A summary of The art of game design: A book of lenses written by James Schell

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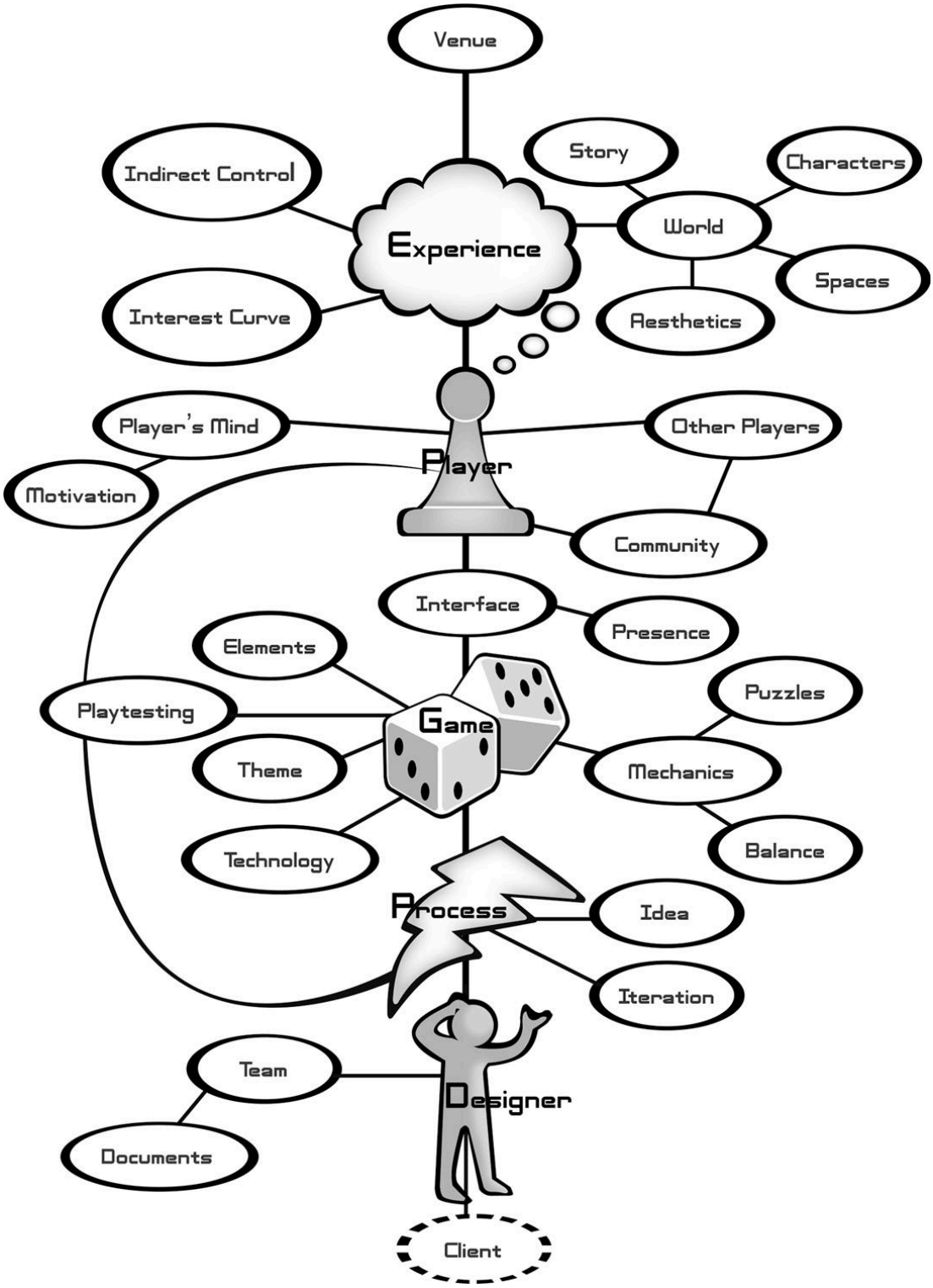


GAME INTERNALLY

PLAYER

PROCESS AND DESIGNER

EXPERIENCE

GAME EXTERNALLY

Lens #1: The Lens of Essential Experience

Is our game capturing the ESSENTIAL EXPERIENCE that we want for the player?

Lens #2: The Lens of Surprise

- What will **surprise** players when they play my game?
- Does the story in my game have surprises? Do the game rules? Does the artwork? The technology?
- Do your rules give players ways to surprise each other?
- Do your rules give players ways to surprise themselves?

Lens #3: The Lens of Fun

- What parts of my game are fun? Why?
- What parts need to be more fun?

Lens #4: The Lens of Curiosity

think about the player's true motivations — not just the goals

- What questions does my game put into the player's mind?
- What am I doing to make them care about these questions?
- What can I do to make them invent even more questions?

"***I wonder what the next animation will be***"

Four Basic Elements of a Game:

1. Mechanics- The ways you can and cannot go about achieving the game's goal, and the after effects of your actions
2. Story- Pretty self-explanatory, most games have a story
3. Aesthetics- Not just visuals, but anything sensory that your game has. These should be used to amplify the tone of the game
4. Technology- The way the game is made

Lens #7: The of the Elemental tetrad

● Is my game design using elements of all four types?
● Could my design be improved by enhancing elements in one or more of the categories?
● Are the four elements in harmony, reinforcing each other, and working together toward a common theme?

Lens #8: The of Holographic Design

To use this lens, you must see everything in your game at once: the four elements and the player experience.

Ask yourself these questions:

● What elements of the game make the experience enjoyable?
● **What elements of the game detract from the experience?**
● How can I change game elements to improve the experience?

Lens #9: The Lens of Unification

consider the reason behind it all

● What is my theme?
● Am I using every means possible to reinforce that theme?

The Lens of Unification works very well with the Lens of the Elemental Tetrad. Use the tetrad to separate out the elements of your game, so you can more easily study them from the perspective of a unified theme.
-This is something I'm going to have to think about. I don't think my games have much of a theme.

Lens #10: The Lens of Resonance

you must look for hidden power.

● What is it about my game that feels powerful and special?
● When I describe my game to people, **what ideas get them really excited**?
● If I had no constraints of any kind, what would this game be like?
● I have certain instincts about how this game should be. What is driving those instincts?

Lens #11: The Lens of Infinite Inspiration

To you use this lens, stop looking at your game, and stop looking at games like it. Instead, look everywhere else.

● What is an experience I have had in my life that I would want to share with others?
● In what small way can I capture the essence of that experience and put it into my game?

You should always listen to your subconscious for ideas. The best ideas can pop up randomly, out of nowhere. In order to organize good ideas, write them down somewhere like the Notes App.

There are 8 filters that a game idea should go through before you use it.

1. Artistic Impulse: This relies on if you, the designer, think that the game fits. Key Question: "Does this game feel right?"
2. Demographics- This relies on if your target demographic will enjoy this idea. Key Question: "Will the intended audience like this game enough?"
3. Experience Design: This relies on seeing if a game is well balanced, a good experience, interesting, or overall well designed. Key Question: "Is this a well-designed game?"
4. Innovation- This relies on how innovative and unique the game is. Key Question: "Is this game novel enough?"

5. Business and Marketing- This relies on if a game's contents are appealing to consumers. Key Question: "Will this game sell?"
6. Engineering- This relies on if a game is practical to make from a technological and labor standpoint. For example, an endlessly detailed space sim beyond No Man's Sky wouldn't pass through this filter. Key Question: "Is it technically possible to build this game?"
7. Social/Community- This relies on if the game is engaging enough to form a community and social aspect. This would be very important in multiplayer games. Key Question: " Does this game meet our social and community goals? "
8. Playtesting- This relies on if the game is just fun to play to playtesters. It's important to get a playable build of games out for playtesters to critique. Their advice is especially useful early on. Key Question: "Do the playtesters enjoy the game enough?

Risk Mitigation: Iterate an idea with little MVP's to see if it's viable.

Lens #14: The Lens of Risk Mitigation

To use this lens, stop thinking positively, and start seriously considering the things that could go horribly wrong with your game.

● What could keep this game from being great?
● How can we stop that from happening?

Lens #15: The Lens of the Toy

To use this lens, stop thinking about whether your game is fun to play, and start thinking about whether it is fun to play with.

● If my game had no goal, would it be fun at all? If not, how can I change that?
● When people see my game, do they want to start interacting with it, even before they know what to do? If not, how can I change that?

-Minecraft is a great example of this. Just messing around is fun enough on its own.

Lens #16: The Lens of the Player

● In general, what do they like?
● What don't they like? Why?

● What do they expect to see in a game?
● If I were in their place, what would I want to see in a game?
● What would they like or dislike about my game in particular?

Player Types:

1. ♦ Achievers

2. ♠ Explorers

3. ♥ Socializers

4. ♣ Killers

The 8 Game Pleasures are the types of pleasure people seek from games. They are:

1. ***Sensation***- Good looking art, beautiful music, or anything sensory. This can't completely save a bad game, but it can certainly elevate it

2. ***Fantasy***- I think this is popular since people play games as a source of escapism. I personally love games where I can pretend to be something I like, even if it isn't real.

3. ***Narrative***- This is about the unfolding of events, not necessarily a storyline (although storylines count too).

4. ***Challenge***- It's simple, people enjoy accomplishing difficult tasks.

5. ***Fellowship***- Teamwork, cooperation, and friendship.

6. ***Discovery***- Finding new things and partaking in new experiences. No Man's Sky and Minecraft do a great job at this.

7. ***Expression***- Expressing yourself is a big part of many games.

8. ***Submission***- This is how immersed you are in a game. Worldbuilding and ambience can help accomplish this.

Lens #17: The Lens of Pleasure

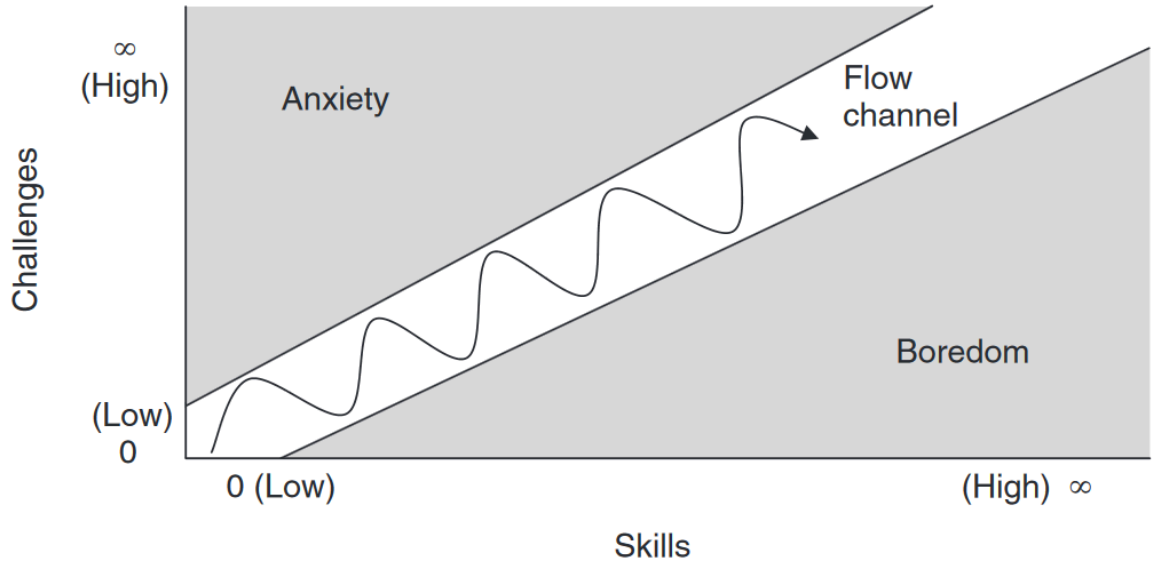
To use this lens, think about the kinds of pleasure your game does and does

not provide.

- What pleasures does your game give to players? Can these be improved?
- What pleasures are missing from your experience? Why? Can they be added?

FLOW STATE is defined as "***a feeling of complete and energized focus in an activity, with a high level of enjoyment and fulfillment***."

- ***No distractions***. Distractions steal focus from our task. No focus, no flow.
- ***Direct feedback***. If every time we take an action, we have to wait before we know what effect the action caused, we will quickly become distracted and lose focus on our task. When feedback is immediate, we can easily stay focused.
- ***Continuously challenging***. Human beings love a challenge. But it must be a challenge we think we can achieve. If we start to think we can't achieve it, we feel frustrated, and our minds start seeking an activity more likely to be rewarding. On the other hand, if the challenge is too easy, we feel bored, and again, our minds start seeking more rewarding activities.



Flow State Diagram

There are generally two types of actions in games:

1. **Operative Actions**
   Operative Actions are base actions that can be taken by the player. Examples:
   - Place/break a block in Minecraft
   - Place a plant in PvZ

2. **Resultant Actions**
   Resultant actions are how the player uses operative actions to achieve a larger goal. They aren't part of the rules themselves, but emerge over time. A well designed game can have many resultant actions from even a few operative actions.
   Examples:
   - Player-made team compositions in Overwatch
   - Redstone machines in Minecraft
   - Any sort of farm in games

Some tips for "growing" resultant actions:

- **Add more operative actions**. But not too many unnecessary actions.
- **Add alternate ways to achieve goals**. A good example is Undertale's various runs.
- **Add side effects.** One example is restraining the player from doing certain things if they make a specific choice.

Lens #23: The Lens of Emergence

- How many **verbs** do my players have?
- How many objects can each **verb** act on?
- How many ways can players **achieve** their goals?
- How many **subjects** do the players control?
- How do **side effects** change constraints?

Lens #24: The Lens of Action

To use this lens, think about what your players can do and what they can't,

and why.

● What are the operational actions in my game?
● What are the resultant actions?
● What resultant actions would I like to see? How can I change my game in order to make those possible?
● Am I happy with the ratio of resultant to operational actions?
● What actions do players wish they could do in my game that they cannot? Can I somehow enable these, either as operational or resultant actions?

Games Have 8 Types of Rules-

1. **Operational Rules.** The fundamentals of the game, essentially what you're supposed to be going.

2. **Foundational rules-** I honestly am not sure what these really are, but from what I understand they're the numbers that change the game. Health bars and stats could count.

3. **Behavioral Rules-** These are basically just etiquette and good sportsmanship

4. **Written Rules-** I'm not fully sure how this differs from the operational rules too much, but it is essentially the main rules of your game. These are often taught through tutorials

5. **Laws-** Think of these as competitive rules, often not made by the default game itself. An example would be banning certain characters in a tournament

6. **Official Rules**- Rules that players make which become dominant, even though they aren't part of the original rules. Saying "check" in chess is an example

7. **Advisory Rules**- These are less rules, and more so advice. An example would be, place sunflowers down first in PvZ

8. **House Rules**- Rules that the players make for themselves to have more fun

Modes are an important part of games that can help make them less stale. There are some tips for adding modes:

- Make it obvious when the mode changes. Changing modes without letting the player know can confuse them.
- The player should usually spend more time in the game's main mode than the others

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Lens #27: The Lens of Skill

To use this lens, stop looking at your game, and start looking at the skills you are asking of your players.

● What skills does my game require from the player?
● Are there categories of skill that this game is missing?
● Which skills are dominant?
● Are these skills creating the experience I want?
● Are some players much better at these skills than others? Does this make the game feel **unfair**?
● Can players improve their skills with practice?
● Does this game demand the right level of skill?

Exercising skills can be a joyful thing — it is one of the reasons that people love games. Of course, it is only joyful if the skills are interesting and rewarding, and if the challenge level strikes that ideal balance between "too easy" and "too hard."

When **BALANCING** two forces in a game that have different goals/abilities/advantages, you can make sure the conflict is balanced by assigning a value to each attribute the sides have, and seeing if the sums are equal. I can't explain it well through words, so here is a graph.

Unbalanced:

Plane	Speed	Maneuverability	Firepower	Totals
Piranha	Medium (2)	Medium (2)	Medium (2)	6
Revenger	High (3)	High (3)	Low (1)	7
Sopwith Camel	Low (1)	Low (1)	Medium (2)	4

Balanced:

Plane	Speed	Maneuverability	Firepower	Totals
Piranha	Medium (2)	Medium (2)	Medium (4)	8
Revenger	High (3)	High (3)	Low (2)	8
Sopwith Camel	Low (1)	Low (1)	High (6)	8

Certain attributes can also be worth more than others, based on the game.

Lens #30: The Lens of Fairness

To use the Lens of Fairness, think carefully about the game from each player's point of view. Taking into account each player's skill level, find a way to give each player a chance of winning that each will consider to be fair.

● Should my game be symmetrical? Why?
● Should my game be asymmetrical? Why?
● Which is more important: that my game is a reliable measure of who has the most skill, or that it provides an interesting challenge to all players?
● If I want players of different skill levels to play together, what means will I use to make the game interesting and challenging for everyone?

A good tip for balancing games in the playtesting phase is to have playtesters of all different types. Get people who like all different genres, or who play games casually or competitively.

Build the player's confidence in the game very early on. Especially nowadays, where people have the worst attention spans in human history and there are billions of things to distract them, if they feel confident in their ability to play your game, they'll be less likely to do something else

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Lens #31: The Lens of Challenge

● What are the challenges in my game?

● Are they too easy, too hard, or just right?

● Can my challenges accommodate a wide variety of skill levels?

● How does the level of challenge increase as the player succeeds?

● Is there enough variety in the challenges?

● What is the maximum level of challenge in my game?

Lens #32: The Lens of Meaningful Choices

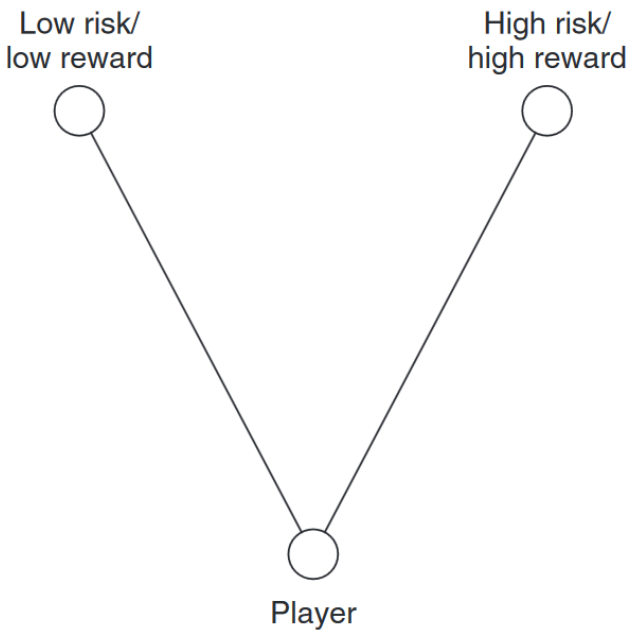
When we make meaningful choices, it lets us feel like the things we do matter.

● What choices am I asking the player to make?

● Are they meaningful? How?

● Am I giving the player the right number of choices? Would more make them feel more powerful? Would less make the game clearer?

● Are there any dominant strategies (the ones that are better choices than other ones) in my game?



A diagram of Triangularity- a method of balancing game choices

Lens #33: The Lens of Triangularity

Giving a player the choice to play it safe for a low reward, or to take a risk for a big reward is a great way to make your game interesting and exciting.

● Do I have triangularity now? If not, how can I get it?

● Is my attempt at triangularity balanced? That is, are the rewards commensurate with the risks?

Once you start looking for triangularity in games, you will see it everywhere. A dull, monotonous game can quickly become exciting and rewarding when you add a dash of triangularity.

Lens #34: The Lens of Skill vs. Chance

To help determine how to balance skill and chance in your game, ask yourself these questions:

● Are my players here to be judged (**skill**), or to take risks (**chance**)?

● Skill tends to be more serious than chance: Is my game serious or casual?

● Are parts of my game tedious? If so, will adding elements of chance enliven them?

● Do parts of my game feel too random? If so, will replacing elements of chance with elements of skill or strategy make the players feel more in Control?

Lens #35: The Lens of Head and Hands

“Baseball is 90% mental. The other half is physical.”

● Are my players looking for mindless action, or an intellectual challenge?

● Would adding more places that involve puzzle-solving in my game make it more interesting?

● Are there places where the player can relax their brain, and just play the game without thinking?

● Can I give the player a choice — either succeed by exercising a high level of dexterity, or by finding a clever strategy that works with a minimum of

physical skill?

● If “1” means all physical, and “10” means all mental, what number would my game get?

● This lens works particularly well when used in conjunction with Lens #16: Lens of the Player

Lens #36: The Lens of Competition

Determining who is most skilled at something is a basic human urge. Games of competition can satisfy that urge.

● Does my game give a fair measurement of player skill?
● Do people want to win my game? Why?
● Is winning this game something people can be proud of? Why?
● Can novices meaningfully compete at my game?
● Can experts meaningfully compete at my game?
● Can experts generally be sure they will defeat novices?

Lens #37: The Lens of Cooperation

Collaborating and succeeding as a team is a special pleasure that can create lasting social bonds.

● Cooperation requires communication. Do my players have enough opportunity to **communicate**? How could communication be enhanced?

● Are my players friends already, or are they strangers? If they are strangers, can I help them break the ice?

● Is there synergy (2 2 5) or antergy (2 2 3) when the players work together? Why?

● Do all the players have the same role, or do they have special jobs?

● Cooperation is greatly enhanced when there is no way an individual can do a task alone. Does my game have tasks like that?

● Tasks that force communication inspire cooperation. Do any of my tasks force communication?

Lens #38: The Lens of Competition vs. Cooperation

Balancing competition and cooperation can be done in many interesting ways. Use this lens to decide whether they are balanced properly in your game. Ask these questions:

● If “1” is Competition and “10” is Cooperation, what number should my game get?
● Can I give players a choice whether to play cooperatively or competitively?
● Does my audience prefer competition, cooperation, or a mix?
● Is team competition something that makes sense for my game? Is my game more fun with team competition, or with solo competition?

Lens #39: The Lens of Time

It is said that “timing is everything.” Our goal as designers is to create experiences, and experiences are easily spoiled when they are too short or too long.

● What is it that determines the length of my gameplay activities?
● Are my players frustrated because the game ends too early? How can I change that?
● Are my players bored because the game goes on for too long? How can I change that?
● Setting a time limit can make gameplay more exciting. Is it a good idea for my game?
● Would a hierarchy of time structures help my game? That is, several short rounds that together comprise a larger round?
Timing can be very difficult to get right, but it can make or break a game. Often, it makes sense to follow the old vaudevillian adage of “Leave ’em wanting more.”

Lens #40: The Lens of Reward

Everyone likes to be told they are doing a good job.

● What **rewards** is my game giving out now? Can it give out others as well?

● Are players excited when they **get rewards** in my game, or are they bored by them? Why?

● Getting a reward you don't understand is like getting no reward at all. Do my players **understand the rewards** they are getting?

● Are the rewards my game gives out **too regular**? Can they be given out in a more variable way?

● **How are my rewards related to one another**? Is there a way that they could be better connected?

● How are my rewards building? Too fast, too slow, or just right?

Lens #44: The Lens of Character (as in emotion)

● Is there **anything strange in my game that players talk about excitedly**?

● Does my game have **funny qualities** that make it unique?

● Does my game have **flaws that players like**?

If there is some aspect of a game that you can't do all that well, leave it to the player's imagination. For example, giving character dialogue subtitles and no voice is better than giving them no subtitles with bad voice acting. The imagination of the player can give them one. This only seems to apply to little details though.

Lens #45: The Lens of Imagination

● What must the player understand to play my game?

● Can some element of imagination help them understand that better?

● What **high-quality**, realistic details can we provide in this game?

● What details would be **low quality** if we provided them? Can imagination

fill the gap instead?

● Can I give details that the imagination will be able to reuse again and again?

● What details I provide inspire imagination?

● What details I provide restrain imagination?

Take notes/documentation of how the things you are **balancing** interact with each other.

While you're designing your game, remember that you are going to have to balance your game

Lens #46: The Lens of Economy

● How can my players earn money? Should there be other ways?

● What can my players buy? Why?

● Is money too easy to get? Too hard? How can I change this?

● Are choices about earning and spending meaningful ones?

● Is a universal currency a good idea in my game, or should there be specialized currencies?

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10 Rules of Puzzles in Games:

1. Make the goal easily understandable. You shouldn't spend more time figuring out what to do than actually doing it

2. Make it easy to start. The entire puzzle doesn't have to be hard, but the first step should be easy

3. Give a sense of progress. Let the player know that they are getting closer to solving the puzzle.

4. Make it clear that it can be solved. This can be done by visual progress, or just saying it has an answer

5. Make the puzzle get harder as it goes on

6. ***Add parallelism. In game design, this means something else to do if you're having trouble with what you're doing at the moment. Be sure to make these alternatives different, so they aren't redundant.***

7. Pyramid Structure Extends Interest. Means to have little challenges that point up to a challenge at the top of the pyramid. Remember to give players a reason to arrive.

8. Hints Extend Interest.

Lens #48: The Lens of Accessibility

When you present a puzzle to players (or a game of any kind), ***they should be able to clearly visualize what their first few steps*** would be.

● How will players know how to begin solving my puzzle, or playing my game? **Do I need to explain it, or is it self-evident**?

● Does my puzzle or game act like something they have **seen before**? If it does, how can I draw attention to that similarity? If it does not, how can I make them understand how it does behave?

● Does my puzzle or game draw people in, and **make them want to touch it** and manipulate it? If not, how can I change it so that it does?

Lens #49: The Lens of Visible Progress

● What does it mean to **make progress** in my game or puzzle?

● Is there enough progress in my game? Is there a way I can add more **interim**

steps of progressive success?

● What progress is **visible**, and what progress is **hidden**? Can I find a way to reveal what is hidden?

Lens #50: The Lens of Parallelism

● Are there **bottlenecks in my design where players are unable to proceed** if they cannot solve a particular challenge? If so, can I add **parallel challenges** for a player to work on when this challenge stumps them?

● If parallel challenges are too similar, the parallelism offers little benefit. Are my **parallel challenges different enough** from each other to give players the benefit of variety?

● Can my parallel challenges be **connected** somehow? Is there a way that making progress on one can make it easier to solve the others?

Lens #51: The Lens of the Pyramid

● Is there a way all the pieces of my puzzle can feed into a **singular challenge at the end**?

● Big pyramids are often made of little pyramids — can I have a **hierarchy of ever more challenging puzzle elements**, gradually leading to a final challenge?

● Is the challenge at the top of my pyramid interesting, compelling, and clear? **Does it make people want to work in order to get to it**?

Lens #52: The Lens of the Puzzle

● What are the puzzles in my game?

● Should I have more puzzles, or less? Why?

● Which of the ten puzzle principles apply to each of my puzzles?

● Do I have any incongruous puzzles? How can I better integrate them into the game? (Use Lens #43: The Lens of Elegance to help do this).

Lens #53: The Lens of Control

● When players use the interface, does it do **what is expected**? If not, why not?

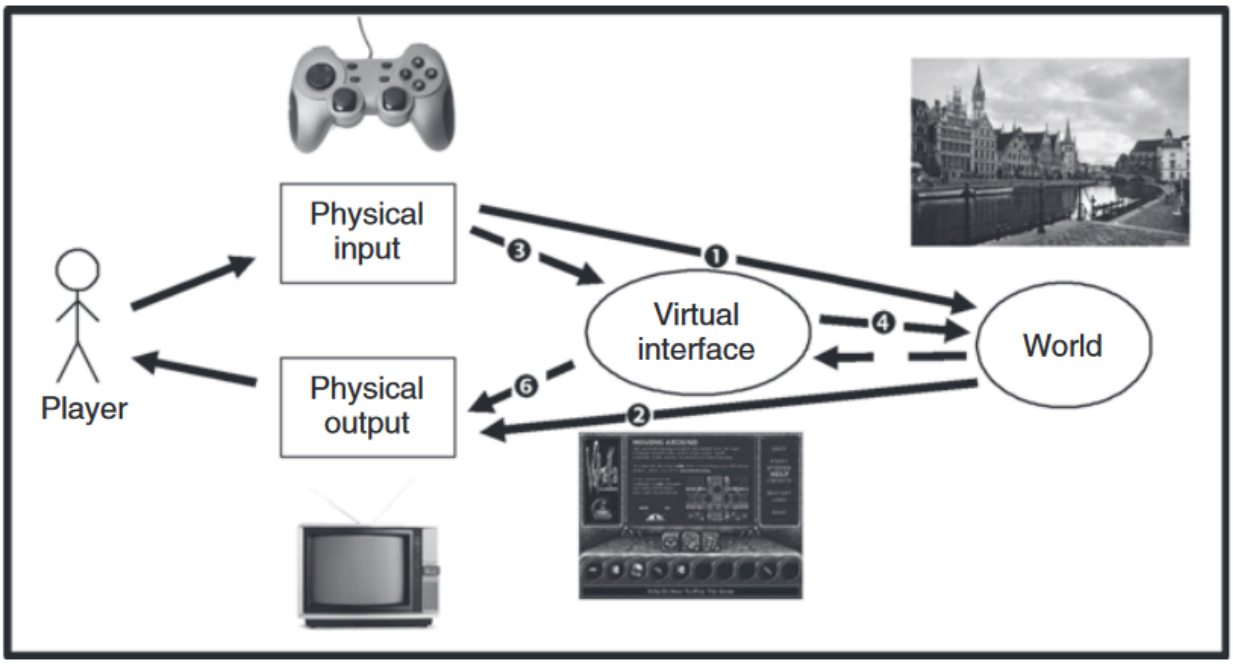
● ***Intuitive** **interfaces give a feeling of control***. Is your interface easy to master, or hard to master?

● Do your players feel they have a strong **influence over the outcome** of the game? If not, how can you change that?

● ***Feeling powerful = feeling in control***. Do your players feel powerful? Can you make them feel more powerful somehow?

Interface is the way that the players can interact with the game. An easy to use interface is important because it helps immerse the player and allows them to play the game easily.

One layer of interface is **virtual interface**. It is made of a physical input (buttons or mouse clicks), and physical output (menus, scoreboards). A better definition to differentiate the virtual interface from other parts of the interface, is that the virtual interface isn't usually part of the game world. Menus and UI generally don't physically exist, they're just there for you to see.



1. Physical Input → World: If pushing a thumbstick makes my avatar run, the mapping tells how fast it will run, and how quickly it will slow down if I let go. If I push the thumbstick harder, does my character run faster? Will my character accelerate over time? Will "double tapping" the thumbstick make my character dash?

2. World → Physical Output: If you cannot see the entire world at once, what parts of it can you see? How will it be shown?

3. Physical Input → Virtual Interface: In a mouse-based menu interface, what does clicking do? What does double clicking do? Can I drag parts of the interface around?

4. Virtual Interface → World: When the player manipulates the virtual interface, what effect does this have on the world? If they select an item in the world, and use a pop-up menu to take an action on it, does that action take effect immediately, or after some delay?

5. World → Virtual Interface: How are changes in the world manifested in the virtual interface? When do scores and energy bars change? Do events in the world lead to special pop-up windows or menus, or mode changes in the interface? When players enter a battle, will special battle menus appear?

6. Virtual Interface → Physical Output: What data is shown to the player, and where does it go on the screen? What colors will it be? What fonts? Will hit points pulse or make a sound when they are very low?

Lens #54: The Lens of Physical Interface

● What does the player pick up and touch? Can this be made more pleasing?

● How does this map to the actions in the game world? Can the mapping be more direct?

● If you can't create a custom physical interface, what metaphor are you using when you map the inputs to the game world?
● How does the physical interface look under the Lens of the Toy?
● How does the player see, hear, and touch the world of the game? Is there a way to include a physical output device that will make the world become more real in the player's imagination?
The world of videogames occasionally goes through dry spells where designers feel it is not feasible to create custom physical interfaces. But the marketplace thrives on experimentation and novelty, and suddenly specially crafted physical interfaces, like the Dance Dance Revolution mat, the Guitar Hero guitar, and the Wiimote appear, bringing new life to old gameplay by giving players a new way to interact with old game mechanics

Lens #57: The Lens of Feedback

● What do players **need to know** at this moment?

● What do players **want to know** at this moment?

● What do you want players to **feel** at this moment? How can you give feedback that creates that feeling?

● What do the players **want to feel at this moment**? Is there an *opportunity for them to create a situation where they will feel that*?

● What is the player's goal at this moment? What feedback will help them toward that goal?
Using this lens takes some effort, since feedback in a game is continuous, but needs to be different in different situations. It takes a lot of mental effort to use this lens in every moment of your game, but it is time well spent, because it will help guarantee that the game is clear, challenging, and rewarding.

Lens #58: The Lens of Juiciness

● Is my interface giving the player **continuous feedback for their actions? I**f not, why not?

● Is second-order motion created by the actions of the player? Is this motion powerful and interesting?

● Juicy systems reward the player many ways at once. When I give the player a reward, how many ways am I simultaneously rewarding them? Can I find more ways?

Lens #59: The Lens of Channels and Dimensions

● What **data** need to travel to and from the player?

● Which **data** are most important?

● What **channels** do I have available to transmit this data?

● Which **channels** are most appropriate for which data? Why?

● Which **dimensions** are available on the different channels?

● How should I use those dimensions?

Lens #60: The Lens of Modes

An interface of any complexity is going to require modes. To make sure ***your modes make the player feel powerful and in control*** and do not confuse or overwhelm, ask yourself these questions:

● What modes do I need in my game? Why?

● Can any modes be collapsed, or combined?

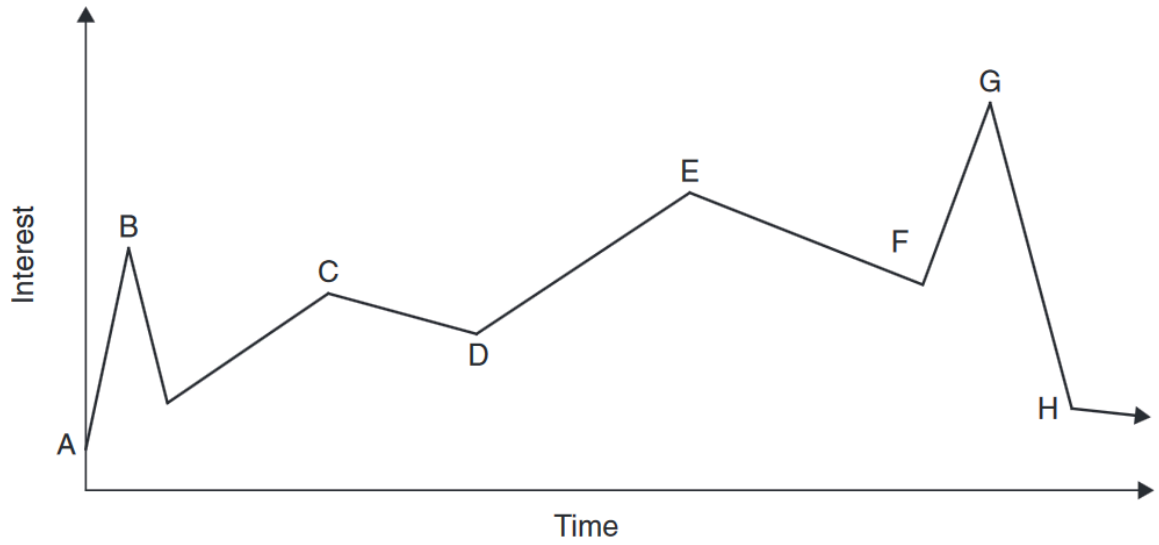
● Are any of the modes overlapping? If so, can I put them on different input channels?

● When the game changes modes, how does the player know that? Can the game communicate the mode change in more than one way?

Tips for making a good interface:

1. ***Steal.*** You can mimic the interface from other games in your genre, then tweak it to match the unique qualities that your game has.
2. ***Invent.*** This is the opposite of tip 1, although both are useful. This tip is about making a custom interface for your game. A good way to start is to list the information that the player will need, and how important each channel of information is. Then design your interface from there.
3. ***Theming.*** Make your interface unify with the theme of the game.
4. ***Sound.*** Adding sound to interfaces is very useful, as the human brain naturally associates the sound of something with the action of touching it. The book says to think about what your interface would sound like if it were real.
5. ***Balance simplicity and complexity.*** An example of this is Minecraft. Normally, the interface is just your hotbar, health, and hunger, which is super simple. But when you open your inventory, suddenly the interface becomes expansive and complicated (relatively speaking).
6. ***Test***. It's pretty simple, by testing your interface (and using the problem statement lens), you can figure out how to improve it.

This is a diagram of a successful interest curve.



Point A- This **isn't really part of the game**, but the expectations the player has going in, usually formed from cover art, trailers, or word of mouth.

Point B- This is **similar to a hook in writing**. Usually this is in the form of a cutscene, but it can really be anything at the start of a game to get the player's attention. I think it should leave the player curious as to what the rest of the game holds through some form of mystery or intrigue (while still adequately informing them).

Points C and E- These are the moments that spike the player's interest.

Points D and F- These are dips in interest, however the player should anticipate a rise soon.

Point G- This is the climax, in most games this is a final boss fight.

Point H- The plot or game is resolved, and the player is hopefully satisfied.

Lens #61: The Lens of the Interest Curve

● If I draw an interest curve of my experience, how is it generally shaped?

● Does it have a hook?

● Does it have gradually rising interest, punctuated by periods of rest?

● Is there a grand finale, more interesting than everything else?

● What changes would give me a better interest curve?

● Is there a fractal structure to my interest curve? Should there be?

● Do my intuitions about the interest curve match the observed interest of the players? If I ask playtesters to draw an interest curve, what does it look like?

Factors of Interest:

1. **Inherent interest**. This is just about how some things are more interesting than others. AN example from the book: a man wrestling an alligator will be more interesting than a man eating a cheese sandwich.

Lens #62: The Lens of Inherent Interest

Some things are just interesting. Use this lens to be sure your game has inherently interesting qualities by asking these questions:
● What aspects of my game will capture the interest of a player immediately?
● Does my game let the player see or do something they have never seen or done before?
● What **base instincts** does my game appeal to? Can it appeal to more of them?
● What **higher instincts** does my game appeal to? Can it appeal to more of those?
● Does dramatic change and anticipation of dramatic change happen in my game? How can it be more dramatic?

2. **Poetry of Presentation.** This is basically the game's aesthetics. Things that look or sound nice tend to be more interesting to people.

Lens #63: The Lens of Beauty

We love to experience things of great beauty. Use this lens to make your game a joy forever by asking yourself these questions:
● What elements make up my game? How can each one be more beautiful?
● Some things are not beautiful in themselves, but are beautiful in combination. How can the elements of my game be composed in a way that is poetic and beautiful?
● What does beauty mean within the context of my game?

3. **Projection.** This relates to empathy/imagination, and putting yourself in the place of the characters.

Lens #64: The Lens of Projection

One key indicator that someone is enjoying an experience is that they have projected their imaginations into it.

● What is there in my game that players can relate to? What else can I add?
● What is there in my game that will capture a player's imagination? What else can I add?
● Are there places in the game that players have always wanted to visit?
● Does the player get to be a character they could imagine themselves to be?
● Are there other characters in the game that the players would be interested to meet (or to spy on)?
● Do the players get to do things that they would like to do in real life, but can't?
● Is there an activity in the game that once a player starts doing, it is hard to Stop?

Lens #65: The Lens of the Story Machine

A good game is a machine that generates stories when people play it. To make sure your story machine is as productive as possible, ask yourself these questions:

● When players have different choices about how to achieve goals, new and different stories can arise. How can I add more of these choices?
● Different conflicts lead to different stories. How can I allow more types of conflict to arise from my game?
● When players can personalize the characters and setting, they will care more about story outcomes, and similar stories can start to feel very different. How can I let players personalize the story?
● Good stories have good interest curves. Do my rules lead to stories with good interest curves?
● A story is only good if you can tell it. Who can your players tell the story to that will actually care?

Lens #66: The Lens of the Obstacle

A goal with no obstacles is not worth pursuing. Use this lens to make sure your obstacles are ones that your players will want to overcome.

● What is the relationship between the main character and the goal? Why does the character care about it?
● What are the obstacles between the character and the goal?
● Is there an antagonist who is behind the obstacles? What is the relationship between the protagonist and the antagonist?
● Do the obstacles gradually increase in difficulty?
● Some say “The bigger the obstacle, the better the story.” Are your obstacles big enough? Can they be bigger?
● Great stories often involve the protagonist transforming in order to overcome the obstacle. How does your protagonist transform?

Lens #69: The Lens of the Weirdest Thing

Having weird things in your story can help give meaning to unusual game mechanics — it can capture the interest of the player, and it can make your world seem special. Too many things that are too weird, though, will render your story puzzling and inaccessible. To make sure your story is the good kind of weird, ask yourself these questions:

● What’s the weirdest thing in my story?
● How can I make sure that the weirdest thing doesn’t confuse or alienate the player?
● If there are multiple weird things, should I may be get rid of, or coalesce, some of them?

● If there is nothing weird in my story, is the story still interesting?

Lens #70: The Lens of Story

Ask yourself these questions:
● Does my game really need a story? Why?
● Why will players be interested in this story?
● How does the story support the other parts of the tetrad (aesthetics, technology, gameplay)? Can it do a better job?
● How do the other parts of the tetrad support the story? Can they do a better job?
● How can my story be better?

Lens #71: The Lens of Freedom

A feeling of freedom is one of the things that separates games from other forms of entertainment. To make sure your players feel as free as possible, ask yourself these questions:
● When do my players have freedom of action? Do they feel free at these times?
● When are they constrained? Do they feel constrained at these times?
● Are there any places I can let them feel more free than they do now?
● Are there any places where they are overwhelmed by too much freedom?

Freedom itself isn't always what makes a game enjoyable, but instead the **feeling** of freedom. This is because the player feels like they get an input, and the designer is able to properly implement an interest curve.

There are multiple ways to express indirect control over a game, so the player feels free but the designer is still in control:

1. Constraints
   An example from the book, you can either say,
   "Pick a color."
   Or,
   "Pick a color from red, blue, or green."
   They're both similar questions, but the way it is framed lowers the amount of possible answers that have to be considered from millions, to three.

2. Goals
   It's pretty simple, if you give your player a goal, you only really have to make things that would help them accomplish that goal, since that's most likely the only thing they would choose anyway. An example from the book: if you make a

racing game that takes place in a big city, and tell the player to reach a certain location, and clearly show the player how to get there, you won't need to model the entire city, just the road the player will take.

3. Interface
   When this book says interface, it means the way that the game is interacted with, so controller, what shows up on the screen etc. By excluding unwanted actions on the interface, you can keep the player from thinking about them. For example, the book says that for a rockstar game about playing guitar, if you make the controller a guitar instead of a standard controller, the player won't try to do anything except play the guitar.

4. Art
   By making the player's objectives visually appealing or striking, they are more likely to become curious, and as a result interact with the objective.

5. Characters
   By making the players care about the characters, they're more likely to act for them, or against them.

6. Music
   To use music to control the player, you can have the tone of the music match what you want them to do. For example, fast and intense music would compliment a chase scene.

Lens #72: The Lens of Indirect Control

Every designer has a vision of what they would like the players to do to have an ideal play experience. To help ensure the players do these things of their own free will, ask yourself these questions:

● Ideally, what would I like the players to do?

● Can I ***set constraints*** to get players to do it?

● Can I set goals to get players to do it?

● Can I design my interface to get players to do it?

● Can I use visual design to get players to do it?

● Can I use in-game characters to get players to do it?

● Can I use music or sound to get players to do it?

● Is there some other method I can use to coerce players toward ideal behavior without impinging on their feeling of freedom?

Lens #73: The Lens of Collusion

Characters should fulfill their roles in the game world, but when possible, also serve as the many minions of the game designer, working toward the designer's ultimate aim, which is to ensure an engaging experience for the player. To make sure your characters are living up to this responsibility, ask yourself these questions:

● What do I want the player to experience?

● How can the characters help fulfill this experience, without compromising their goals in the game world?

A well designed level isn't just meant to look nice, but be functional. If it creates the type of experience it is meant to (from a gameplay standpoint), then it is good.

4 ways to organize game space:

1. **Linear**. This is when the player can only move forward/backward on a line. Examples are monopoly, Mario, Smash Bros.
2. **Grid-** This is simply when each cell of a grid is a certain location in a space. Examples are chess, Plants vs Zombies
3. **Web**- This is when different major areas are connected or can be traveled to from each other in some way. Examples are TemTem, Pokemon, and most open world games.
4. **Divided-** This is most similar to a real map, where a space is irregularly carved into sections. An example is Spore

Lens #82: The Lens of Inner Contradiction

A good game cannot contain properties that defeat the game's very purpose. To remove those contradictory qualities, ask yourself these questions:

● What is the purpose of my game?
● What are the purposes of each subsystem in my game?
● Is there anything at all in my game that contradicts these purposes?

● If so, how can I change that?

Alexander's Fifteen Properties of Living Structures

1. Levels of Scale. We see levels of scale in "telescoping goals," where a player has to satisfy short-term goals to reach mid-term ones and to eventually reach long-term goals. We see it in fractal interest curves. We also see it in nested game world structures. Spore is a symphony of levels of scale.

2. Strong Centers. We see this in visual layout, certainly, but also in our story structure. The avatar is at the center of our game universe — and generally we prefer strong avatars over weak ones. Also, we prefer strong centers when it comes to our purpose in the game — our goal.

3. Boundaries. Many games are primarily about boundaries! Certainly any game about territory is an exploration of boundaries. But rules are another kind of boundary, and a game with no rules is no game at all.

4. Alternating Repetition. We see this on the pleasing shape of the chessboard, and we see it too in the cycle of level/boss/level/boss that comes up in so many games. Even tense/release/tense/release is an example of pleasing alternating repetition.

5. Positive Space. What Alexander means here is that the foreground and background elements both have beautiful, complementary shapes, like Yin and Yang. In a sense a well-balanced game has this quality — allowing multiple alternate strategies to have an interlocked beauty.

6. Good Shape. This is as simple as it sounds — a shape that is pleasing. We certainly look for this in the visual elements of our games. But we can see and feel it, too, in level design. A good level feels "solid" and has a "good curve."

7. Local Symmetries. This is different from an overall symmetry, like a mirror image; instead referring to multiple small, internal symmetries in a design.
Zelda: The Wind Waker has this feeling throughout its architecture — when you are within a room or area, it seems to have a symmetry, but it is connected to other places in a way that feels organic. Rule systems and game balance can have this property as well.

8. Deep Interlock and Ambiguity. This is when two things are so tightly inter-

twined that they define each other — if you took one away, the other wouldn't be itself any longer. We see this in many board games, such as Go. The position of the pieces on the board is only meaningful relative to the opponent's pieces

9. Contrast. In games we have many kinds of contrast. The contrast between opponents, between what is controllable and what is not, and between reward and punishment. When opposites in our game are strongly contrasted, the game feels more meaningful and more powerful.

10. Gradients. This refers to qualities that change gradually. The gradually increasing challenge curve is an example of this, but so are appropriately designed probability curves.

11. Roughness. When a game is too perfect, it has no character. The handmade feeling of *"house rules"* often makes a game seem more alive.

12. Echoes. Echoes are a kind of pleasing, unifying repetition. When the boss monster has something in common with his minions, we are experiencing echoes. Good interest curves have this property, especially fractal ones.

13. The Void. As Alexander says, "In the most profound centers which have perfect wholeness, there is at the heart a void which is like water, infinite in depth, surrounded by and contrasted with the clutter of the stuff and fabric all around it." Think of a church, or the human heart. When boss monsters tend to be in large, hollow spaces, we are experiencing the void.

14. Simplicity and Inner Calm. Designers talk endlessly about how important it is for a game to be simple — usually with a small number of rules that have emergent properties. Of course, these rules must be well-balanced, which gives them the inner calm that Alexander describes.

15. Not-Separateness. This refers to something being well-connected to its surroundings — as if it was part of them. Each rule of our game should have this property, but so should every element of our game. If everything in our game has this quality, a certain wholeness results that makes the game feel very alive indeed.

Lens #83: The Lens of The Nameless Quality

Certain things feel special and wonderful because of their natural, organic design. To ensure your game has these properties, ask yourself these questions:

● Does my design have a special feeling of life, or do parts of my design feel

dead? What would make my design feel more alive?

● Which of Alexander's fifteen qualities does my design have?

● Could it have more of them, somehow?

● Where does my design feel like myself ?

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4 ways to make the scale correct:

1. Make the **"units"** of measurement in your game **something you are similar** with, such as feet or meters.

2. **Eye Level-** In the case of a first person game(or third person game where you are roughly eye level with the avatar), make the eye level roughly match that of the player

3. People and Doorways- **Players will often use the size of doorways and people to estimate their own size.** Unless there is a reason for it in your game, the player shouldn't be too big or small compared to other people and doorway.

4. **Texture scaling-** Textures should be similar in size to their real world counterpart.

8 Tips to Create Community:

1. **Foster Friendships.** Communities are a group of people who feel connected under a similar goal, purpose or cause, and friendships work similarly. Online friendships need the following:

   ### Lens #84: The Lens of Friendship

   People love to play games with friends. To make sure your game has the right qualities to let people make and keep friendships, ask yourself these Questions:
   ● What kind of friendships are my players looking for?
   ● How do my players break the ice?
   ● Do my players have enough chance to talk to each other? Do they have enough to talk about?
   ● When is the moment they become friends?

● What tools do I give the players to maintain their friendships?

2. **Put Conflict at the Heart-** This refers to how a sense of companionship is felt when people overcome a challenge or conflict together.

3. **Structure Your Game to Support Interaction-** This is usually done through things such as lobbies. Have a specific place in your game that is frequently visited, where players can interact.

4. **Create Community Property-** When people have shared ownership over something, they're more likely to feel connected to one another. This doesn't have to be direct. The ranking of a guild based off of the performance of all its players could make a sense of community (although if a few bad players drag the average down, it could do the opposite)

5. **Allow players to express themselves.** By seeing the expressions of others that they like, players are more likely to interact

   ## Lens #85: The Lens of Expression

   When players get a chance to express themselves, it makes them feel alive, proud, important, and connected. To use this lens, ask yourself these questions:
   ● How am I letting players express themselves?
   ● What ways am I forgetting?
   ● Are players proud of their identity? Why or why not?
   ● This lens is important and overdue. It works very well in combination with other lenses, such as Lens #63: The Lens of Beauty and Lens #80: The Lens of Status.

6. Support the 3 Levels:
   1. Noob- At this stage. The challenge isn't the game itself, but learning how to play it. Make the learning process as rewarding as possible, and if possible, allow more experienced players to help them.
   2. The Player- Most of game design is centered around this group. This is the average player of the game, and the most populous.
   3. The Wizard- These are the most skilled players who have done almost everything there is to do in a game. Most of the time they get bored and leave, but there are some tips to keep them interesting. First, add post-game content that lasts a while.

7. **Force Players to Work Together-** This can be done in a variety of ways. First, you can simply make a challenge too overwhelming or hard to do alone. Or, you can lock content away from some players, forcing them to give it to others. Pokemon does this with version exclusives.

8. **Manage the Community-** This can be done by things such as events. Community challenges in GW2 were an example.

Lens #86: The Lens of Community

To make sure your game fosters strong community, ask yourself these questions:

- What conflict is at the heart of my community?
- How does architecture shape my community?
- Does my game support three levels of experience?
- Are there community events?
- Why do players need each other?

Documents are mostly meant to be used for memory and communication

Types of Design Documents

Game Design Overview

- This is usually only a page or two long, and it gives a somewhat broad summary of the game's content, mechanics, and content. It is meant to big people the big picture of the game

Detailed Design Document:

- These go very in depth into the game's mechanics and inner workings.
- This is especially useful because the team may forget the smaller details

Story Overview:

- An overview of the games plot, setting, characters, and story

Technical Design Document:

- This is usually meant to document the system limitations.
- Examples: The number of models that can be on screen, number of message updates per second, etc

Art Bible:

- This gives concept art that is meant to encompass the overview aesthetic of the game.
- Artists should try matching the art in the art bible so everything feels consistent

Budget

- This just gives estimates of how much each part of the project will cost

- Usually a spreadsheet

Schedule
- Have a schedule that states what needs to be done, when it needs to be done, and who is doing it
- This should be flexible, as many unexpected things happen in game design

Tutorial and Manual
- This is a text-based tutorial of the game, that should be translated into an in-game one
- Update this frequently, as mechanics change all throughout the game cycle.

Benefits of Playtesting-
1. It allows the designer to know if their target audience is enjoying the game
2. It let's the designer know what issues the game has and how to fix them
3. It's a lot better to find problems early on in development than weeks before the game is released

Playtesting has 5 Questions: Why, who, where, what, how

Lens #91: The Lens of Playtesting

Playtesting is your chance to see your game in action. To ensure your playtests are as good as they can be, ask yourself these questions:
- Why are we doing a playtest?
- Who should be there?
- Where should we hold it?
- What will we look for?
- How will we get the information we need?

Lens of the Client:
If you are making a game for someone else, you should probably know what they want. Ask yourself these questions:

- What does the client say they want?
- What does the client think they want?
- What does the client really want, deep down in their heart?

Type of Idea	Description	Value
Idea	Just a plain old idea	$0.083 (dime a dozen)
Cool idea	An idea that captures the imagination	$5
Really cool idea	A cool idea, shouted	$5
Good idea	An idea that someone could actually use	$100
Good idea in the right place at the right time, sold convincingly	Just what it sounds like	$1,000,000+

Usually, when you pitch a game, it is judged based on how useful it is, not its merit (how good it is).

12 Tips to Pitch a Game:

1. Get in the Door- Just getting the opportunity to pitch can be difficult, especially with a big company. Using the “front door” is a simple email, phone call, or other traditional way of asking for an offer. Using the “back door” is a much better option. The back door is when you know somebody on the inside, who can help you get a pitch. Companies will ignore the email from random people, but not an associate. A good way to get these connections is from joining groups like the IGDA.
2. Show You Are Serious- When you are pitching an idea, be very prepared. Show that this idea is something you seriously care for and believe in. If you don’t care much about your idea, then why should people you are pitching to be?
3. Be Organized- Organization is very important, as it keeps you from scrambling around and seeming unprofessional. It ties into the last point of showing that you are serious.
4. Be Passionate- If you seem apathetic about your game, the people you are pitching to may think “If the creator of this game doesn’t care, then why should I?”. Don’t be fake and phony however. You need to show real, authentic passion. If you don’t feel any, then you probably shouldn’t be making the game.
5. Assume Their Point of View- Nobody likes a pushy salesperson. When you pitch your game idea, try to understand the client. Understand what they want out of a game. Avoid using terminology that they may not understand. They’re also busy people, so get straight to the point, focusing only on key aspects. Start off the pitch by telling them your platform, audience, and genre. Another way to do this is by giving your idea a “handle”, or a short phrase to summarize it. Examples from the book are “It’s Pokemon, but for grownups”, “Nintendogs, but a whole zoo”, or “It’s a bowling RPG.”. This can make your concept more clear. Remember to show, not tell. Nobody will care if you say, “my game has great character design and art”, you need to show them these things. **Tell** them broad ideas, **show** them the details.

6. Design the Pitch- A pitch is an experience, and as such, it can be designed just like a game experience. Have an interest curve, elegance, and appeal to the senses. A good way to make a pitch interesting would be to do something to just stand out, while still fulfilling the purpose of a pitch.
7. Know the Details- Publishers are going to ask questions, and you should know the answers to whichever ones they will ask. There are three types of details you should know all about.
    a. Design Details- Things such as “How long is a level”, “How does multiplayer work”, “How is this unique from other games?”
    b. Schedule Details- Publishers will want to know how long you will take with your game. You’ll want to know the dates of specific milestones (first prototype, first alpha, beta, full release). Be expected to be held to these dates. Be realistic with the time you give.
    c. Financial Details- Publishers are companies, and as such they care about money. You should know how many people will be working on the game, and how much it will cost. When asked how much money the game will make, based your answer off of similar games. Don’t give just one number, but a decent range. Make **absolutely** sure that the minimal value is still profitable
    d. Risks- The publisher will want to know the risks of the game. Be ready to tell them what they are, and how you plan on dealing with them
8. Be Confident- Being passionate and organized helps with this. Have a clear, confident tone, without speaking too slow or fast. Make eye contact, and don’t get shaken up over difficulties.
9. Be Flexible- Be ready to have a wrench thrown in your plans; have backup plans and be ready to make changes to your idea (as long as it doesn’t compromise your vision to the point where you lose passion).
10. Rehearse- Practice your pitch to friends, family, or even just to yourself. This helps build confidence. You don’t need to know your pitch word for word. Instead, you need to be able to explain the chain of ideas confidently.
11. Get Them To Own It- Listen to the little details that your clients say, and integrate it into the pitch. This can make them feel included.
12. Follow Up- Have some way to stay in contact with your client after the pitch. For example, let's say they asked about the combat in your game. You could occasionally give them updates via email, showing them a bit of progress or change.

Game Design Business Terms

- ***SKU- Pronounced “skew:,*** this stands for Stock Keeping Unit. This is a unique inventory item for a store. There may be many of these for each game, for example, Minecraft on the Nintendo Switch, in English

- ***COGS- “Cost of goods sold”,*** how much producing the game costs

- ***Burn Rate-*** How much it costs to keep development/the studio going

- ***Sold In VS Sold Through-*** Sold in means how many copies the retailer has bought, sold through means how many copies players have bought

- ***Units Sold-*** simple, how many times the game has been bought

- ***Breakeven-*** How many units the game has to sell until the developer makes back the money they used to make it. If you spend 100K to make a game, and the game costs $5, the breakeven is 20K

- ***Churn-*** The amount of players lost per month.

- ***Cost of Acquisition-*** The average of how much it costs to get someone to play the game

- **DAU-** Daily active users

- **MAU-** Monthly active users. How many (individual) people have played the game in the last month.

- **ARPU-** average revenue per user. To find this, divide the total money made by the MAU

- **ARPPU-** This is the average revenue per paying user. ARPU includes people who have never spent money, so this is different.

- **K-factor-** The average of how many people a new user generates. If a game is viral, and people tell their friends to play, the K-factor will be high. (I'm not sure how to get this information though?)

- **Whale-** Someone who spends lots of money on free to play games. Common on Roblox, and Fortnite (to a lesser extent).