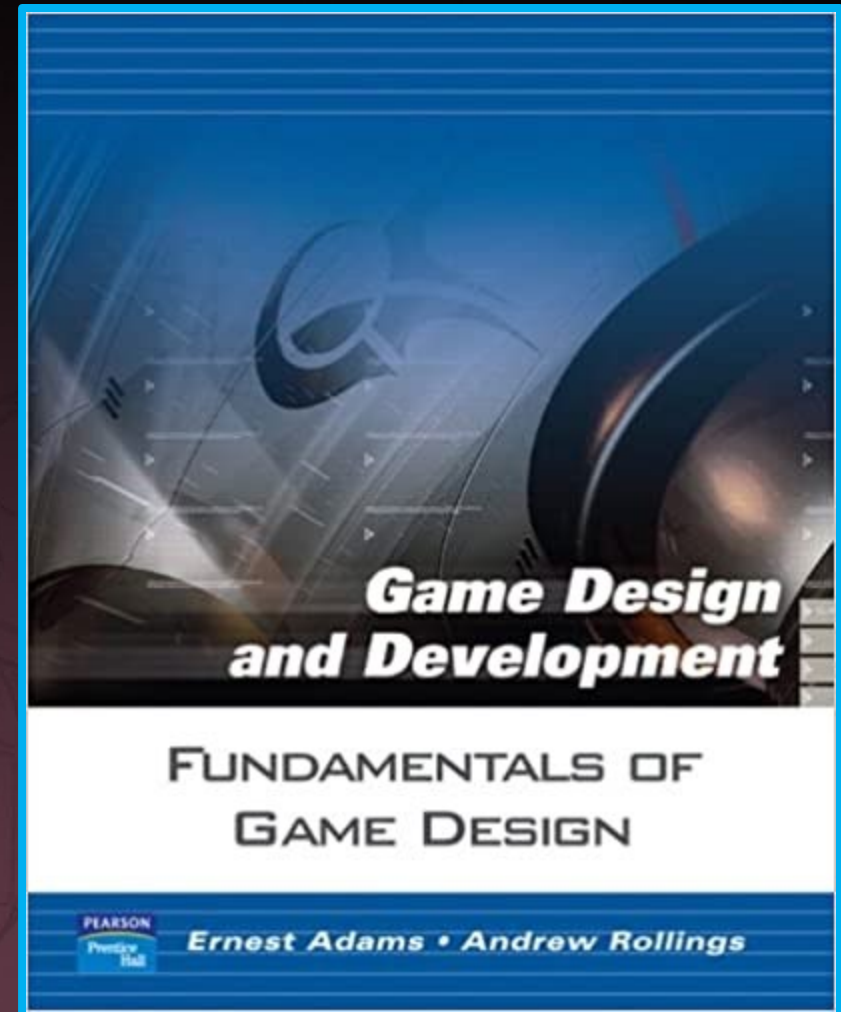


Further reading:

Commonly Used Challenges

Ernest Adams & Andrew Rollings, Fundamentals of Game Design

(Available in **Y Fforwm Library**, SA1)





Ernest Adams & Andrew Rollings Commonly Used Challenges

Conflict



If one player must beat the others by opposing or impeding them directly the challenge qualifies as **conflict** – even **without** combat or violence.

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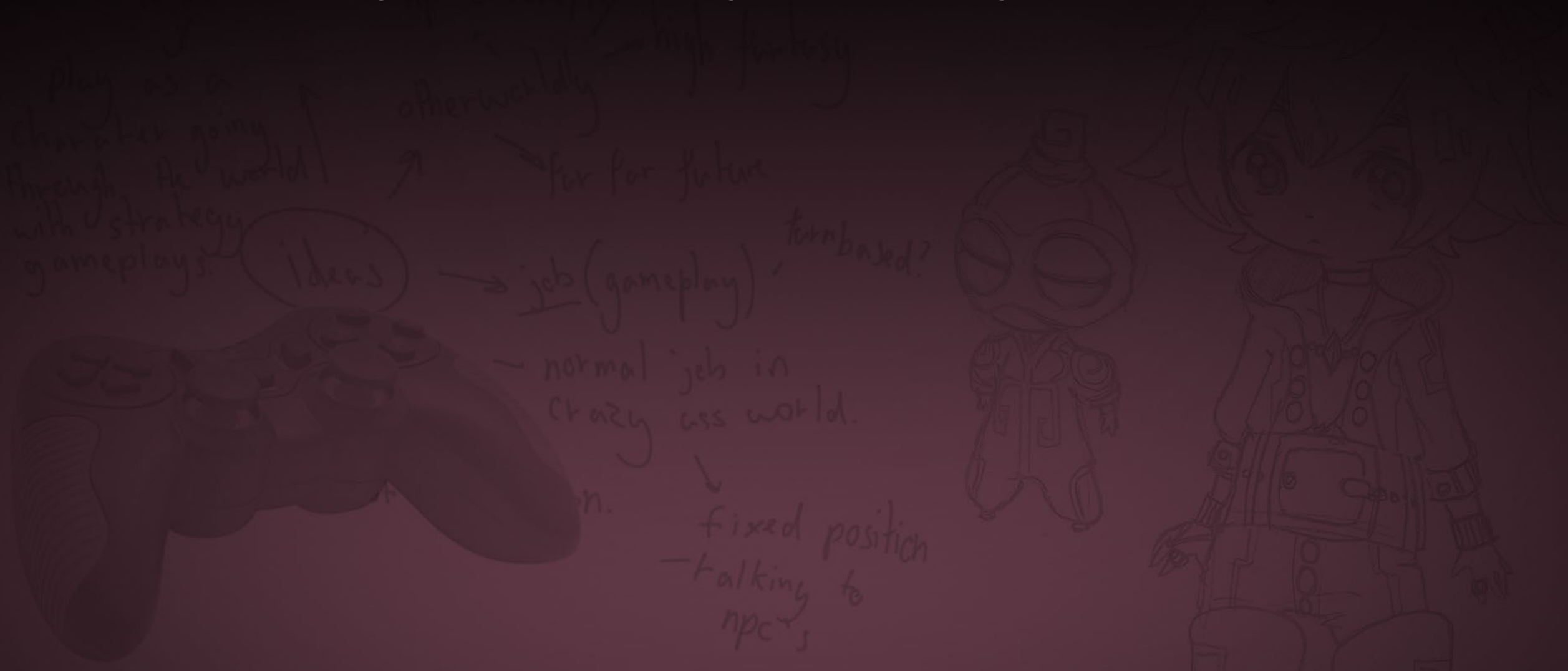
Adams and Rollings define a **conflict challenge** as one requiring the **direct opposition of forces**, some of which are under player control.

If one player must beat the others by opposing or impeding them directly the challenge qualifies as **conflict** – even **without** combat or violence.

Classic activities to overcome conflict challenges include taking away another player's resources and impeding another player's ability to act.



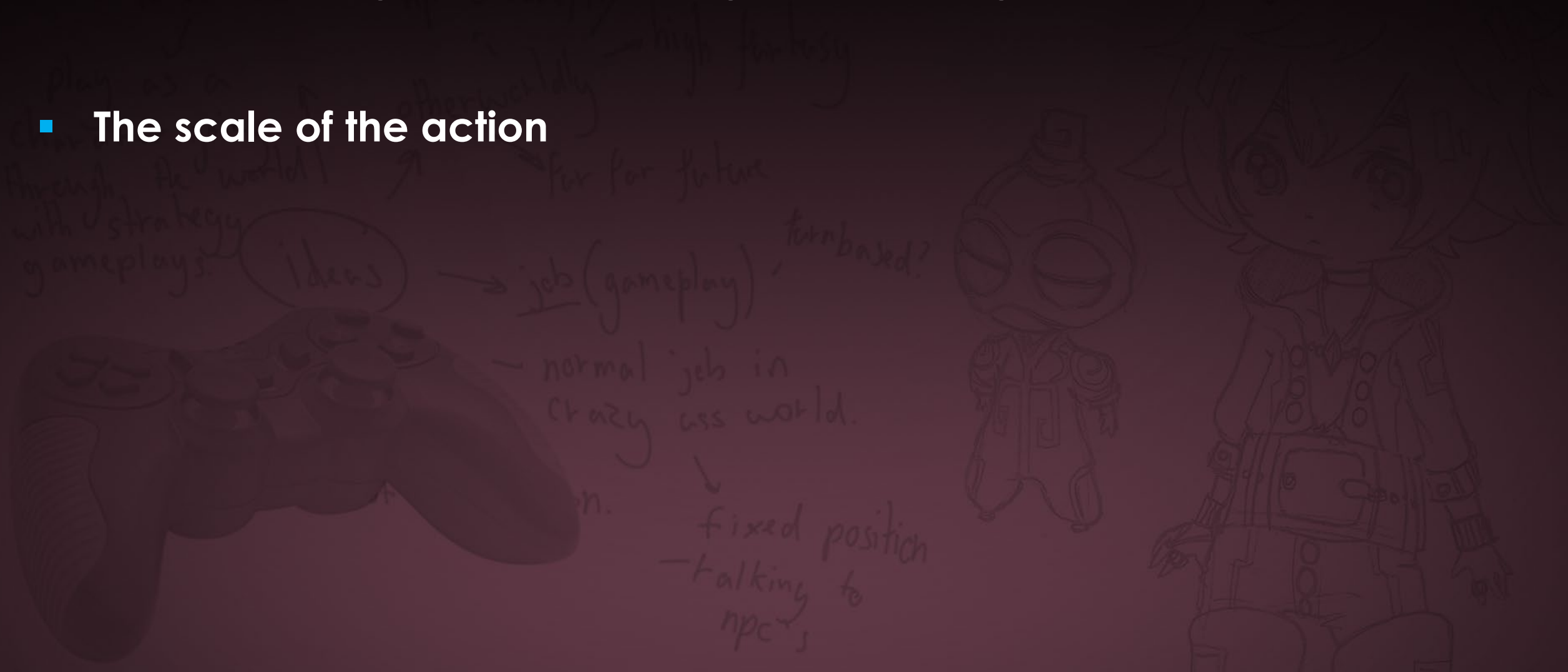
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- The scale of the action
- The speed at which the conflict takes place
(Turn based? Action games? Etc.)
- The complexity of the victory conditions
(Simple survival to complex missions with goals and subgoals)



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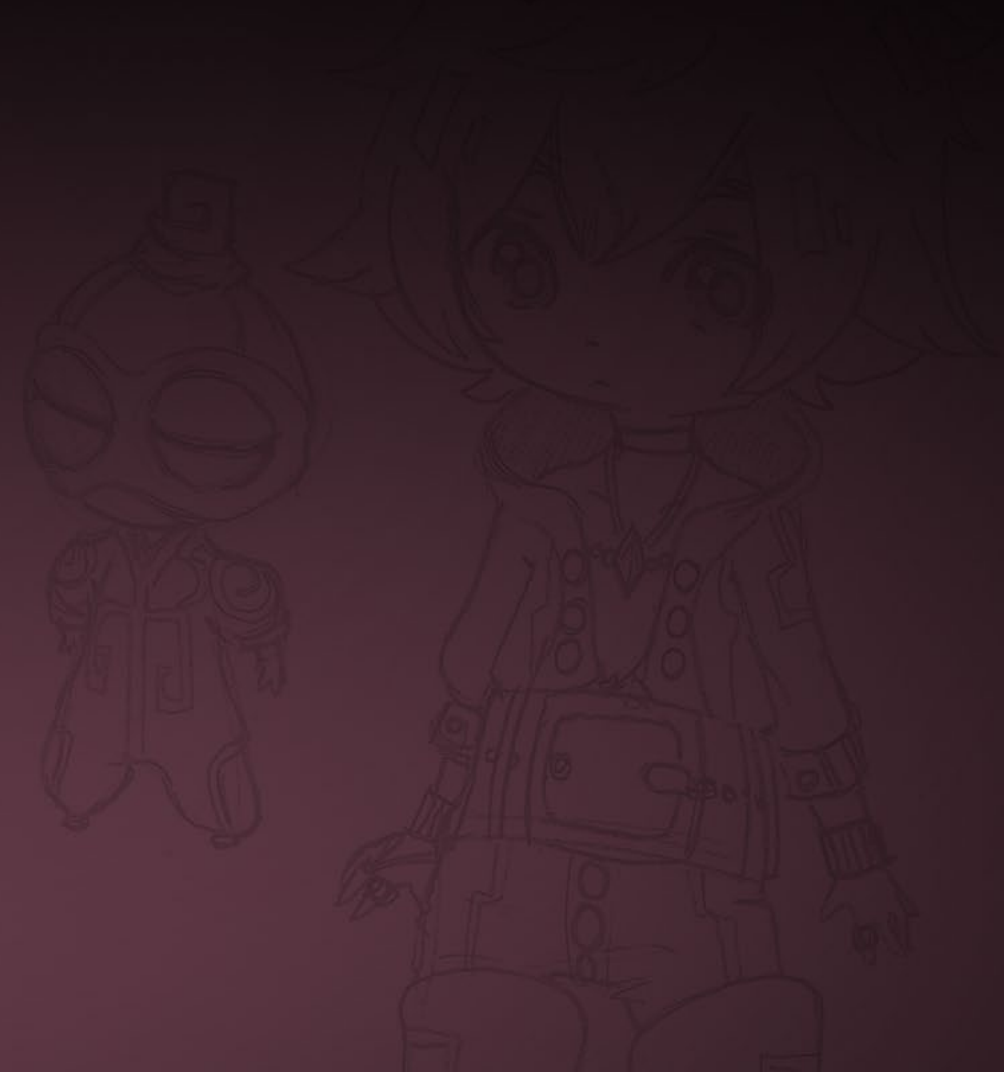
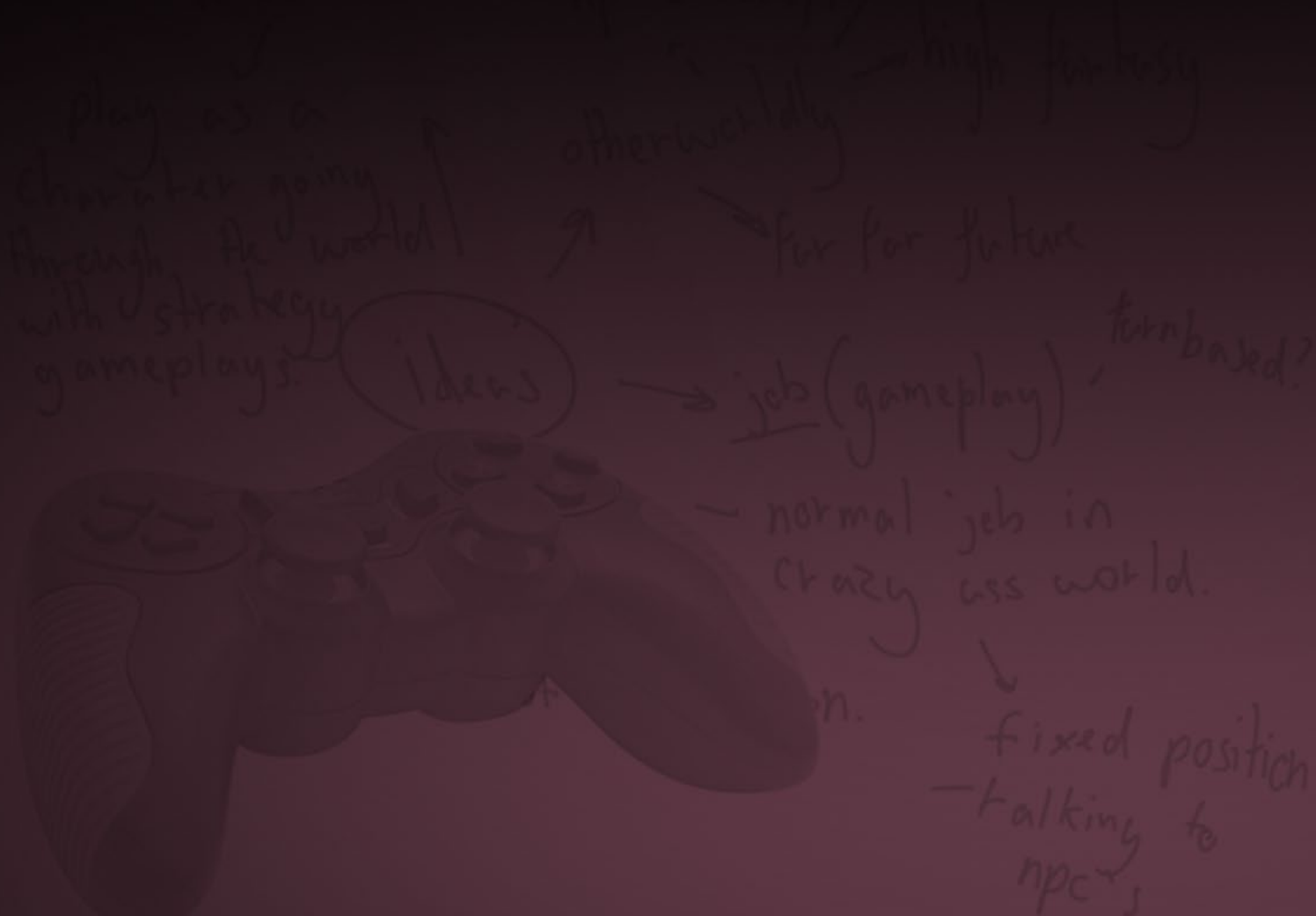
Commonly Used Challenges: Part 2

Ernest Adams & Andrew Rollings Commonly Used Challenges

Strategy



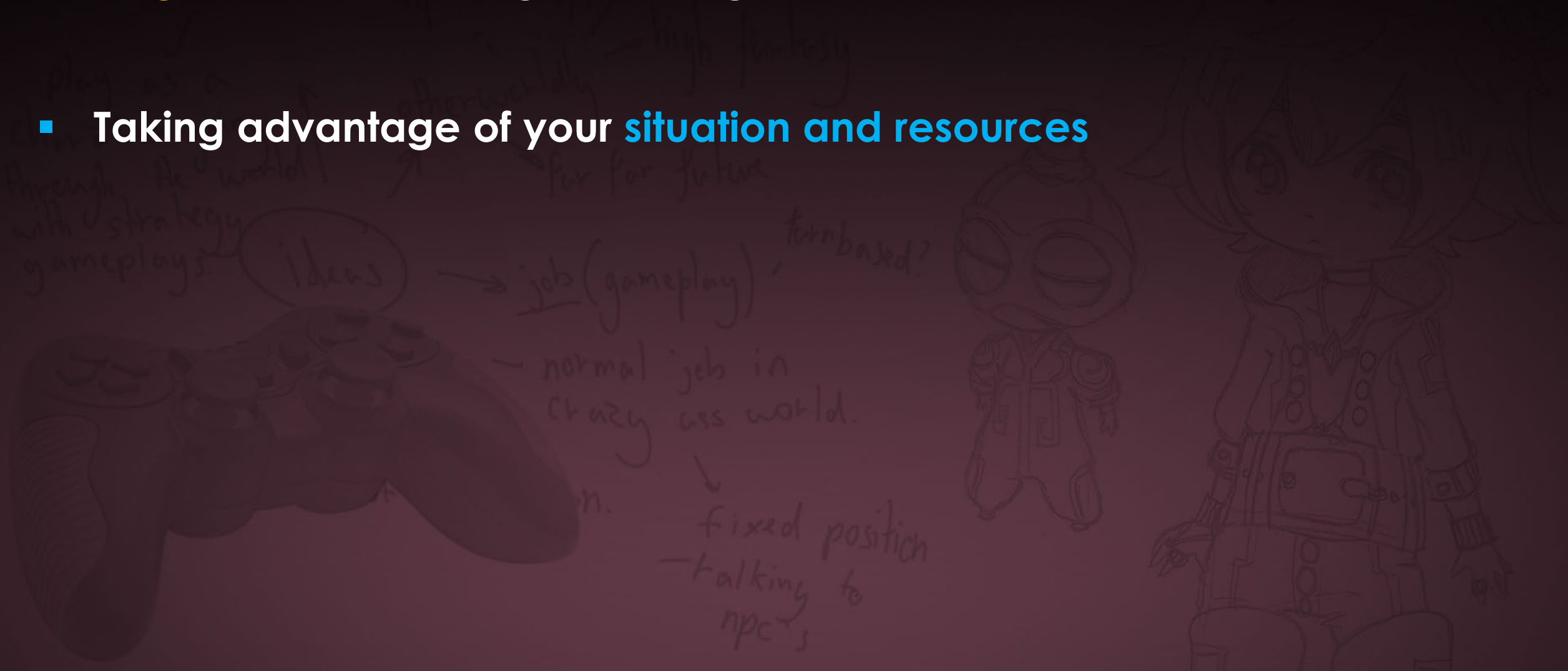
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normal job in
crazy ass world.

fixed position
- talking to
npc's





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- Taking advantage of your **situation and resources**
- **Anticipating** your opponent's moves
- Knowing and minimizing your **weaknesses**



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A strategic challenge requires the player to carefully consider the game – a process called **situational analysis** – and devise a plan of action.



Real-Time Strategy (RTS) games normally require applied strategy and offer **economic and exploration challenges** as well.



These elements make RTS games **accessible to players with less skill at logic** and providing other ways to win besides strategy alone.

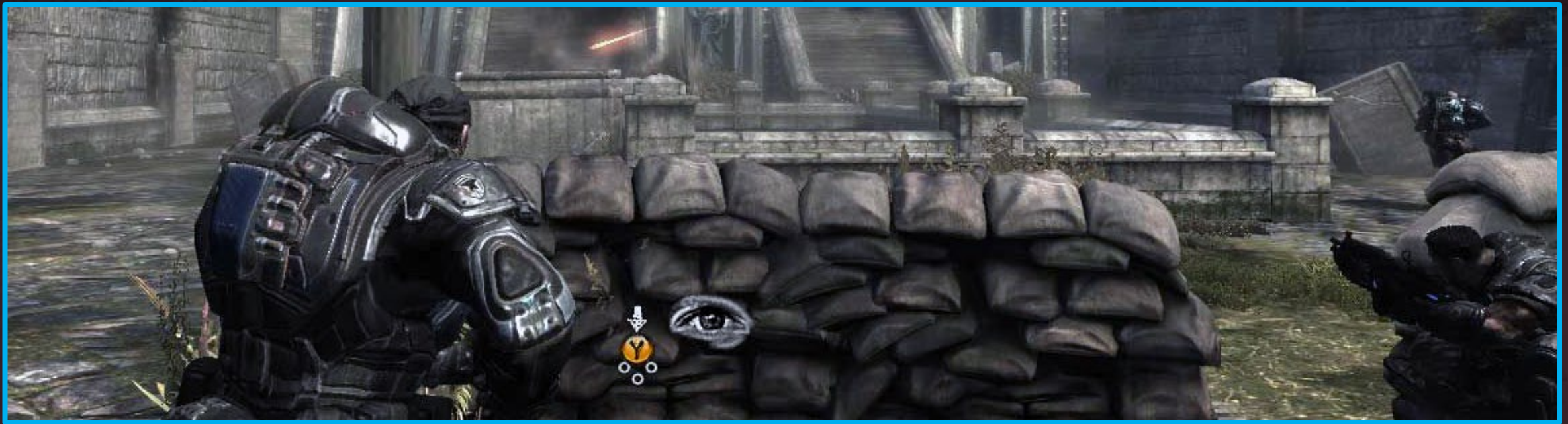


Ernest Adams & Andrew Rollings Commonly Used Challenges

Tactics



Tactics involve putting a plan into execution, accomplishing the goals that strategy calls for.





Tactics also require responding to **unexpected events** or **conditions**, **new information** or **bad luck**.





Ernest Adams & Andrew Rollings Commonly Used Challenges

Logistics



The business of supporting troops in the field and bringing fresh troops to the front lines is called **logistics**.

Most war games don't bother with logistical challenges such as transporting food and fuel to where the troops can use them.

fixed position
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Players tend to find combat interesting but consider logistics a boring distraction from the action.



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Commonly Used Challenges: Part 2

Logistics

Modern RTS games routinely include one important logistical challenge: **Weapon production.**

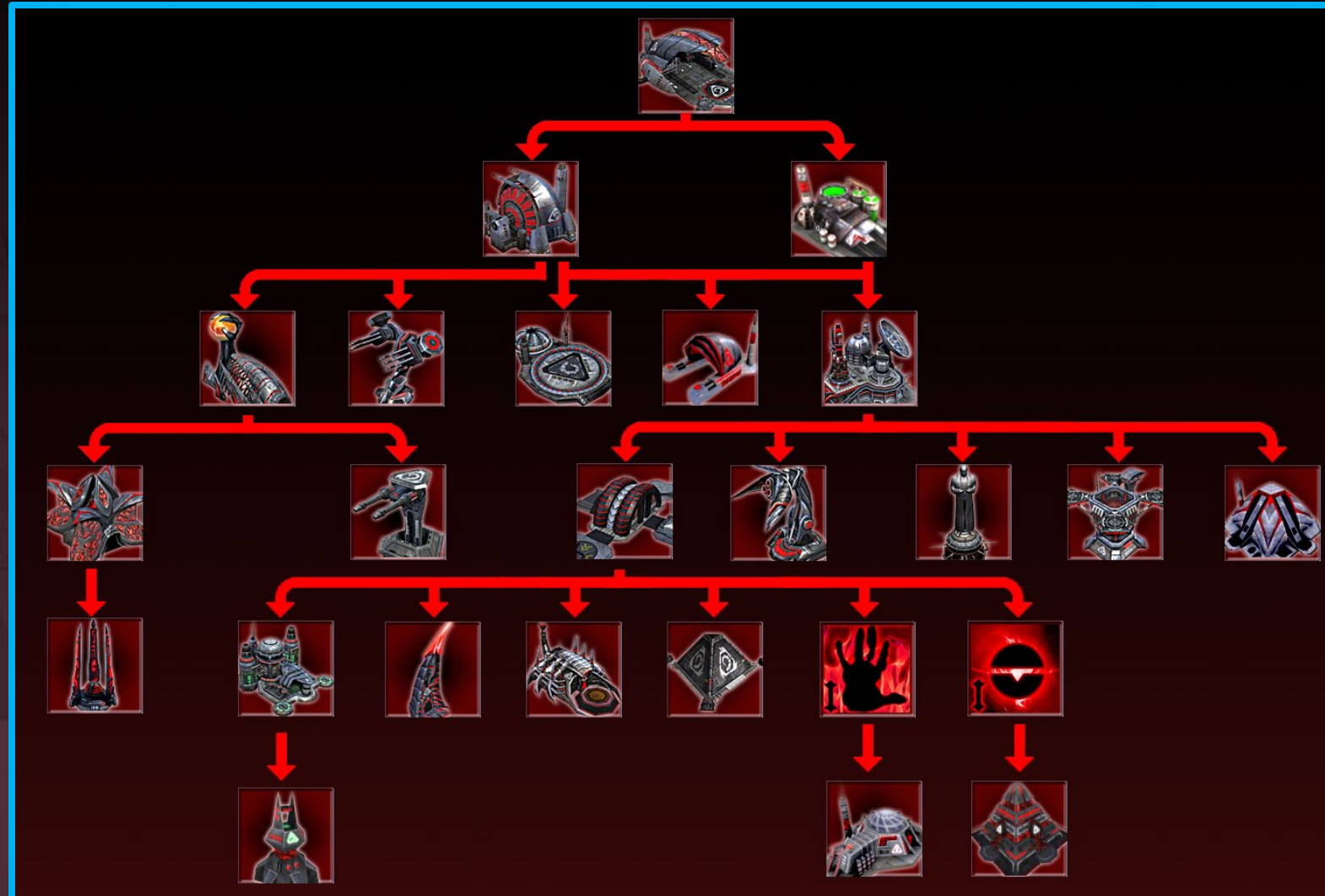
RTS games require the player to produce weapons and to research new types of weapons using a limited amount of raw material.

The production facilities themselves must be constructed and then defended.





Logistics example: Typical Real Time Strategy (RTS) 'Tech Tree'





In role-playing games, the limited size of the character's **inventory** presents another **logistical challenge**.

Players must decide what items to carry and what to leave behind.





Ernest Adams & Andrew Rollings

Commonly Used Challenges

Survival and Reduction of Enemy Forces



The fundamental challenge in any game based on conflict is **survival**.





The player must preserve the effective playing time or they cannot achieve the victory condition.





Ernest Adams & Andrew Rollings
Commonly Used Challenges

**Defending Vulnerable
Items or Units**



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Commonly Used Challenges: Part 2

Defending Vulnerable Items or Units



The converse of the survival challenge is the **challenge to reduce enemy forces.**

To design such a challenge you must **create rules that determine how a unit may be removed** from the game.



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Commonly Used Challenges: Part 2

Defending Vulnerable Items or Units

The player may be called upon to **defend other units or items**, especially items that **cannot defend themselves**.

To meet such a challenge requires that the player **know not only the capabilities and vulnerabilities of their units** but also those of the entity they must protect.





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Commonly Used Challenges: Part 2

Defending Vulnerable Items or Units

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The player must be prepared to **sacrifice some units to protect the vital one**.





Ernest Adams & Andrew Rollings Commonly Used Challenges

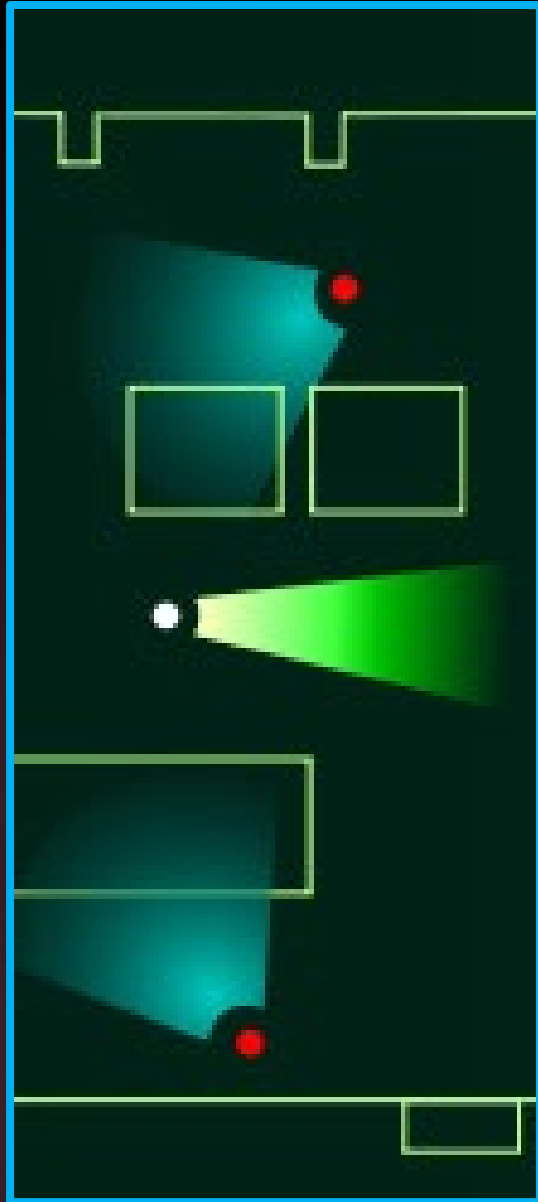
Stealth



The ability to move **undetected**, an extremely valuable capacity in almost any kind of conflict – especially if the player takes the side of the underdog.

Games occasionally pose challenges in which the **victory condition cannot be achieved through combat** but must be achieved through **stealth**.





Stealth poses a considerable problem in the design of artificial opponents.

You must **restrict the opponent's knowledge**, limit its attention or leave it ignorant of whole regions of the game world.

The **designer must decide what the AI opponent does and does not know** and define what steps it will take (if any) to gain further information.



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Commonly Used Challenges

Economic Challenges



An **economy** is a system in which resources move either **physically** from place to place or **conceptually** from owner to owner.





Any quantifiable substance that can be created, moved, stored, earned, exchanged or destroyed can form the basis of an economy.





The behaviour of **resources**, as defined by the core mechanics of the game, creates **economic challenges**.





Ernest Adams & Andrew Rollings

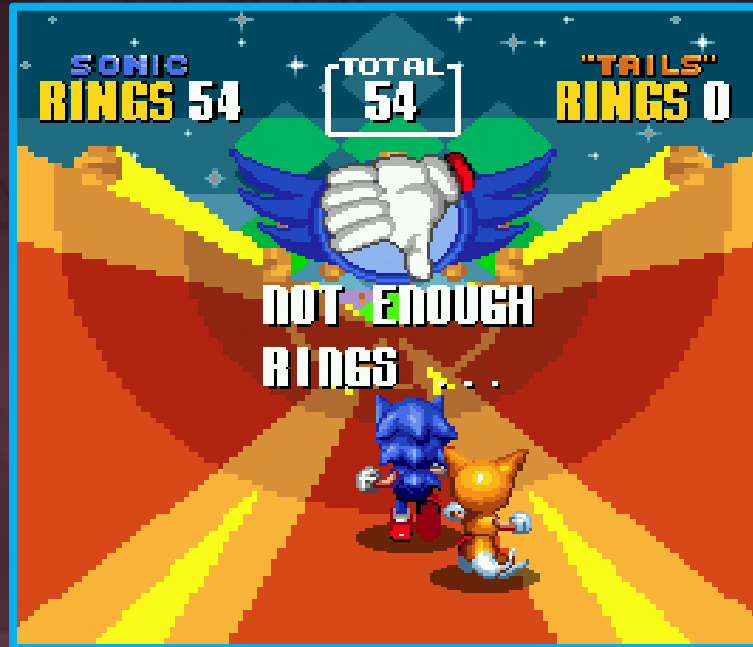
Commonly Used Challenges

Accumulating Resources



Many games challenge the player to **accumulate** something:

Wealth, points, or anything else deemed valuable.





Ernest Adams & Andrew Rollings **Commonly Used Challenges**

Achieving Balance



Requiring your players to **achieve balance** in an economy gives them a more interesting challenge than simply accumulating points, especially if you give them many different kinds of resources to manage.

Training

You have to pay the following resources to train this unit:

10 x 

5 x 

1 x 

Recruit requires 3 minutes to train, in Baracks on level 1.

ECONOMY

 10	 40	 21
 5	 0	 5
 15	 0	 0



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Commonly Used Challenges

Caring for Living Things



One variant of economic challenges involve **looking after a person or creature**, or a small number of them.

The game challenges the player to meet the needs of each individual and possibly improve its development.

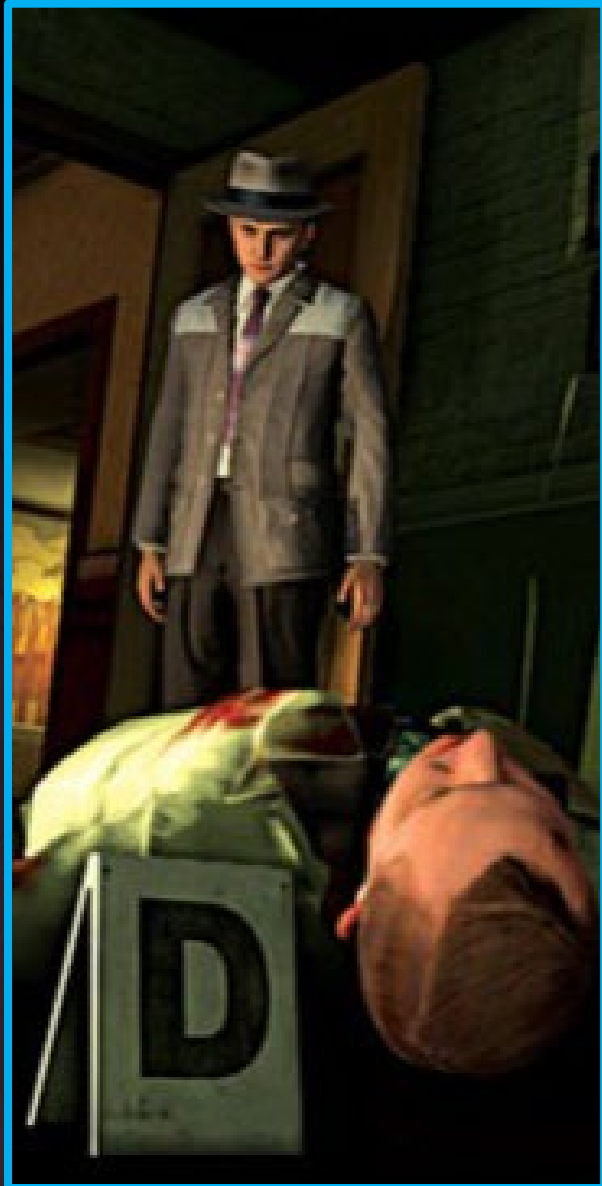
Because the game measures and tracks these needs via numeric terms, these qualify as **economic challenges**.



Ernest Adams & Andrew Rollings

Commonly Used Challenges

Conceptual Reasoning and Lateral Thinking Puzzles



Conceptual reasoning puzzles require the player to use their **reasoning power and knowledge** of the puzzle's subject matter to arrive at a **solution** to a problem.

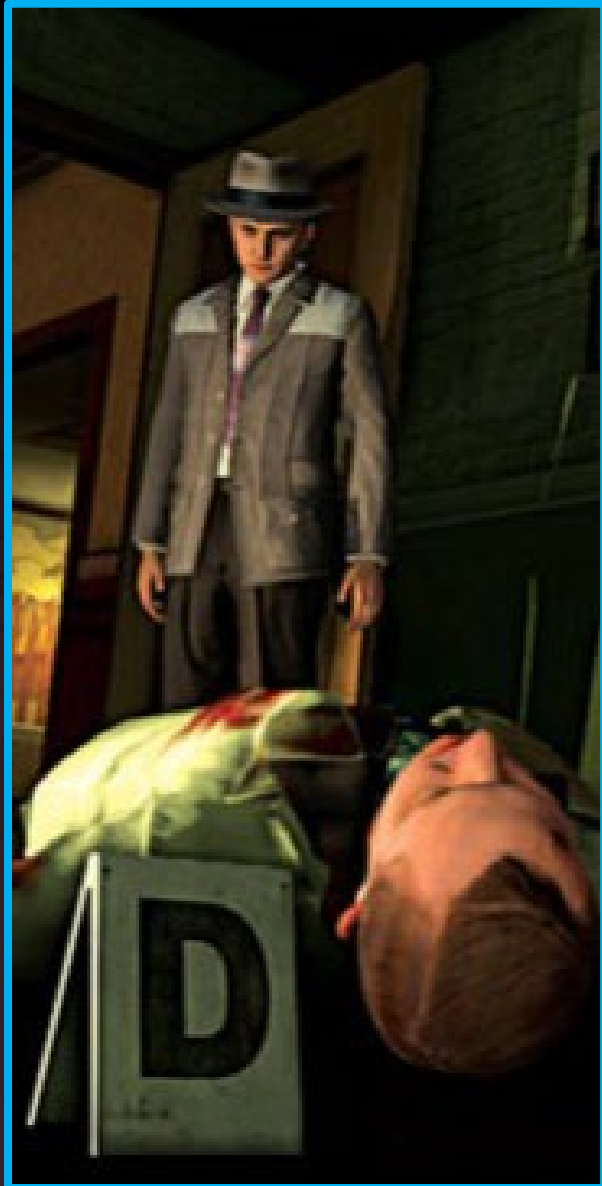
Conceptual challenges occur in **mystery or detective games**, in which **the player must examine the evidence** and deduce which of a number of suspects committed the crime and how.



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Conceptual Reasoning and Lateral Thinking Puzzles



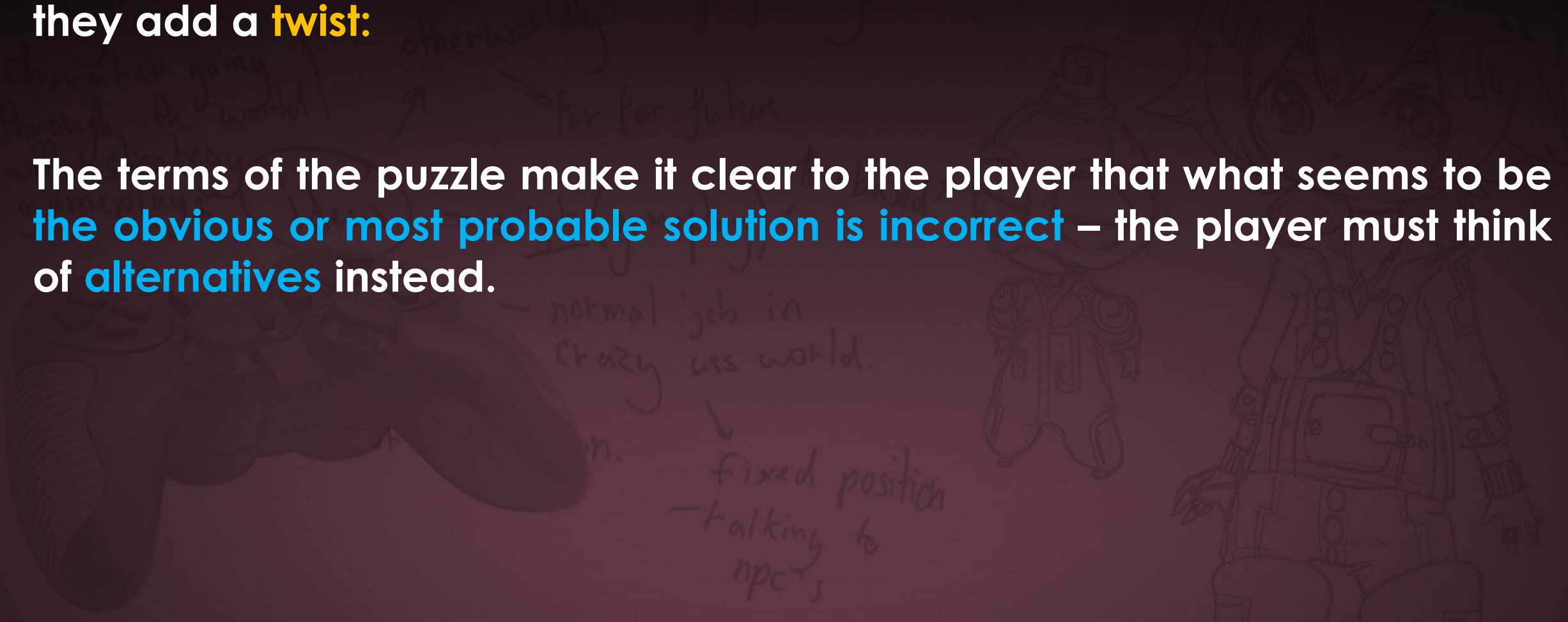
You may find designing conceptual reasoning challenges a lot of fun because **they offer a lot of scope to the designer.**

However, these challenges are **harder to create** than putting together simpler trials such as **physical** or **exploration** challenges.



Lateral thinking puzzles are related to conceptual reasoning puzzles but they add a **twist**:

The terms of the puzzle make it clear to the player that what seems to be **the obvious or most probable solution is incorrect** – the player must think of **alternatives** instead.





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Lateral thinking puzzles often require the player to use extrinsic knowledge gained in real life, but to use it in unexpected ways.



Adventure games frequently include lateral thinking puzzles.

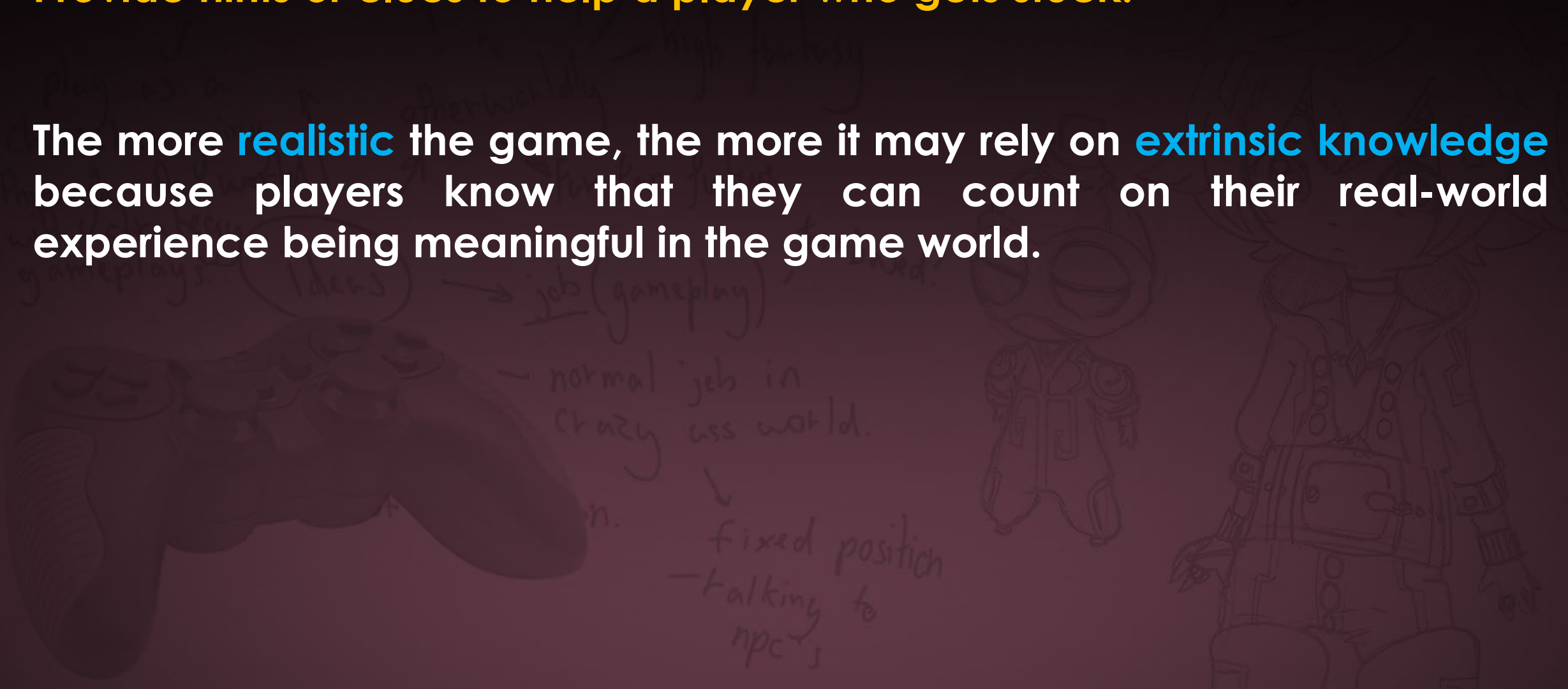
Be careful not to make your solutions too obscure or to rely on information that goes **beyond common knowledge**.





Provide hints or clues to help a player who gets stuck.

The more **realistic** the game, the more it may rely on **extrinsic knowledge** because players know that they can count on their real-world experience being meaningful in the game world.





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In a highly abstract or surreal game, **the player won't expect common-sense experience to be of any use**. These games may still include lateral thinking puzzles but the **knowledge required** to solve them must be available **within the game**.



Ernest Adams & Andrew Rollings Commonly Used Challenges

Summary



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Any questions?



Game Examples (Steam Library)

Commonly Used Challenges 2

- *Command & Conquer* (Westwood Studios, 1994) – **Resource Management, Defending vulnerable units, Logistics**
- *Left 4 Dead* (Valve 2009) – **Survival and reduction of enemy forces**
- *The Sims 4* (EA/Maxis 2014) – **Caring for Living Things**
- *Beneath A Steel Sky* (Virgin Interactive, 1994) – **Lateral Thinking Puzzles**



Books

Adams, E. & Rollings, A. (2007). *Fundamentals of Game Design*.
Pearson Education Inc, USA.



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