Dawn of Time

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GAME DESCRIPTION

STORYLINE

In the very dawn of time took place an explosion whose magnitude would never be encountered again. It happened 13.7 billion years ago and it shaped our universe the way we know it, the way physicists have spent centuries trying to figure out. Yet, despite tireless efforts and brilliant hypotheses, despite billions invested in building super-colliders and countless resources used to deploy them, no one has yet been able to fully grasp what happened up to the first 10^{-32} seconds.

These were indeed troubled times. Using the powers of darkness, a pitiless entity, going by the name of the Dark Architect, spawned antimatter at a sickening pace, in an attempt to annihilate the newly born matter. If the universe was able to survive in this boiling chaos and havoc, it was not without the help of a few brave entities, whose dedication and leading skills ultimately gave them the upper hand.

The Architects, as they were called, each had their designs and views about the way matter should form, and how it should be shaped to build the most robust structures. In the end, the strongest and slyest was able to survive, and using the strength of his dead former companions, pushed the Dark Architect back to the edges of outer space and laid the bricks of the universe we now live in.

These first 10^{-32} seconds were indeed the greatest battle of all times.

GAME CONCEPT

Each player is one of the Architects. There is a shared nucleon source and each player individually owns an electron source, from which they are provided with elementary particles. Their first goal is to protect these sources by building robust defenses. In order to do so, they have to use the collected particles to craft atoms, which can then be assembled into structures powerful enough to resist the antimatter waves thrown by the Dark Architect.

However the game is twofold. In early game the antimatter only targets the central source, which acts as the diplomatic power, preventing players from harming each other, and rewarding good citizens with nucleons. However, at some point the Dark Architect realizes he has to crush the Architects before, because they are too strong together. The antimatter waves will start aiming at the Architects electron sources. Everyone has to fight for his own survival and anarchy begins. Fortunately, the central source still provides nucleons. Nevertheless, because antimatter waves become really powerful, they will also need to steal atoms from each other. The winning player is the one whose electron source is the last one standing.

RELATION TO THE THEME 'ATTRACTION'

Nucleons and electrons are combined together due to attraction (electromagnetism, and strong interaction). These are the building blocks for all the structures in our game. Our technical achievement will be to determine if the inter-atoms attractions are powerful enough to withstand the gravitational attraction. Finally the antimatter particles launched by the Dark Architect are attracted by the other particles, destroying the work of the Architects.
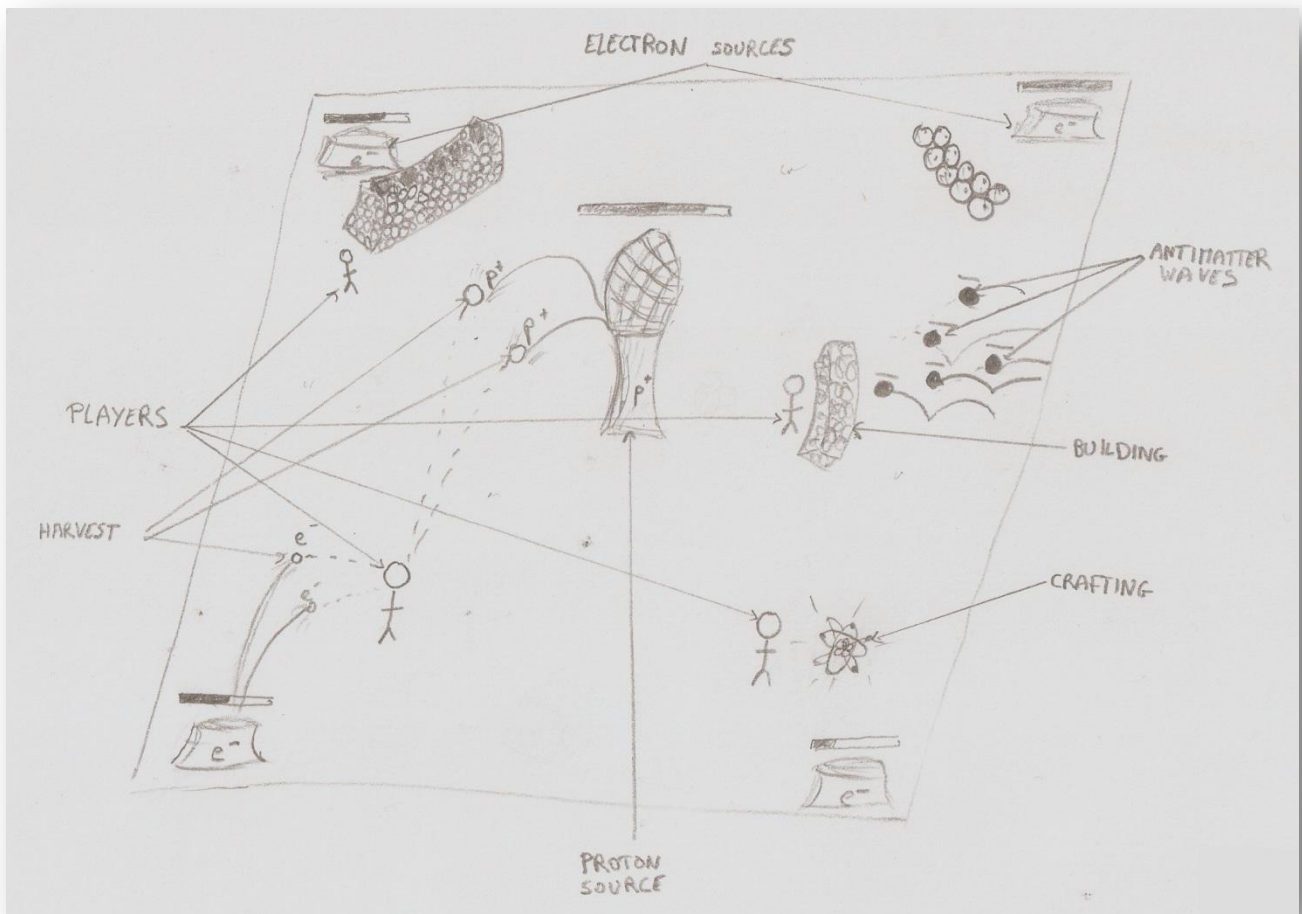
GAME CONCEPT ARTWORKS

Fig 1: Map design with particles sources and other gameplay elements
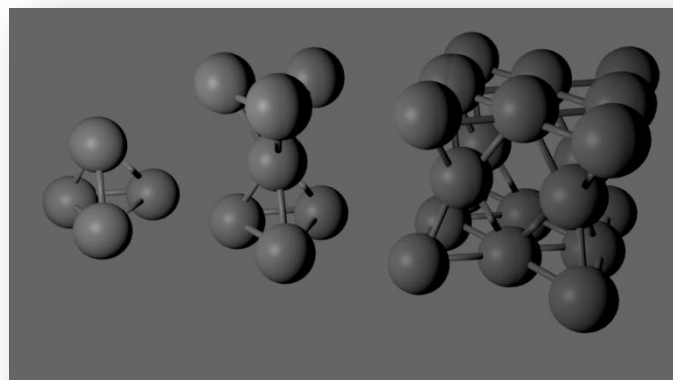

Fig 2: Concept of tetrahedral structures with atoms

FORMAL ELEMENTS

- **Players:** the game is designed for 2 to 4 players.

- **Interaction pattern:** one of the strengths of this game is the complex interaction pattern, interleaving cooperation and multilateral competition.

- **Objectives:** the main goal of the player is to protect the shared nucleon source and his personal electron source, which provide him with particles. In the first part he only has to defend himself against the antimatter waves, while the second part will see him face the other Architects as well.

- **Procedures:** in order to protect himself the player needs to create atoms with the elementary particles he collected and combine them to build more robust structures.

- **Rules:** each atom has a particular purpose which is described later in this document.

- **Resources:** the primary asset is the particles and the atoms that you possess. You can use them to protect yourself and also to attack other player in the second part of the game.

- **Boundaries:** the spatial constraints correspond to the map design.

- **Outcome:** in the first part of the game the antimatter waves only target the shared source. If this source is destroyed everybody lose. At some point (depending on the level of difficulty you choose), the antimatter waves stops targeting the common source and attacks the electron sources of the players.

STRATEGY

Our game framework is designed to render an optimal strategy very hard to find. Players should find a fine balance between cooperation to protect the main source, and preparing their own defenses. Besides when the Dark Architect starts targeting them directly, they will have to modify their strategies to also weaken the other Architects.

TECHNICAL ELEMENT

One certain thing is that the design of the buildings has to be very robust in order to both resist antimatter and present no weakness a sly player could crush. That's why our focus is to simulate the physical constraints for these structures. We will use an underlying tetrahedral grid, which gives the players a constrained but powerful framework to stimulate their creativity. We will do structural analysis to check that the buildings can stand and also resist to the antimatter waves.

ATOMS DESCRIPTION

There are 10 different atoms that you can create by putting nucleons and electrons together. You can do it in the player interface. However, the process takes some time. There are two categories of atoms the ones you can use for your buildings (in green) and the ones with special effects (in red).

- Hydrogen (1 nucleon + 1 electron): this is like a snowball that you can throw to other players to prevent them to steal your atoms, or just to annoy them.

- Carbon (12 nucleons + 6 electrons): this is the basic atom for your constructions.

- Oxygen (16 nucleons + 8 electrons): it makes you move faster.

- Aluminum (27 nucleons + 13 electrons): this is an intermediate atom for your constructions.

- Iron (56 nucleons + 26 electrons): this is a strong atom for your constructions.

- Xenon (132 nucleons + 54 electrons): this can be used to poison another player for example if he tries to steal from you.

- Platinum (195 nucleons + 78 electrons): this acts as a catalyst and can be used to accelerate the process of atoms crafting.

- Gold (197 nucleons + 79 electrons): this is the strongest atom for your constructions.

- Lead (208 nucleons + 82 electrons): this atom is less strong than gold, but it cannot be stolen by other players.

- Uranium (235 nucleons + 92 electrons): this is an explosive atom and will make huge damage if you throw it on constructions.
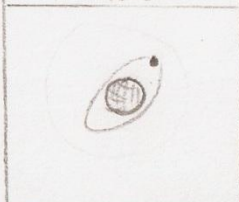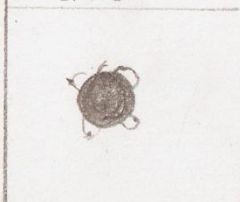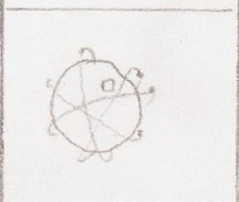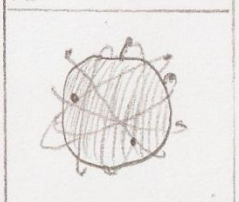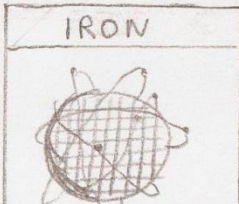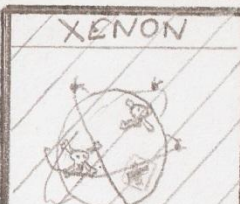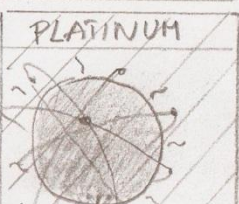
Fig 3: Atom crafting menu

'BIG IDEA' BULLSEYE

Primary drive: Construction and Destruction

Secondary drive: Cooperate but don't be a fool…

DEVELOPMENT SCHEDULE

FUNCTIONAL MINIMUM

At this stage, the player will be able to create atoms and combine them into tetrahedral structures.

- Environment setup (camera, controller, basic rendering…)

- Atoms crafting framework

- Basic building framework

LOW TARGET

At this stage, the construction of building will be constrained by physical feasibility and we can have several players on the same map. The antimatter particles will also be included.

- Basic structural analysis of building

- Collision detection

- Multiplayer gameplay

- Basic map with sources

- Antimatter waves

DESIRED TARGET

At this stage, the gameplay follows the scenario and you can actually play the game in its whole.

- Story inclusion into gameplay (two step strategies)

- Better rendering (textures, lights…)

- Character modeling

- Effects of atoms

- Map design

- Advanced menus

HIGH TARGET

These are features that will make the game nicer to play.

- Destruction using rigid-body simulation

- Visual effects for the atoms

- Sound effects

- Animations for the story

EXTRAS

- Additional physical effects (earthquake)

- Character animation

- Multiple maps

SCHEDULE

A: All, MP: Mattis, MZ: Marco, R: Romain

		6.3	13.3	20.3	27.3	3.4	10.4	17.4	24.4	1.5	8.5	15.5	22.5	29.5
Game Proposal	3h	A	A											
Prototype chapter	8h		A	A										
Environment setup	10h		R	R										
Atoms crafting framework	8h		MZ	MZ										
Basic building framework	12h		MP	MP										
Basic structural analysis of building	40h			MZ+R	MZ+R	MZ+R	MZ+R							
Collision detection	10h					MZ	MZ							
Multiplayer gameplay	6h					R								
Basic map with sources	4h					MP								
Antimatter waves	6h				MP	MP								
Interim report	6h							A						
Story inclusion into gameplay	12h						A	A	A					
Better rendering	6h						MZ	MZ						
Character modeling	6h							R	R					
Effects of atoms	4h						R	R						
Map design	4h						MP	MP						
Advanced menus	10h						MP	MP	MP					
Alpha release	20h								A	A	A			
Playtest	15h										A	A	A	
Conclusion and presentation	20h											A	A	A

ASSESSMENT

WHO SHOULD PLAY?

Our game is designed for everyone who likes to:

- Be challenged: our goal is to make the game decisions really challenging, so that in order to win you will have to find a fine balance between common and individual objectives.

- Kick asses: by using cleverly the different atoms properties you can annoy your opponents and destroy their defenses.

- Be creative: do you think you can build the Eiffel Tower?

WHY SHOULD YOU PLAY?

The main strength of our game relies on the fact that each player has his unique style. To get the upper hand, you have to constantly adapt your gameplay and try to find the weaknesses of the other players.

Besides this game is fun in two different ways. First, you can build gigantic and crazy atoms structures. Your only limit is your imagination. Second, you can destroy other player's constructions. This multilateral competition will put a great strain on your ability to make the good decisions.