

Game Mechanics, Dynamics, and Aesthetics

In the previous chapter, we reviewed fourteen examples of gamification and discussed five different definitions. We also compared gamification with three other related concepts—game, playful design, and toys—and clarified how they differ from one another. For the purpose of this report, I adopt the definition by Deterding et al. as the most useful one; that is, gamification is “the use of game design elements characteristic for games in non-game contexts.”¹ But we have not yet covered what those game design elements are exactly. In this chapter, we will take a look at game design elements in order to better understand how gamification works.

Game Design Elements

By now, you must have noticed some of the game elements that have been recurring in our examples of gamification, such as points, badges, levels, leaderboards, challenges, rewards, and so on. Other examples of game elements included avatars, teams, narrative, treasures, and ranks. Game elements are relatively easy to identify, probably because all of us have played games before. Points generally indicate how much time and effort a player has spent or the level of achievement reached. While points represent a player’s state since the beginning of a game, badges are used to signify the successful completion of a given task. Levels are a kind of stage in which a player grows abilities and powers until she can unlock a new level to move up to. Levels often function as a reward system to encourage players to continue the game. Leaderboards list players by their scores or achievements to create an environment for competition. The *Gamification Wiki* has a useful list of gamification mechanics:

achievements, appointments, behavioral momentum, blissful productivity, bonuses, cascading information theory, combos, community collaboration, count-down, discovery, epic meaning, free lunch, infinite gameplay, levels, loss aversion, lottery, ownership, points, progression, quests, reward schedules, status, urgent optimism, and virality.²

The *Gamification Wiki* also claims that these game mechanics fall into three types: *behavioral*, *feedback*, and *progression*. It refers to these types as “game dynamics” and provides the following explanations: (a) the behavioral type of game mechanics (i.e., the behavioral game dynamics) “are solely focused on human behavior and the human psyche”; (b) the feedback type of game mechanics, (i.e., the feedback game dynamics) “complete the feedback loop in a game mechanic”; (c) the progression type of game mechanics (i.e., the progression game dynamics) “are used to structure and stretch the accumulation of meaningful skills.”³

On the other hand, Priebsch lists *appointment*, *progression*, and *communal discovery* as three examples of game dynamics. According to his explanation, “The appointment dynamic is a . . . game mechanic in which . . . a ‘player’ must return at a predefined time to take a predetermined action” (such as “happy hour”) to succeed; the progression dynamic is used to display “a ‘player’s’ level of success” and to gradually improve it “through the completion of granular tasks”; and communal discovery is a game dynamic “which involves an entire community working together to solve a problem.”⁴

Schonfeld presents another list of the forty-seven game dynamics used by SCVNGR, a mobile, location-based gamification company.⁵ Among those forty-seven game dynamics, the following are the unique ones that do not show up in the game mechanics list

in the *Gamification Wiki* mentioned above: avoidance, behavioral contrast, chain schedules, companion gaming, contingency, cross situational leaderboards, disincentives, endless games, extinction, fixed interval reward schedule, fixed interval ratio schedules, fun once fun always, interval rewards schedule, lottery, loyalty, meta game, micro leaderboards, modifiers, moral hazard of gameplay, pride, privacy, ratio reward schedule, real-time vs. delayed mechanics, reinforce, response, reward schedule, rolling physical goods, shell game, social fabric of games, variable interval reward schedule, variable ratio reward schedule, and virtual items.⁶

Each of these is explained in more detail. For example, *behavioral contrast* means the shift in behavior depending on changed expectations; *chain schedules* refers to “the practice of linking a reward to a series of contingencies”; *free lunch* means a situation in which a player gets something because of the efforts of other people; *fun once, fun always* refers to the idea that a simple action maintains a minimum level of enjoyment no matter how many times you do it; *cascading information theory* refers to the tactic of giving out information in the smallest dribbles possible to keep players guessing and moving forward; and *moral hazard of gameplay* means the loss of the actual enjoyment of an action itself due to too many artificial incentives to take the action.⁷

These lists were compiled as quick resources for software developers and are not based upon any theoretical or empirical studies. As such, they need to be taken with a grain of salt. Nevertheless, many seem to equate listing game elements like these with understanding gamification itself and identify gamification with game mechanics such as points, badges, and leaderboards. Even the education literature on gamification explains game elements used in learning contexts merely by listing game mechanics such as: points, levels/stages, badges, leaderboards, prizes and rewards, progress bars, storyline, and feedback.⁸ While these are legitimate game elements, simple lists do not distinguish the different levels of abstraction in which those different game elements operate. This applies to the existing literature on games and gamification as well.⁹

Understanding How Games Work: The MDA Framework

The MDA framework is a formal approach to understanding games, and it provides a useful model for us to grasp how gamification works. The MDA (mechanics, dynamics, and aesthetics) model breaks down a player’s consumption process of game into three parts: *rules, system, and fun*. These correspond to the following counterparts in a game designer’s design process: (a) *mechanics*, (b) *dynamics*, and (c) *aesthetics*.¹⁰ Let’s

take a look at what the MDA model means by these three counterparts. For ease of understanding, I will start with aesthetics and then move on to dynamics and mechanics in descending order of generality.

Under the category of *aesthetics* are *sensation* (game as sense-pleasure), *fantasy* (game as make-believe), *narrative* (game as drama), *challenge* (game as obstacle course), *fellowship* (game as social framework), *discovery* (game as uncharted territory), *expression* (game as self-discovery), and *submission* (game as pastime). These aesthetics can be understood as different goals of games and the components of *fun*.¹¹

Dynamics in the MDA model are the game design principles that create and support aesthetic experience. For example, *time pressure* and *opponent play* are two game dynamics that create and support the aesthetic of *challenge*. The dynamics of sharing information across certain members of a session (a team) or supplying winning conditions that are more difficult to achieve alone are for the game aesthetic of *fellowship*. The aesthetic of *expression* is created and supported by the dynamics that encourage individual users to leave their mark, such as systems for purchasing, building, or earning game items; for designing, constructing, and changing levels or worlds; and for creating personalized, unique characters.¹²

Mechanics refers to the various actions, behaviors, and control mechanisms afforded to the player within a game context. For example, the mechanics of card games include shuffling, trick-taking and betting, from which dynamics like bluffing can emerge.¹³

Another good explanation of the distinction between game dynamics and game mechanics is found in Marczewski’s book *Gamification: A Simple Introduction and a Bit More*. He explains that game mechanics are a distinct set of rules that dictate *the outcome of interactions within the system* with an input, a process, and an output, while game dynamics are *users’ responses to collections of those mechanics*.¹⁴

The MDA model is useful because it allows us to consider the perspectives of a game designer and a game player at the same time. Players experience game mechanics as the rules of a game, while designers think of them as various player actions and control mechanisms. Dynamics appear to game players as the system that creates the desirable game experience, while game designers see them as design principles for the interaction between game mechanics and players. Lastly, aesthetics are the goal of gameplay itself for game players. But to game designers, they are the ultimate emotional responses or states that they want to generate in people through the use of game dynamics and game mechanics.

Armed with this understanding of game mechanics, dynamics, and aesthetics, we can now approach the game elements that we have previously seen with a fresh set of eyes. Points, badges, leaderboards,

statuses, levels, quests, countdowns, tasks/quests/missions, and other particular rules and rewards all fall under the category of *game mechanics*. These constitute most of what we immediately notice as game elements. By contrast, those game elements that are concerned with the interaction between concrete game mechanics and players at a more abstract level are *game dynamics*. Examples of game dynamics include appointment, behavioral momentum, feedback, progress, time pressure, and certain abilities that game avatars can develop. Some game elements that we identified, on the other hand, are more accurately classified as *game aesthetics* since they are the desired experience that games attempt to generate through gameplay. Those game aesthetics include elements such as achievement, challenge, discovery, epic meaning, blissful productivity, sensation, and fantasy.

Notes

1. Sebastian Deterding, Dan Dixon, Rilla Khaled, and Lennart Nacke, "From Game Design Elements to Gamefulness: Defining 'Gamification,'" in *Proceedings of the 15th International Academic MindTrek Conference: Envisioning Future Media Environments* (New York: Association for Computing Machinery, 2011), 13, doi:10.1145/2181037.2181040.
2. "Game Mechanics," Gamification Wiki, Badgeville website, accessed November 3, 2014, http://badgeville.com/wiki/Game_Mechanics.
3. "Game Mechanics Types," Gamification Wiki, Badgeville website, accessed November 3, 2014, http://badgeville.com/wiki/Game_Mechanics/Types.
4. Seth Priebatsch, "Welcome to the Decade of Games," HBR Blog Network, *Harvard Business Review*, September 9, 2010, http://blogs.hbr.org/cs/2010/09/welcome_to_the_decade_of_games.html.
5. Erick Schonfeld, "SCVNGR's Secret Game Mechanics Playdeck," TechCrunch, August 25, 2010, <http://techcrunch.com/2010/08/25/scvngr-game-mechanics>.
6. Ibid.
7. Ibid.
8. Fiona Fui-Hoon Nah, Qing Zeng, Venkata Rajasekhar Telaprolu, Abhishek Padmanabhuni Ayyappa, and Brenda Eschenbrenner, "Gamification of Education: A Review of Literature," in *HCI in Business: First International Conference, HCIB 2014, Held as Part of HCI International 2014, Heraklion, Crete, Greece, June 22–27, 2014, Proceedings*, edited by Fiona Fui-Hoon Nah, 401–9, Lecture Notes in Computer Science 8527 (Cham, Switzerland: Springer International Publishing, 2014), doi:10.1007/978-3-319-07293-7_39.
9. Deterding et al., op. cit., 12.
10. Robin Hunicke, Marc Leblanc, and Robert Zubek, "MDA: A Formal Approach to Game Design and Game Research," in *Proceedings of the Challenges in Games AI Workshop, Nineteenth National Conference of Artificial Intelligence* (San Jose, CA: AAAI Press, 2004), 2.
11. Ibid.
12. Ibid., 3.
13. Ibid., 4.
14. Andrzej Marczewski, *Gamification: A Simple Introduction and a Bit More*, 2nd ed. (self-published on Amazon Digital Services, 2013), Kindle edition, Loc 1119 of 1798.