The Eighth Annual Game Design Think Tank
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Group Report: Solving Big Problems

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Systems of Inspiration for Solving Big Problems

Video Games are uniquely positioned to create immersive, empathic-evoking experiences. As designers, how do we craft experiences that shape solutions to systemic real-world problems?

Large-scale multifaceted problems plague our planet. These problems are difficult, intractable, and have no single correct solution. They cannot be solved by one person, one game, or one perspective.

Big problems require big solutions, with millions of people working in concert toward potentially complex solutions. How do we create games that crowdsource problems of this magnitude?

To create such games, we propose a framework designed to create games that encourage players to explore, learn about, and act on real-world problems.

Explore, Learn, Act: A System of Inspiration

Though a single game cannot solve problems such as poverty or homelessness, it can facilitate action and expose players to new perspectives. We believe that creating games where players **Explore, Learn, and Act** —however they choose to do so—can foster change in the world. Through this system, we can begin to banish ignorance and overcome inertia.

In this document, we propose a series of questions that prioritize the *experience* of a big problem, as opposed to advocating a particular agenda or outcome. Players can then take what they have learned from these experiences, and act accordingly outside of the game. Such a game shapes action subconsciously by cultivating the worldview of the player, something which will not happen if the game is a thinly-veiled wrapper for a hamfisted message.

Our initial version of this process uses questions to guide game developers, specifically. We begin by deconstructing the problem into relatable experiences, create a game surrounding these experiences, and analyze the results in the real world.

Deconstructing the Issue

To provide players a space where a problem can be fully and thoroughly explored, identify the problem to be addressed, and dissect it into discrete chunks. The pieces that emerge from this deconstruction process expose the raw elements of the problem, giving us a starting point for creating relatable experiences from which our players will explore and learn.

In the first stage of this design process, answer the following questions to begin deconstructing the big problem. Use hard research to formulate your answers where feasible:

What is your problem? Choose which problem your game will tackle. For this example, we'll choose *global warming*.

What are it's possible causes? Whether you employ game mechanics based on the causes or simply explores causes themselves, you will need to enumerate the causes of your problem. Proper research will help inform your answer. *Greenhouse gases from: vehicles, factories, energy production, beef production.*

What is the scope of exploration? Big problems are just that: big. External constraints affecting development teams will prevent the game from presenting of every facet of the problem. Narrowing the scope of the problem can focus our players' attention and foster thorough, meaningful exploration. In our global warming example, are we examining coal pollution, green technology, a small plot of land, or the whole earth? For now, we will examine *coal pollution*.

What are the related contexts? How is the problem experienced in the real world? Numerous entities experience different parts of a large problem in a host of varying social, cultural, economic, political, and personal contexts. Providing players with as many contexts as possible

will allow for deeper exploration and better understanding of the problem. Which contexts will your game explore? Will the player experience the problem through the lens of a coal miner, a coal producing company, a family heating their home with coal power, a coal-mining town, a government regulator, or even a time-traveller from a devastated future?

What are the perspectives? Perspective are scenes, a slice within the overarching narrative informed by context. Many people are only familiar with one perspective of the problem: their own. Providing players with a perspective other than their own sheds lights on previously unseen parts of the problem. With so many perspectives abound, which ones should be expressed and integrated into the game?

When enumerating perspectives, focus on those that will provide the players with a new type of experience, something that will broaden the players' worldviews. Avoid presenting perspectives in an inherently negative light, as developers cannot expect to change someone's opinion through argument. Instead of arguing about which perspectives are valid, the game should present perspectives free of bias, leaving it up to the player to explore and decide for themselves. Does coal energy employ you? Does it bring revenue to your town? Does it provide your family on a tight budget with affordable energy? Does sulfur dioxide exacerbate your child's asthma? Does combustion waste pollute your state's drinking water?

What are the roles related to the problem? Who are the actors, observers, and victims involved in the problem? These roles will be the players' vehicles for exploration, mapping to character roles available in the game. Which roles will the player assume to explore the contexts and perspectives of the issue? Will the player be immersed in the role of a mining surveyor, a coal producer, a manufacturer of solar power equipment, coal miner's family, the lawyer of someone ill from coal pollution, or perhaps a government?

How does the problem impact the world? What are the consequences of each actor within the scope of our examination? Can some consequences only be viewed by certain roles, from certain perspectives, or within certain contexts? How are these individual consequences interconnected, and what is the aggregate result? Are there interconnections among this issue and other issues? Steering clear of bias, use clear research to realistically illustrate the impact of the problem from each viewpoint represented in the game.

What are the challenges related to this problem? Big problems are also hard problems: there are many challenges, and no easy solutions. What are these challenges, and how do they manifest within our scope, contexts, and perspectives? To prevent brownouts, regulators require that more energy is produced than is demanded at any time. When demand for energy increases during the day, how do power providers bring more energy online when the wind isn't blowing or the sun isn't shining? How do they make renewable energy more widely available when no one wants a wind farm built near their neighborhood? How do you provide affordable energy to your customers when prices are highly regulated and coal is your cheapest option?

Who is your intended audience? Who are you informing? Are there differences between the game's intended audience versus the audience for the problem's solution? How does your audience currently approach these types of problems? What vocabulary should be used to help this audience understand the issues presented within the game? Should this game be translated or culturally modified to support a global audience? In our global warming example, potential audiences are diverse, ranging from middle-school children to energy executives.

What are your external constraints? Finally, development teams face a completely separate host of issues that will keep the game from mirroring the complexity of the problem. What is the budget for creating this game? What is the timeline needed by your publisher? How are the stakeholders' needs balanced with presenting an unbiased picture of the problem? What is the

audience's attention and appetite for this type of game? Acknowledge your team's limiting factors, and creatively address this reality.

Creating the Experience

Once the problem space has been defined, game designers must consider how players will experience the problem, and how to craft a game encapsulating these experiences? Use the information discerned by deconstructing the problem to help deconstruct the experience itself. Along the way, consider why your design decisions are valid, and play "Design Devil's Advocate" to validate your assumptions. Some useful questions include:

What is your goal? We spent the previous step of the process exploring our big problem, but what are we working toward? What is the goal of your project? How does this get translated into gameplay?

What perceptions will you address? How will you overcome the biases of the player's own perspective and encourage them to explore other perspectives on the issue? Which deeply-held perceptions about the problem will your game examine? Can your game depict the problem in a nuanced light that challenges partisan perceptions such as *"coal is perfect"* or *"coal is evil"*?

What are the stories you will tell? Games provide a medium for telling stories related to the problem that would be difficult for the player to experience otherwise. What stories will your game use to have players explore new contexts, perspectives, and roles other than their own? Perhaps you will tell the story of daily life producing energy, or the story of fish swimming through polluted waters.

Who are the characters? How will the player relate to these characters? Are there characters that fairly represent the perspectives surrounding the problem? When telling the story a coal mine, are our characters relatable human beings?

What actions can the player take? To fully explore the problem, players should be able to engage in any action fitting the role, perspective, and context being explored. How do we take real-world actions and reformulate them into meaningful gameplay? How do the actions and activities in the game affect the emotions, perspectives and attitudes of the player? What are the consequences of these actions, and will the player experience the action and its consequences? Our coal producer will need to purchase more coal, but the player should see the mountain top being removed to obtain it. If a player assuming the role of an environmentalist shuts down the power plant, they should also experience what happens to the families of the newly unemployed.

Does the concept match the audience? In our haste to design the game experience, our zealousness may lead in a direction divergent from that of our audience's tastes.

Does the style match the concept? Does your art style evoke the desired emotions? Does it enhance the experiences and make them more engaging? Is the style of play suitable for exploring the issue at hand?

How do you balance fun vs. seriousness? Our large problems are austere in nature, so how do we create a fun game without sacrificing serious treatment of the issue?

Is it fun? If not, no one will play the game for a meaningful amount of time.

Is it relevant? How are the design choices that have been made relative to exploring, learning,

and acting on the issue? Do our game mechanics support the theme? *Awesome Upstanders*—an anti-bullying game—is a platformer where you collect bananas. It may be fun, but it won't address the issue.

Is it balanced? Players are savvy, and can sense propaganda with a modicum of play. Where is there bias in our game, and how can we eliminate it? Does the game explore opposing, related perspectives, or only those with with our audience and stakeholders are most comfortable?
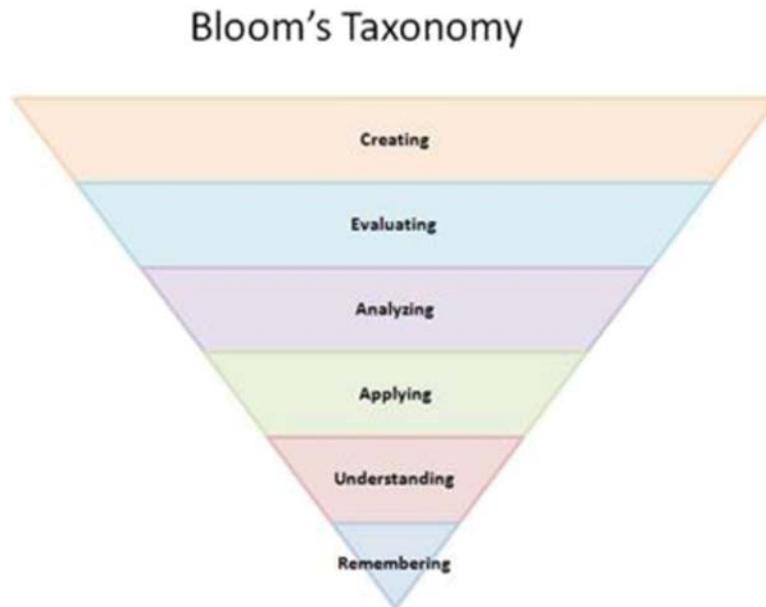
What are the social dynamics of gameplay? Is the game collaborative or competitive? How do players work together or individually toward the goal, or work toward solving the problem? What are the social components to play? What are the social components to marketing? What are the social components to communicating the results or solutions?

Does the game end? How so? What should the player have experienced in each end scenario?

What happens after the game ends? What actions will the game elicit?

Representation via Bloom's Taxonomy

Bloom's Taxonomy is a framework typically used to classify learning activities and the development of skills. We recommend that this educational tool for understanding complicated problems can be applied in our work to inform the designer about how to more authentically represent a problem in a game.

Bloom's Taxonomy

Creating

Evaluating

Analyzing

Applying

Understanding

Remembering

Revised edition by Lorin Anderson (a student of Bloom)

There are six categories of learning activity types in Bloom's Taxonomy (1956), as follows:

- **Remembering**: This involves rote learning or recalling data or other types of information.
- **Understanding**: This involves comprehending a problem enough to put it into one's own words or frameworks.
- **Applying**: This involves taking the concept or information and applying it to a new context, situation, or environment.
- **Analyzing**: This involves breaking down a concept or problem into parts and also refers to

distinguishing among facts and inferences.
- **Evaluating**: This involves judging or evaluating the new material.
- **Creating**: This refers to creating new meaning or structures; organizing the data into a new framework.

We can incorporate this process into our design of the game and the integration of the problem into the game. Games should facilitate these six categories of learning and activity to help players more effectively work toward problem solutions, and also to create their own meaningful and exploratory game experience.

Emotional and Intellectual Engagement

As Sid Meier stated, "a game is a series of interesting choices." Intellectual engagement explores the choices themselves. Intellectually engaged players learn about the problem space by absorbing the facts, perspectives, and contexts of the available choices in the system.

Yet, it is also important to support a highly emotionally engaged experience. How do you universalize a highly personal experience? What are the tools and techniques that allow you to do that? How do you create that connection that everyone can relate to?

Games should have both intellectual and emotional engagement, even when it comes to learning and problem solving. How do you get designers to think about both sides of this coin?

Measuring Success

Success requires iterative trial-and-error through the development process. Along the way, can we determine if our players are exploring, learning, and eventually acting on the problem? We can break this down at a few different levels: Playtesting, Marketing, and Real-World Analysis.

Playtesting

- What are you testing?
- How do you measure success? Failure?
- Who are we testing? Are we testing the audience? Outside of the audience? Our stakeholders?
- Is it enjoyable?
- Are players exploring the problem?
- What have the players learned?

Marketing

- How does your audience consume information?
- How do you reach your audience?
- Are there transmedia opportunities?
- How do your stakeholders define success?
- Is the marketing appropriate for the content?
- How do you measure the success of your marketing campaign?
- How do you maximize reach within your marketing budget?
- Are your metrics relevant?

Analysis After Gameplay

- What are your engagement goals?
- How will you collect data?
- Are there privacy concerns collecting data from your audience? (e.g., kids, Europe)

- How does your data change your approach to solving the problem in the real world? Do you need to iterate the game design based on the results?
- Is this data valuable to users? Other groups?
- How do you report your analysis of the data? How do you distribute your report?

The Process Is Just Beginning

In a 90-minute session, our team followed this process to demo a game about coal pollution from the perspective of an executive at a coal producing company. The game was able to quickly elicit emotional responses from the audience while exploring the benefits and tragedies involved. Though the process itself is a work in progress, it can already be used to guide the creation of games addressing big problems.