

GAME DESIGN AND HISTORY

UNIVERSITY OF WALES
TRINITY ST DAVID



Play

- Play is Metaphorical
- Play must be Safe
- Play Need Not be Exotic
- The Fun Factor

Challenge

- Cerebellar Challenges
- Sensorimotor Challenges
- Forms of challenge in games



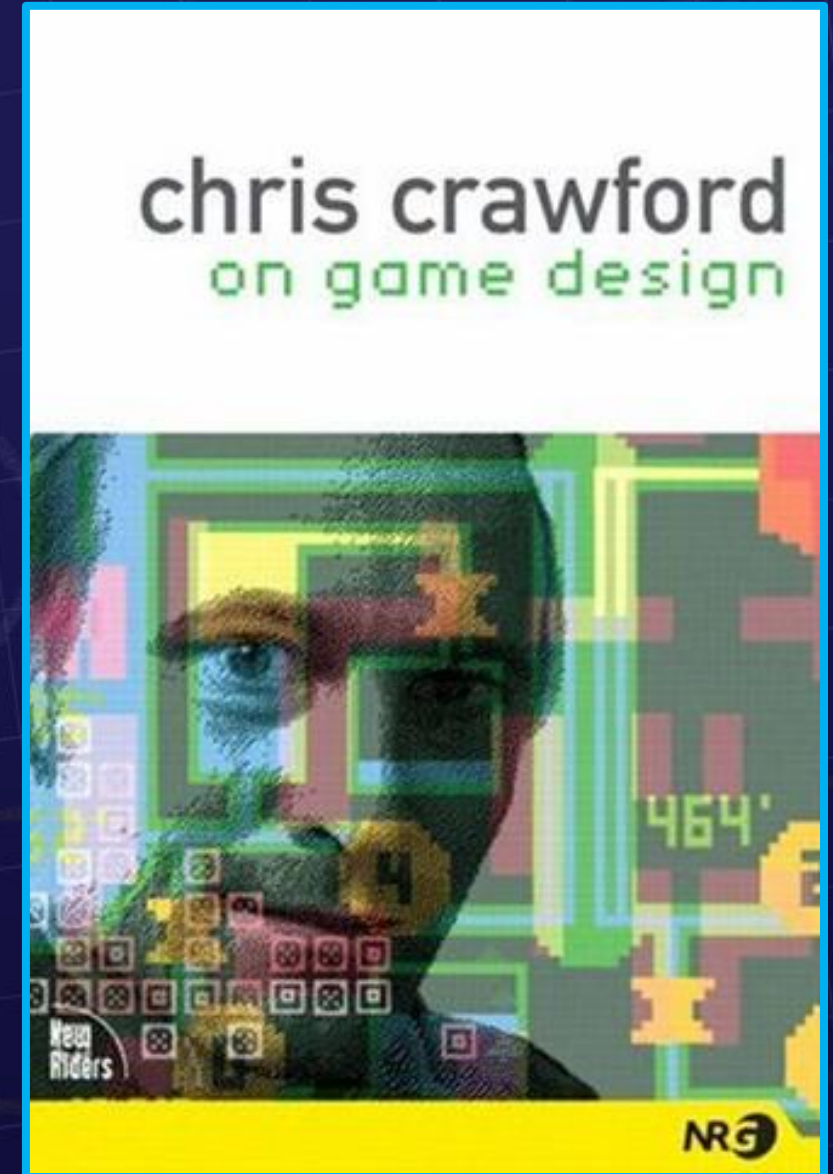
CHALLENGE AND PLAY

CHRIS CRAWFORD:
CHRIS CRAWFORD
ON GAME DESIGN



Chris Crawford
Chris Crawford on Game Design

This book is available in the UWTSD
Library for you to use!



**CHALLENGE
AND PLAY**

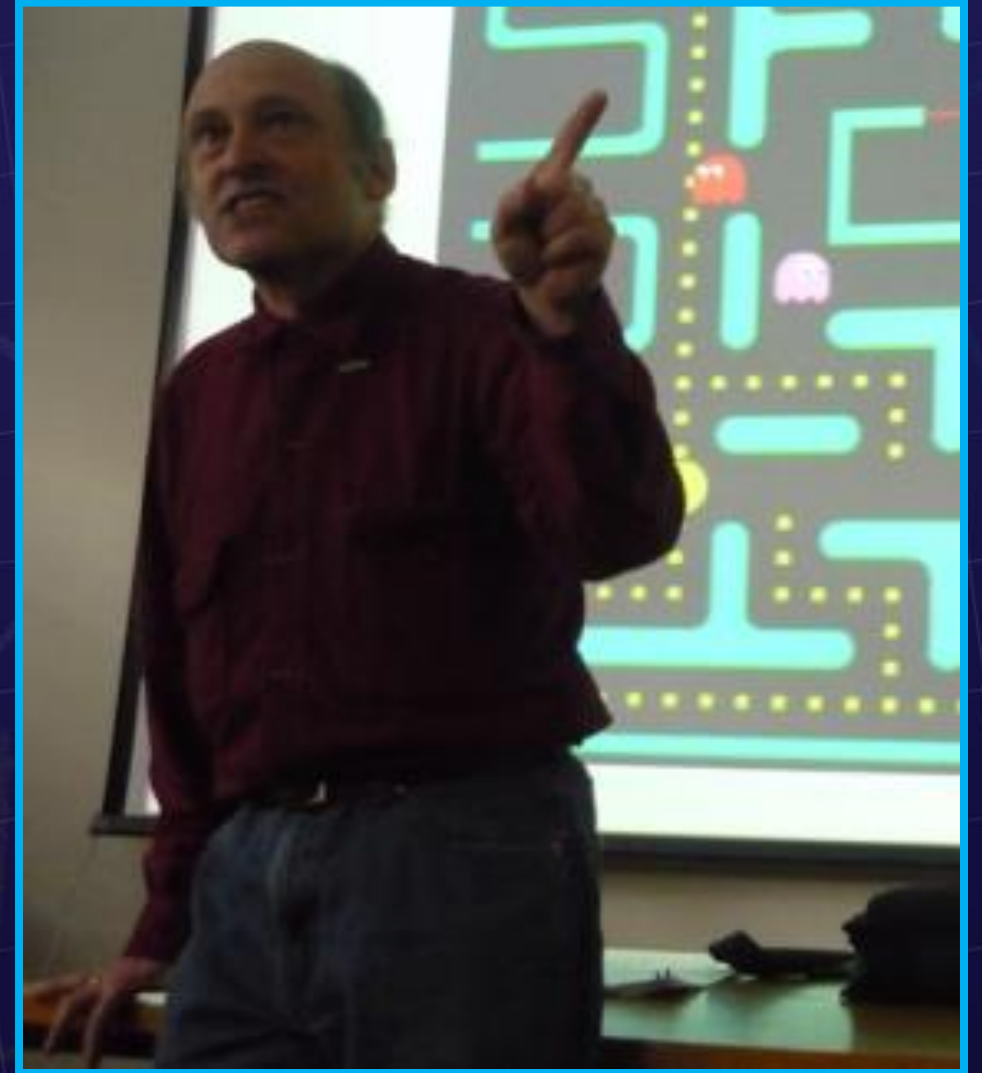
PLAY



“You can’t design games if you don’t understand play – and play is a complex and tricky behaviour.”

We dismiss it too readily as child’s activity, and therefore something devoid of depth and richness, but in fact play extends far beyond the realm of the child and touches a wide range of human life.”

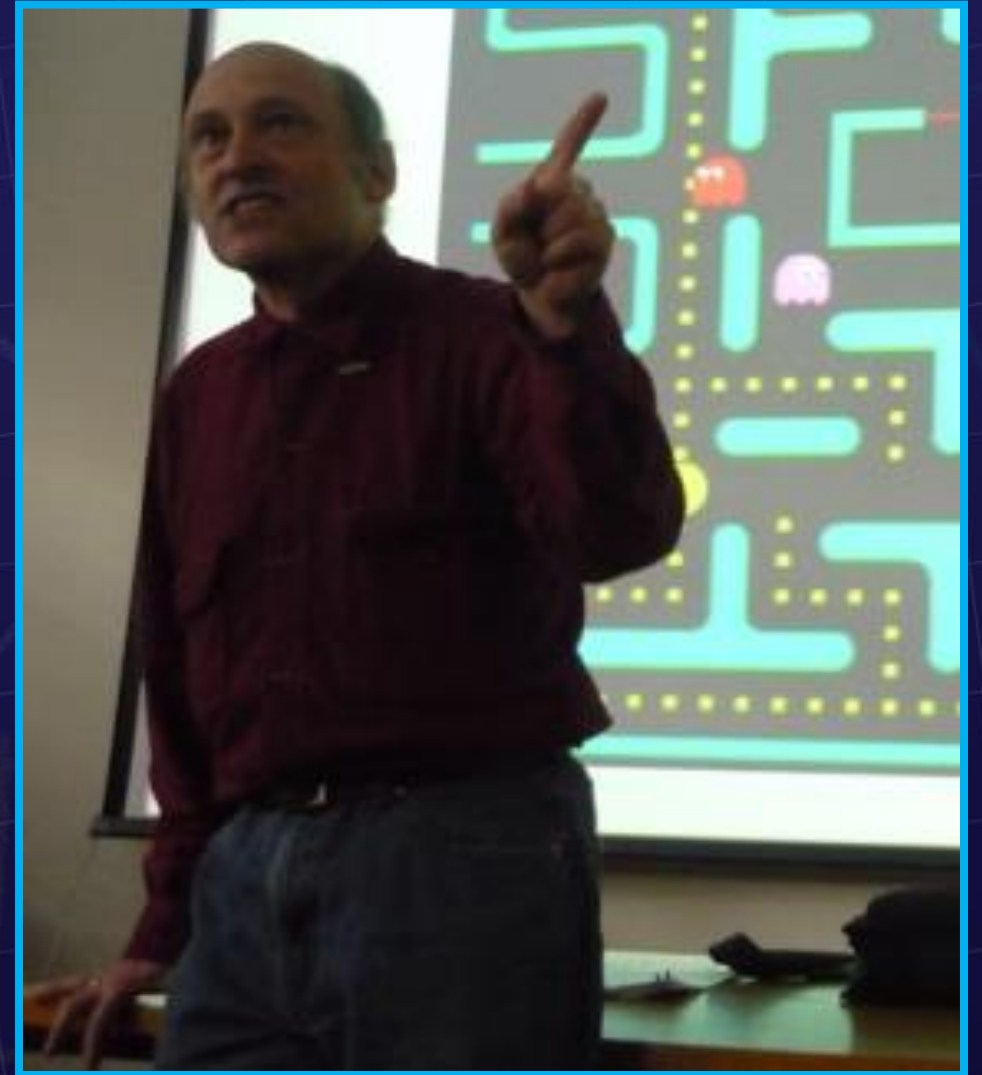
(Crawford, 2003, p.27)





“Appreciating the many facets of play is a vital first step in understanding game design.”

(Crawford, 2003, p.27)





Play's role in our childhood is so dominating that we cannot let go of it when we grow up.

The concepts of play are integrated into **everything** we do.

Our culture is full of behaviour patterns or templates that we use to guide our actions.

**CHALLENGE
AND PLAY**

**PLAY IS
METAPHORICAL**



All play in some sense represents something from the non-play universe.

This metaphorical aspect of play is often mistaken as **simulation**.

(Crawford, 2003)





Play is not necessarily a simulation of any particular thing but it does generate mental associations with real-world issues.

(Crawford, 2003)

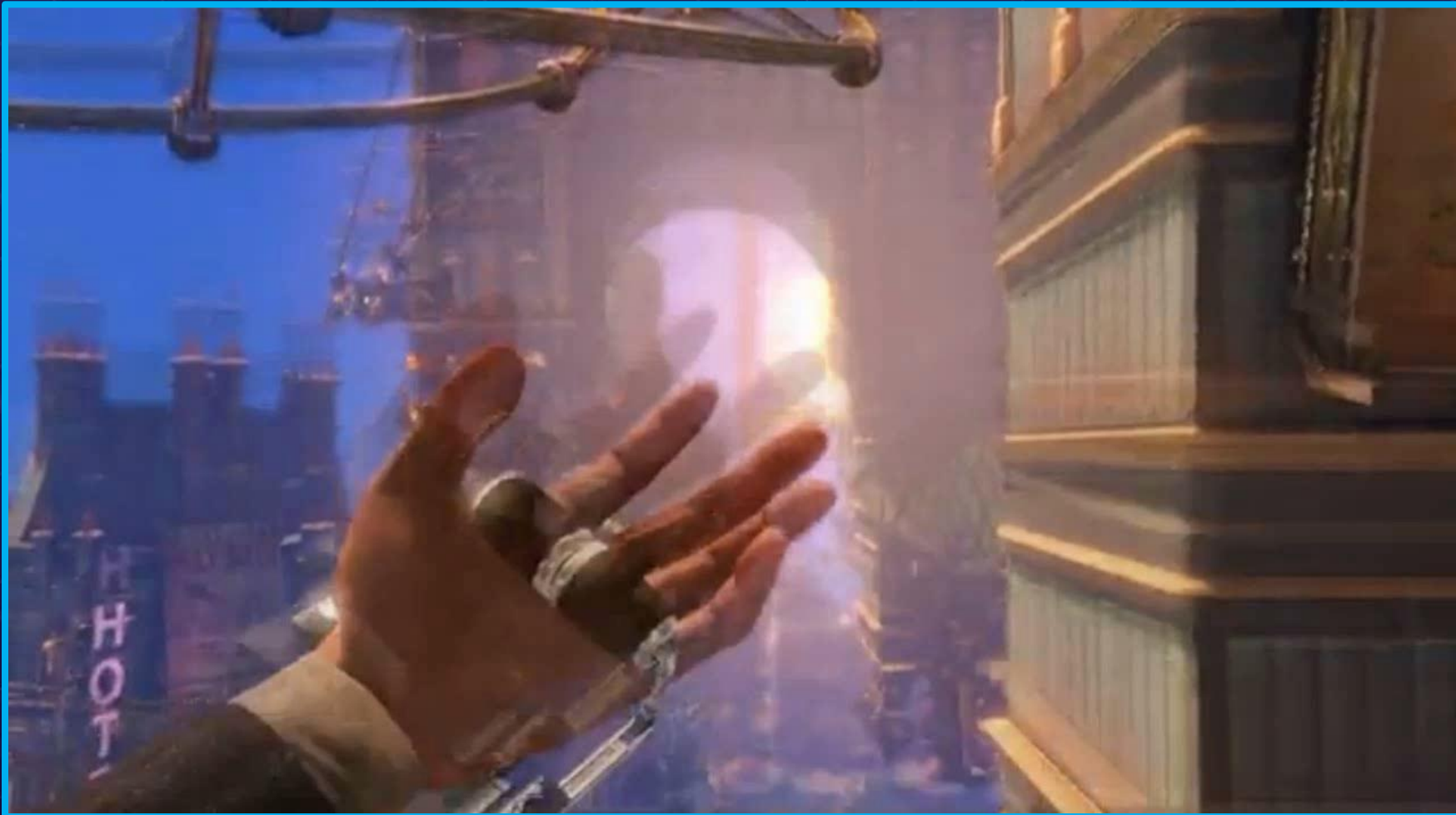


**CHALLENGE
AND PLAY**

**PLAY MUST
BE SAFE**



The whole idea of play is to give the player an experience **without the danger** that might normally accompany that experience.





The same phenomenon is present in movies.

In *Raiders of the Lost Ark*, Indiana Jones (our protagonist / hero) faces ten deadly threats and escapes each one.

(Crawford, 2003)



The sense of **underlying safety** amid the **dangers** is an irresistible allure in a movie – audiences love it.

(Crawford, 2003)



The sense of **underlying safety** amid the **dangers** is an irresistible allure in a movie – audiences love it.

Games should do the same.

(Crawford, 2003)

**CHALLENGE
AND PLAY**

**PLAY NEED NOT
BE EXOTIC**



Some game designers believe that play must have an exotic, escapist aspect to be successful.

These designers have missed the underlying truth at work - players don't need to be placed in exotic worlds.





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These designers have missed the underlying truth at work - players don't need to be placed in exotic worlds.

Players want to face and overcome interesting challenges.





Skateboarding games are a good example of this concept.

The settings are not necessarily other-worldly or fantastical, but offer players to **play in environments that may be forbidden to them** in reality.

Environments such as freeways, factories or shopping malls are not so much exotic as they are **challenging**.

**CHALLENGE
AND PLAY**

THE FUN FACTOR



Most people place the words “game”, “play” and “fun” in a straightforward relationship:

- *Game* is the formal activity that you perform.
- *Play* is the actual behaviour that you engage in.
- *Fun* is the experience or emotion you derive from that behaviour.

The conclusion seems simple – games and play must lead to **fun**.

If a game isn't fun, it must be a bad game.

(Crawford, 2003)



This sounds perfectly logical, but it is wrong.

According to Crawford, “fun” is a misleading word to use. He uses it informally, but never for serious design analysis.

Condemning a game as “not fun” expresses an emotional reaction but offers absolutely **nothing substantial** in a critical analysis of a game.

(Crawford, 2003)



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Condemning a game as “not fun” expresses an emotional reaction but offers absolutely **nothing substantial** in a critical analysis of a game.

Remember this for your game reviews!

(Crawford, 2003)



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Not everyone enjoys the same sort of activities.

Know your demographic, and **design around your ideal player.**

Only then (and even then, only **after extensive testing**) can you hope to be on the right track with your design decisions!

**CHALLENGE
AND PLAY**

CHALLENGE



We measure ourselves by the challenges we face.

Once a challenge has been overcome **it is no longer a challenge** and we move on to new ones.

We seek challenges in all areas of our lives: social, work, romantic, artistic, etc.

(Crawford, 2003)



Sometimes we **fail** and adjust our challenges accordingly.

Other times we **succeed** and raise the challenge a little.

Our quest for challenges **expands our identities.**

(Crawford, 2003)

**CHALLENGE
AND PLAY**

**CHALLENGE
NECESSITATES
RULES**



All challenges take place in some sort of **defined context**, setting the conditions under which the challenge is presented.

(Crawford, 2003)



All challenges take place in some sort of **defined context**, setting the conditions under which the challenge is presented.

The conditions under which a challenge is presented are its rules.

(Crawford, 2003)



Some rules are imposed on the player by forces outside their control.

Important rules are those that define the nature of the challenge and that make it an interesting one.

(Crawford, 2003)

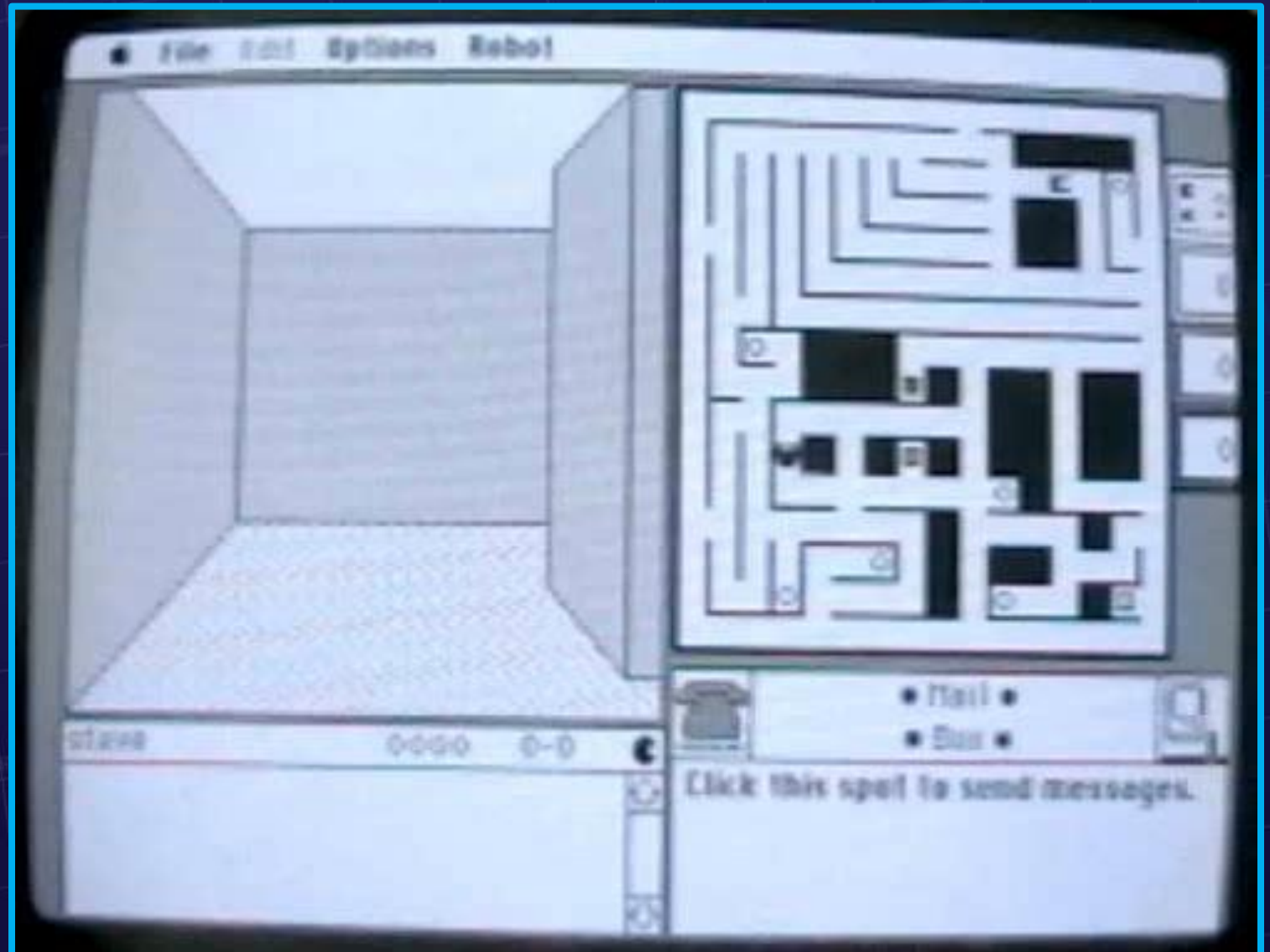
CHALLENGE AND PLAY

**THE POINT IS
THE CHALLENGE,
NOT THE GOAL**



It is easy to ruin a good challenge by **exploiting loopholes** in the rules.

No matter how carefully the challenge is set up, **someone will find a way to subvert your system.**





The purpose of rules is to **prevent strategies that subvert the challenge.**

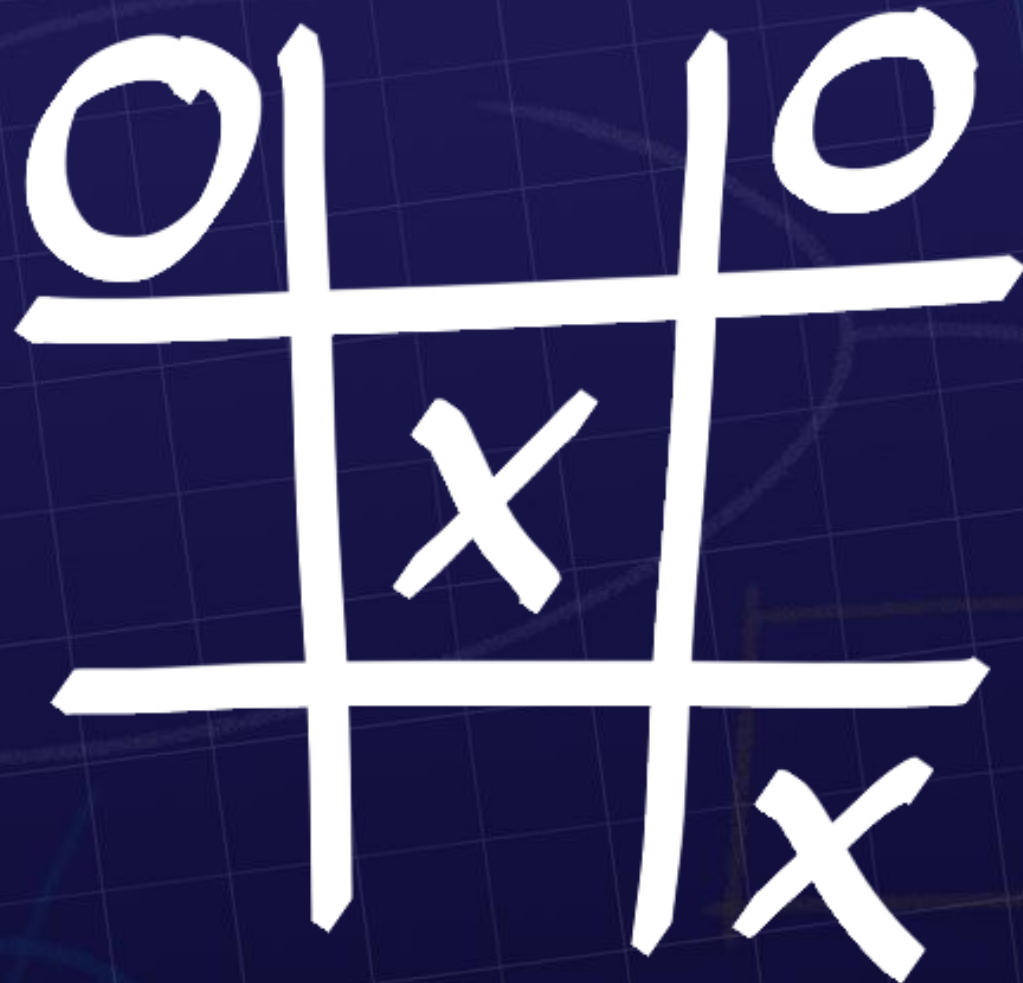
In most sports games, there is some sort of boundary and any play that goes 'out of bounds' is forbidden by the rules.

There are many ways to play a game, but a good design ensures that **only the challenging ways are possible.**

(Crawford 2003)



Tic-Tac-Toe is challenging for some people and devoid of challenge for others.





All challenges force us to use a combination of skills.

Most recreational challenges are centred on particular **mental skills**.





In most sports, it is the precise **control** of superb musculature that is most important to success - not just having it.

Physical strength and co-ordination are **supported by additional skills** such as judging distances and gauging speed.





Most challenges can be characterized by the nature of the **mental challenge** they offer.



**CHALLENGE
AND PLAY**

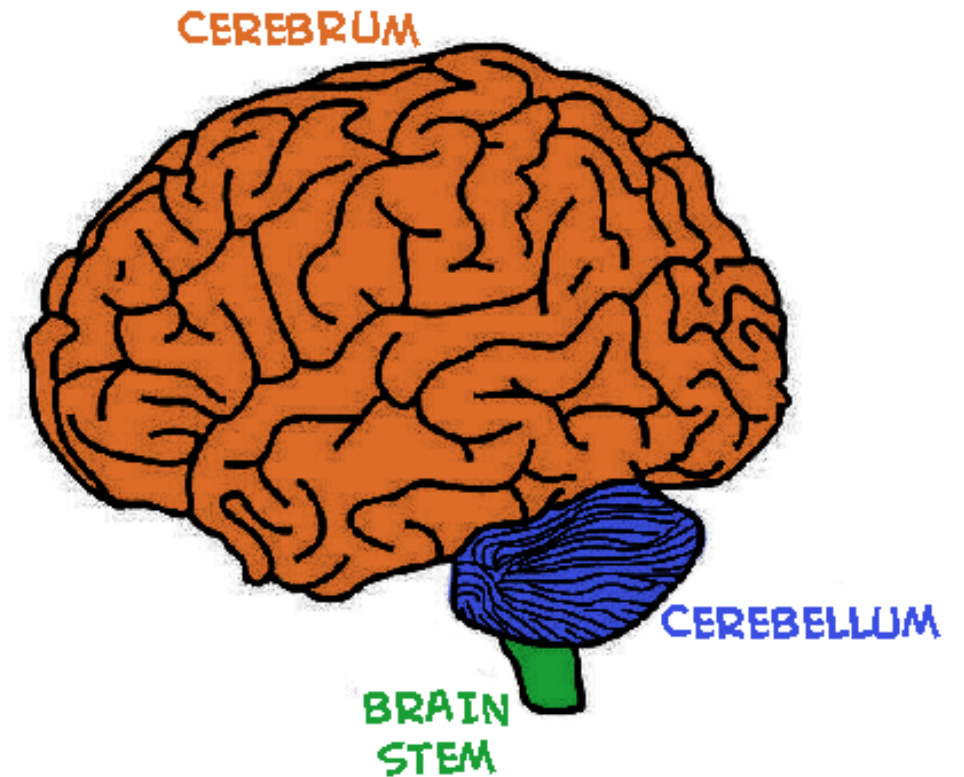
**CEREBELLAR
CHALLENGES**



The **cerebellum** sits at the base of the brain; the spinal cord enters it.

High-level brain decisions are passed to the **cerebellum**, which breaks each command down into smaller, precisely tuned commands to trigger particular muscle bundles.

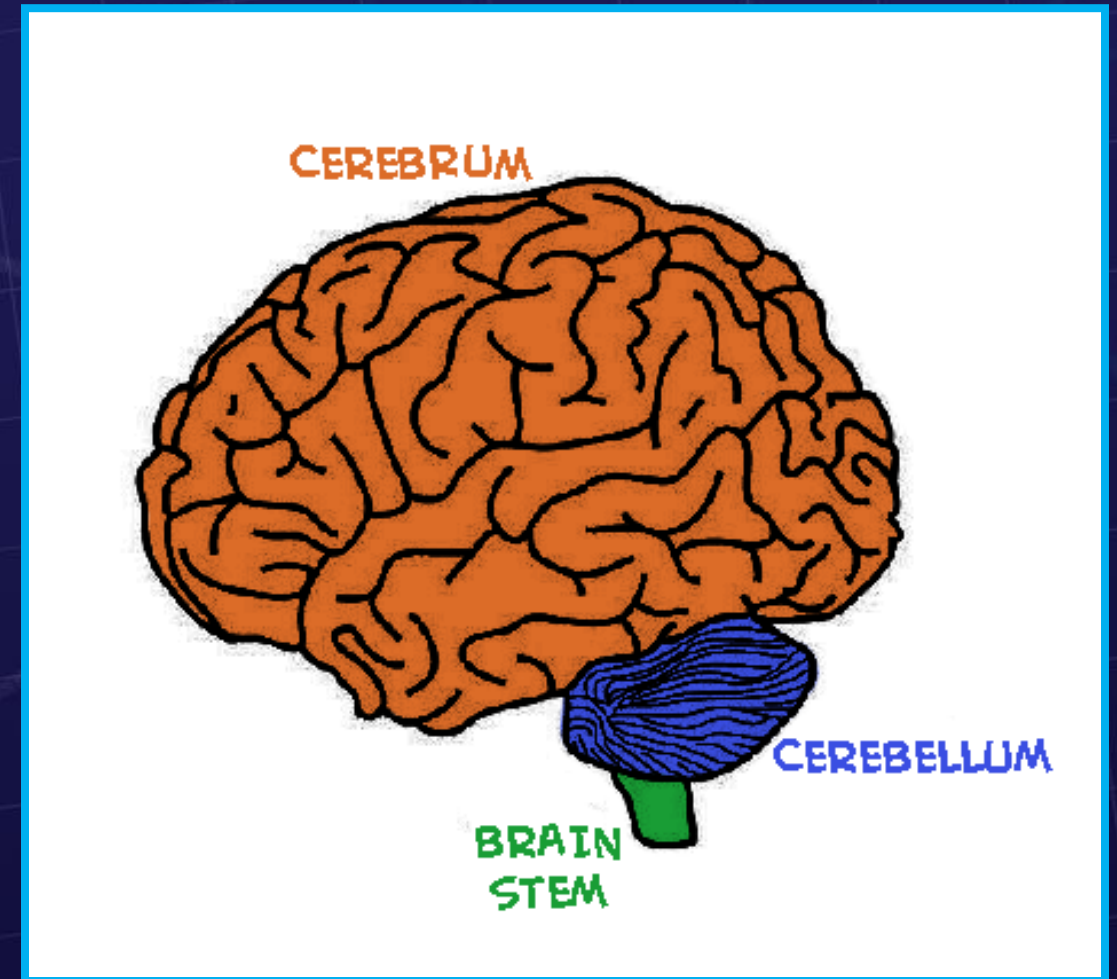
(Crawford, 2003)





These commands go down the **brain stem** to the spinal cord and from there to the muscles of the body.

(Crawford, 2003)



**CHALLENGE
AND PLAY**

**SENSORIMOTOR
CHALLENGES**



Most cerebellar challenges include a **sensory element**.

Senses such as **vision** are used to direct and control muscular activity.

(Crawford, 2003)





A simple example of this would be the mechanics of throwing a crumpled ball of paper into a bin.

The timing of muscle activity, and especially the release of the ball, must be accurate to within a millisecond.

(Crawford, 2003)





However, a single neuron takes a few milliseconds to fire.

The trick is achieved by applying large numbers of neurons and using their **average value**.

(Crawford, 2003)





Statistically, the average time of firing a hundred neurons is ten times more precise than the timing of a single neuron.





Sensorimotor challenges require the integration of **visual information** with **motor response**.

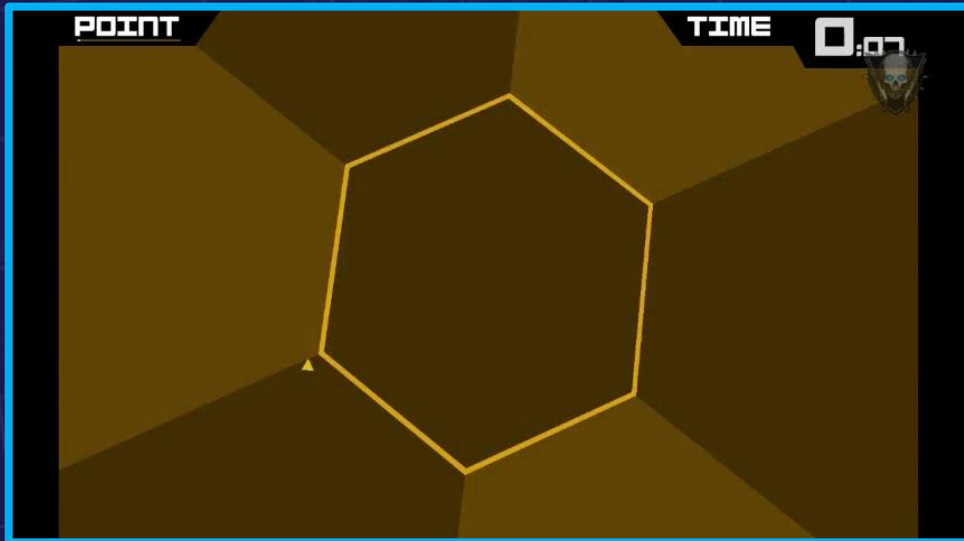
In its simplest form, this is known as **hand-eye co-ordination**.



A hand-drawn diagram on a chalkboard background. A large white oval in the center contains the text 'CHALLENGE AND PLAY'. A curved arrow points from this oval down to a yellow rectangular box in the bottom right corner containing the text 'SPATIAL REASONING'. In the top left, there is a blue rectangle with diagonal hatching and an arrow pointing towards the center. In the top right, there is a blue geometric sketch of a structure with a curved line above it. At the bottom left, there are blue circles and lines. The entire diagram is enclosed in a white rectangular border.

**CHALLENGE
AND PLAY**

**SPATIAL
REASONING**



A certain amount of **spatial reasoning** is involved with challenge.



Much of the learning process of a fast game is a matter of moving the spatial reasoning process into **lower regions of the brain**.

(Crawford, 2003)



Some games do not rely as much on fast hand-eye co-ordination.

In a strategy game the player may be required to **analyze spatial patterns** of military units, looking for weaknesses in the front lines and lines of advance and retreat.



**CHALLENGE
AND PLAY**

**PATTERN
RECOGNITION**



Many board games make strong use of **pattern recognition**, such as *Chess*, *Draughts* and *Go*.





Some shooters encourage players to **recognize particular enemies** when they are far away, helping them to ready an appropriate response.





Patterns are not always visual. They can take more esoteric or hidden forms.

For example, players entering a new area in an RPG game must quickly evaluate the **tactical situation, positions and capabilities** of hostile inhabitants.

(Crawford, 2003)





If the pattern appears dangerous, the player may decide to retreat, but a situation with a less threatening pattern would require a different approach.

(Crawford, 2003)



**CHALLENGE
AND PLAY**

**SEQUENTIAL
REASONING**



When players string together long sequences of steps, they are engaging in **sequential reasoning**.

Most games require some form of sequential reasoning.





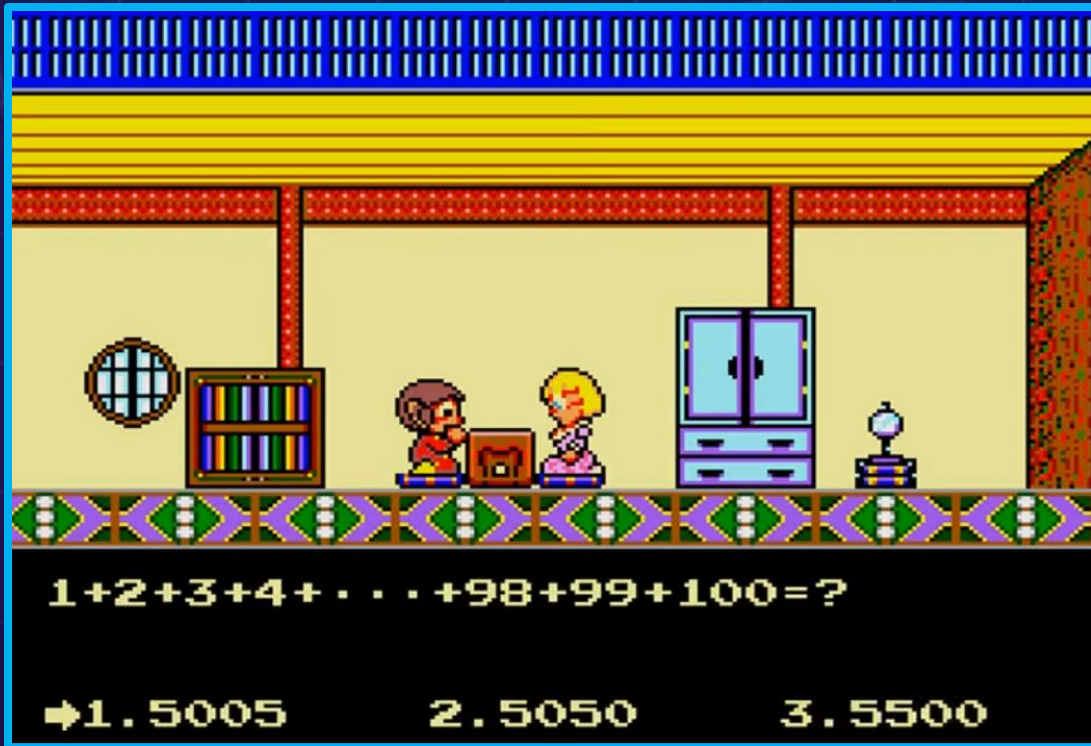
Computers excel in this area and can beat people at this task.

Most people find highly sequential tasks, such as long calculations or memorizing complex sequences of actions, to be a **tedious challenge**.



**CHALLENGE
AND PLAY**

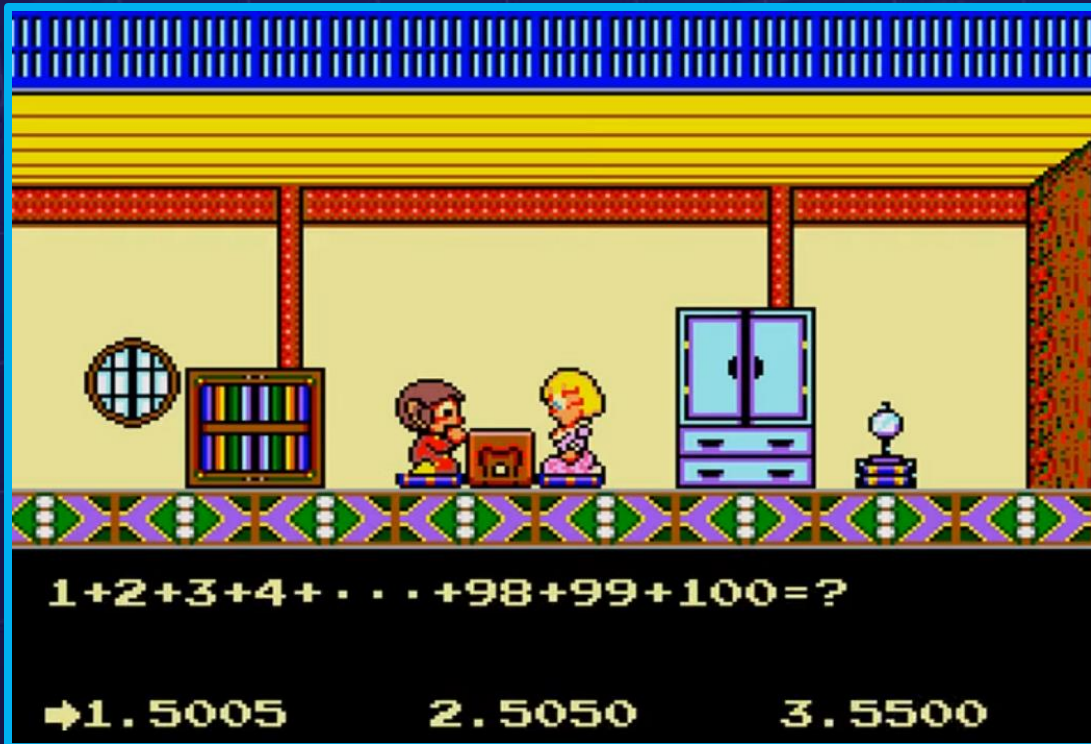
**NUMERICAL
REASONING**



All of us have to juggle numbers in our heads, working out prices of products while shopping, estimations of journey durations and so forth.

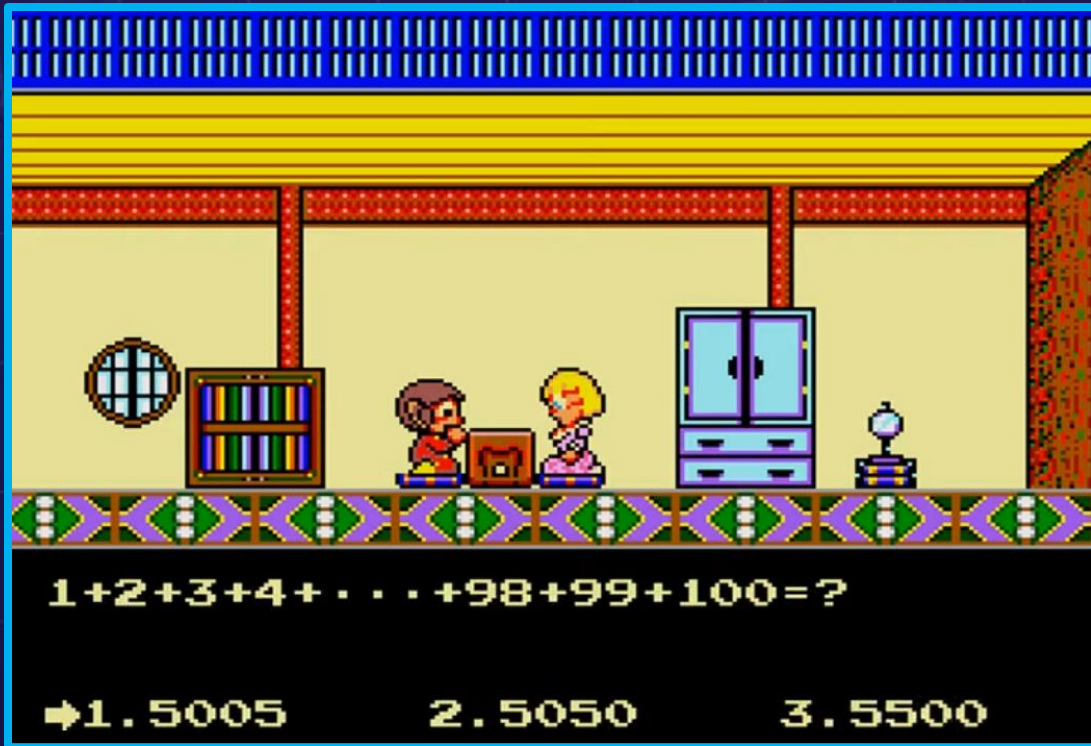
This kind of **numerical reasoning** is a special form of sequential reasoning, and most people dislike it, particularly in games.

(Crawford, 2003)



Computers excel at numerical reasoning – let the machine crunch numbers, **not the player.**

(Crawford, 2003)



Computers excel at numerical reasoning – let the machine crunch numbers, **not the player.**

A designer should never challenge a player in this dimension.

(Crawford, 2003)

**CHALLENGE
AND PLAY**

**RESOURCE
MANAGEMENT**



In many games the player must **manage a limited supply of scarce resources** to handle the problems they face.



Shooters have resource management in the form of **ammunition and health**.



Some game genres, such as Real Time Strategy (RTS) games, may be far more complex.



As with **sequential reasoning**, some games can overdo it.

**CHALLENGE
AND PLAY**

**SOCIAL
REASONING**



Crawford believes that **social reasoning** is an under developed source of challenge for video games.

Games need to be made that challenge **social reasoning** skills.





Even now, it seems that it is easier to calculate the trajectory of a bullet than to figure out why a character breaks up with their partner.



**CHALLENGE
AND PLAY**

**CHALLENGE
AND IDENTITY**



We define ourselves by the limits we can push through.



Each person has their own sense of those limits and the challenges that define them.





Good game design should **cover a broad range of challenges.**



Individual games cannot cover everything but games as a medium should be able to provide a wide range of varied challenges.





**CHALLENGE
AND PLAY**

SUMMARY

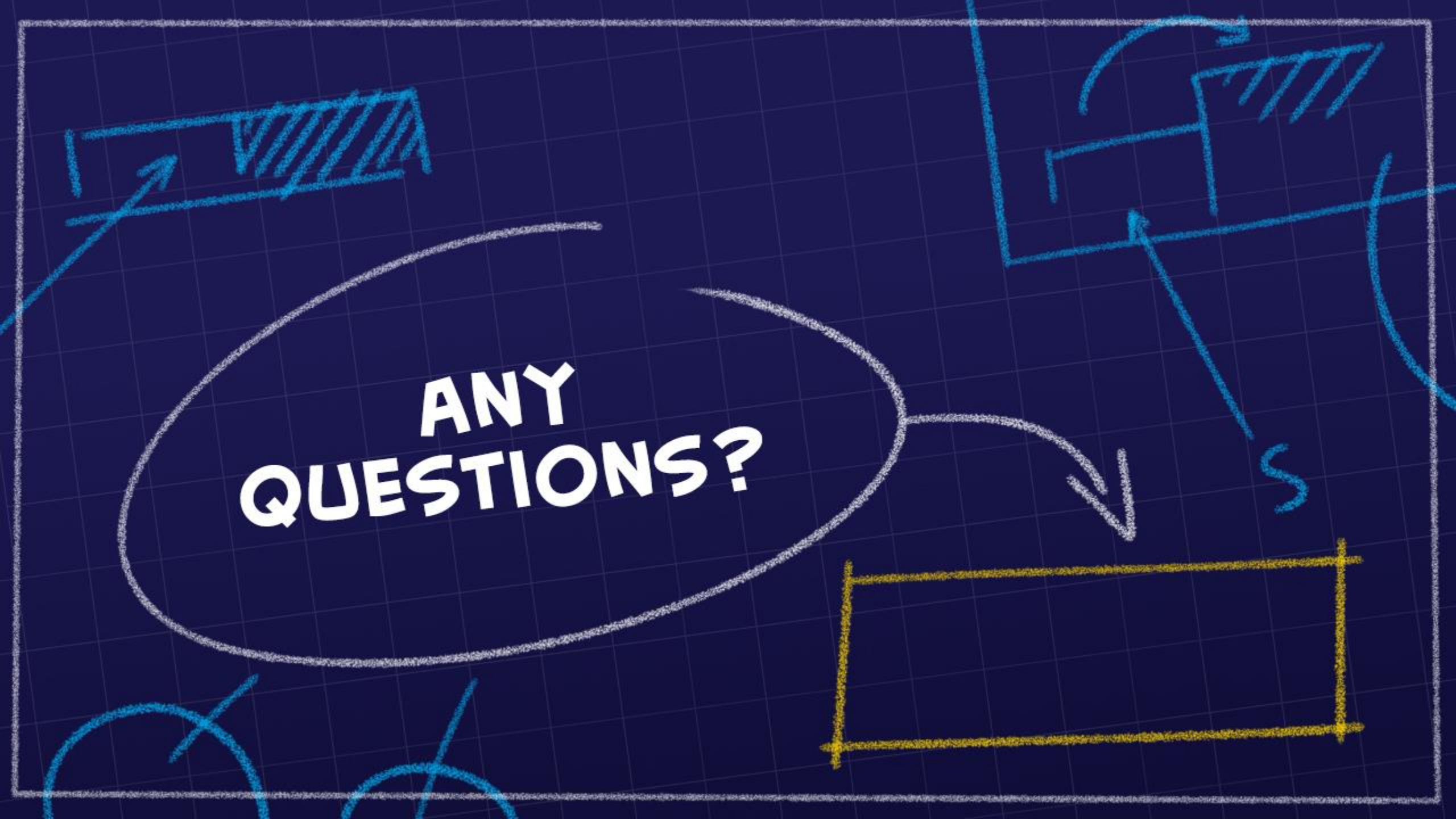


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Challenge

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A hand-drawn diagram on a chalkboard background. The central element is a large, hand-drawn oval containing the text "ANY QUESTIONS?". To the top left of the oval is a rectangular box with diagonal hatching and an arrow pointing towards it from the left. To the top right is a more complex diagram with a rectangle, a curved line, and an arrow pointing from the rectangle towards the oval. Below the oval, an arrow points from the oval to a large, empty rectangular box. In the bottom left corner, there are two overlapping circles. The entire scene is set against a dark blue background with a light blue grid pattern.

**ANY
QUESTIONS?**



Books

Crawford, C. (2003). *Chris Crawford on Game Design*.
New Riders Publishing, USA.

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