# The Beauty of *Mass Effect 2* Ending

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**Abstract**

This paper analyzes the narrative design in the endgame sequence of the 2010 action role-playing video game *Mass Effect 2*. Its final levels, collectively titled as "the Suicide Mission", are modeled as a puzzle with multiple solutions, whose availability depends on the number and type of resources the player had previously obtained throughout the main game. The paper examines how the designers incorporate narrative flavor into their puzzle design while translating ludic developments into a cohesive narrative experience that feels compellingly interactive despite its technical linearity. Finally, it suggests a set of recommendations for using the design patterns pioneered by *Mass Effect 2* to improve future interactive narratives.

## 1  Introduction

The *Mass Effect* series of role-playing video games is produced by the Canadian video game developer BioWare. The first three games, comprising what the fans refer to as the "*Mass Effect* original trilogy" or the "Shepard trilogy" (after its customizable protagonist), were released between 2007 and 2012 for Microsoft Windows, PlayStation 3, Xbox 360, and Wii U platforms. Spanning almost the entire seventh generation of video game consoles, the trilogy had become one of the hallmarks of science fiction video gaming, and its evolution over the years had both influenced and been influenced by the development of the 3D action RPG genre as a whole.

The second game of the trilogy, *Mass Effect 2* was released on January 26, 2010 for Microsoft Windows and Xbox 360 in North America and marked a major departure from the gameplay conventions of the original game, which were largely informed by BioWare's own *Knights of the Old Republic* (2003) and, through it, by Wizards of the Coast's pen-and-paper *Star Wars Roleplaying Game* (2000) and their third edition of *Dungeons & Dragons* (2000). In terms of its core combat gameplay, *Mass Effect 2* instead drew inspiration from Epic Games' *Gears of War* series (2006–) of third-person shooter games to focus on more visceral cover-based combat, interspersed by cinematic cutscenes and dialogue. Its storyline also drastically diverted from the so-called "BioWare formula", cited by Purchese (2009) as "intro, four planets, finale", and was focused much more on non-playable characters the players recruited to their cause than on the locales they could explore in the game.

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*Mass Effect 3*, released in 2012, refined and improved upon the gameplay features of the previous game, but these improvements were overshadowed by the controversy surrounding its endgame sequence, which a substantial number of players found unsatisfactory, even after BioWare had released a free DLC (downloadable content) epilogue to address some of the most common criticisms. Apart from its underlying narrative inconsistency with the larger context of the series, the endgame sequence of *Mass Effect 3* shows equal quality of level design, cutscene direction, musical composition, and dialogue writing as that of the previous game, but the latter still feels significantly more satisfying. The following is an attempt to address this apparent contradiction by demonstrating that the key to the success of the *Mass Effect 2* endgame lies in how it interweaves gameplay and narrative design in a way that its sequel does not.

## 2   Overview

*Mass Effect 2* is set in the year 2185 CE, several decades after humanity had discovered faster-than-light travel and made contact with the numerous sentient alien species populating the Milky Way galaxy. The overarching protagonist and playable character of the series is a human space military officer exclusively referred by rank and surname as "Commander Shepard"[1] in the games. Two years after the events of the original *Mass Effect*, Commander Shepard learns about the Collectors, a mysterious alien species originating from the galactic core, who perpetrate mass abductions of entire human colonies for unknown purposes. Assuming command of a stealth reconnaissance spaceship *Normandy SR-2*, Shepard sets out to gather a team of specialists from across the galaxy for a "suicide mission" to infiltrate the hidden Collector base and to put an end to their attacks on humanity.

The main appeal, driving force, and resource of *Mass Effect 2* are the thirteen[2] specialists ("squadmates") whom Commander Shepard can recruit for the mission. The entire game revolves around them, and the Suicide Mission (which is the official name of the endgame sequence) deliberately functions as a "final exam" level[3] that repeatedly tests the players' knowledge of individual squadmates' strengths and weaknesses, drawing upon gameplay design patterns from both puzzle and deck-building game genres. The deck-building aspect is apparent in the fact that the outcome of the game depends largely on what "deck" (i.e. which squadmates) the players, as Shepard, bring with them to the Collector's base. The puzzle aspect manifests itself in the complex but deterministic set of rules that ultimately determine said outcome and that can be inferred even by first-time players who pay attention to the narrative flavor of the game, such as the squadmates' dialogue and miscellaneous lore.

The largest part of the game revolves around the composition and enhancement of the player's "deck" and is very options-driven[4], in that individual missions can be completed in any order or skipped, mostly without fear of immediate harsh consequences. It ends with the first true major choice of the game that finalizes the state of the "deck", namely, with the choice to embark for the Collector Base. The subsequent Suicide Mission can be reduced to ten more choices that determine its outcome, as Commander Shepard is repeatedly forced to put their squadmates at risk of a "cutscene death"[5] in order to advance the mission. The players' task is made easier by the fact that for every choice, there are at least three possible winning solutions, but the game

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[1]Because Commander Shepard's gender is selected by the player, gender-neutral pronouns will be used here.

[2]This number includes both the two DLC-only companions and the secret squad member Morinth.

[3]See http://tvtropes.org/pmwiki/pmwiki.php/Main/FinalExamFinale.

[4]Rosewater (2009) introduced the distinction between options- and choices-driven gameplay.

[5]See http://tvtropes.org/pmwiki/pmwiki.php/Main/PlotlineDeath for a discussion of character mortality in video games.

also refuses to hold their hand in solving this puzzle with explicit hints, and instead makes them rely on common sense and on the story knowledge gained earlier to make ideal decisions.

The interchangeability of squadmates in particular story roles[6] and, conversely, the dependence of said roles' outcomes (success or tragedy) on the suitability of the actors is what gives the strictly linear Suicide Mission its remarkable variability. Even though it doesn't matter much, for instance, which loyal squadmate escorts the abducted *Normandy* crew back to the ship, the option to pick one and the palpable consequence of that teammate being absent for the rest of the mission give the players a compelling illusion of controlling their own story. Moreover, the multitude of winning scenarios guarantees that the endgame feels personal and unique to each player, despite the fact that almost everyone tackles it with roughly the same "deck" and experiences exactly the same story beats[7] along the way.

# 3  Player resources

The player's deck at the beginning of the Suicide Mission can be effectively represented by three sets of resources and two additional variables.

## 3.1  $R$: Recruited squadmates

This set is the base of all other pre-endgame variables. It can contain up to 12 elements from the complete set of 13 permanently recruitable squadmates available in the game and its expansions: Garrus, Grunt, Jack, Jacob, Kasumi, Legion, Miranda, Mordin, Morinth, Samara, Tali, Thane, Zaeed. Recruiting a squadmate generally takes place in the course of a single "dossier" mission, but with several particularities:

- Two squadmates (Jacob, Miranda) do not have to be recruited, as they join Commander Shepard automatically at the start of the game.

- Three more (Garrus, Jack, Mordin) are mandatory, because it is not possible to advance the main storyline past a certain point (the planet Horizon) without recruiting them first.

- Two squadmates (Grunt, Legion) require manual activation after their respective recruitment mission before they can join the squad.

- Two more (Zaeed, Kasumi) require purchasing DLC and join immediately after a brief dialogue instead of a full-length recruitment mission.

- One squadmate (Morinth) can only be recruited by recruiting and then killing another (Samara) during her loyalty mission.

## 3.2  $L$: Loyal squadmates

At some point after their recruitment, each squadmate will approach Commander Shepard with a personal matter that the player can choose to assist them with or to ignore. Successfully completing these "loyalty missions" secures the respective squadmate's loyalty to Commander Shepard's cause, giving them additional gameplay abilities and outfit options, as well as influencing their performance during the endgame. The set of loyal squadmates is a subset of all recruited specialists so far ($L \subseteq R$), with following particularities:

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[6]See http://tvtropes.org/pmwiki/pmwiki.php/Main/StaticRoleExchangeableCharacter.

[7]See Laws (2010) for a model of narrative beats in (cinematic) games.

- Four loyalties (Samara, Tali, Thane, Zaeed) can be forfeited by making certain decisions in the respective loyalty missions.

- Two squadmates (Samara, Zaeed) can perish during their respective loyalty missions, although in Zaeed's case, it is only possible after the Suicide Mission has been completed and is thus irrelevant to the endgame sequence.

- One squadmate (Morinth) is loyal immediately upon recruitment.

Additionally, two pairs of squadmates (Jack and Miranda, Tali and Legion) are scripted to get into a confrontation after the loyalty of both characters in a pair has been earned. Unless Shepard is able to persuade both to stand down, the player is forced to support one side in the argument, losing the other's loyalty.

## 3.3 $U$: *Normandy* upgrades

This set is a mix of story-relevant, gameplay-relevant, and even purely cosmetic upgrades to Commander Shepard's spaceship, the *Normandy SR-2*. Only the three story-relevant upgrades (Heavy Ship Armor, Multicore Shielding, Thanix Cannon) have an impact on the course of the Suicide Mission. Upgrade availability is entailed by which squadmates have been recruited ($R \models U$), since they can only be unlocked for purchase by talking to a specific squadmate.

## 3.4 $f$: Paramour squadmate

In the course of the game, Commander Shepard has the option of entering a romantic relationship with one of the loyal squadmates: $f \in \{Garrus, Jacob, Thane\}$ if Shepard is female, $f \in \{Jack, Miranda, Tali\}$ if male. Of these, the choice of only two paramours (Thane, Jack) has any effect on the course of the endgame, and that effect is purely cosmetic.

## 3.5 $d$: Delay between the attack on the *Normandy* and the Suicide Mission

Late in the game, the Collectors raid the *Normandy* while Commander Shepard and most squadmates are absent and abduct most of the ship's crew. Because the game does not simulate the passage of time, it instead tracks the number of completed missions between the abduction of the crew and the start of the Suicide Mission. Effectively, this variable can only have one of three values: short (if at most one story mission or side assignment had been completed), middle (one to three assignments and no story missions), and long (anything beyond that).

# 4  The endgame puzzle

A formalized representation of the endgame puzzle is presented as pseudocode below, based on the data reverse-engineered from the game by the players.[8] It deliberately omits all combat gameplay sequences and most interactive dialogue that have no impact on the outcome of the game, and instead focuses on how the player applies previously obtained resources to traverse the possibility space of the puzzle. For the purposes of this analysis, the endgame sequence is split into three phases and twenty distinct story beats, while player resources are categorized into Primary (squadmates and their loyalties) and Secondary (*Normandy* upgrades).

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[8]For the complete overview of the Suicide Mission gameplay, see `http://masseffect.wikia.com/wiki/Mass_Effect_2_Guide`.

### 4.1 Phase I

Beats 1 through 4 mostly consist of cutscenes and evaluate the player's initiative and readiness to go beyond explicit instruction in preparation for the Suicide Mission, i.e. to discover and to acquire Secondary Resources without an obvious indication to their utility. It punishes the insufficiently prepared players by handicapping them in phase II with a loss of Primary Resources, but cleverly makes this seem like unavoidable cutscene deaths by denying the player any immediate agency in them and giving only vague hints at how they could have been prevented. To further throw the player off-balance, loyalty, while essential everywhere else, provides no protection to crucial Primary Resources in this phase.[9] The phase I sequence is as follows:

$S \coloneqq R$        $\triangleright$ Initializing the squad survivors set
**if** $d = $ short **then**        $\triangleright$ Calculating the crew survivors
     $CS \coloneqq$ entire crew
**else if** $d = $ middle **then**
     $CS \coloneqq$ half of the crew
**else if** $d = $ long **then**
     $CS \coloneqq$ only Dr. Chakwas
**end if**

**cutscene**: Passing through the Omega 4 relay        $\triangleright$ Beat 01
$victim_1 \coloneqq$ Jack
**if** Heavy Ship Armor $\notin U$ **then**
     $S \coloneqq S \setminus \{victim_1\}$, i.e. Jack dies
**end if**

**player choice #1**: Two party members during the Oculus battle        $\triangleright$ Beat 02
$P_1 \xleftarrow{2} S$

**cutscene**: Eezo core overload        $\triangleright$ Beat 03
$victim_2 \coloneqq \textsc{First}(\{\text{Kasumi, Legion, Tali, Thane, Garrus, Zaeed, Grunt}\} \cap S \setminus P_1)$[10]
**if** Multicore Shielding $\notin U$ **then**
     $S \coloneqq S \setminus \{victim_2\}$, i.e. another squadmate dies
**end if**

**cutscene**: Assault on the Collector Ship        $\triangleright$ Beat 04
$victim_3 \coloneqq \textsc{First}(\{\text{Thane, Garrus, Zaeed, Grunt, Jack, Samara, Morinth}\} \cap S \setminus P_1)$
**if** Thanix Cannon $\notin U$ **then**
     $S \coloneqq S \setminus \{victim_3\}$, i.e. another squadmate dies
**end if**

### 4.2 Phase II

Beats 5 through 16 [11] comprise the final exam that repeatedly tests the players' common sense and knowledge of the setting, of the squadmates' backgrounds and personalities, and of the basic

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[9]See `http://tvtropes.org/pmwiki/pmwiki.php/Main/PlotArmor`.

[10]This function treats its argument as an ordered set and returns the leftmost element of it, modeling priority queues used by the game to determine which specific squadmate dies in the current cutscene.

[11]Beat 17 is not included in phase II because it has no tangible impact on the outcome of the Suicide Mission.

game rules. Suboptimal decisions result in further loss of the Primary Resources, negatively impacting the player's capacity to overcome later tests, and ultimately, to an inferior ending.

**player choice #2**: Specialist Technician in the vents $\qquad$ ▷ Beat 05
$st \leftarrow S$
$Ideal_{ST} \coloneqq \{\text{Kasumi, Legion, Tali}\}$, i.e. the exceptional technology experts

**player choice #3**: Fireteam Leader during the Infiltration $\qquad$ ▷ Beat 06
$fl_1 \leftarrow S \setminus \{st\}$
$Ideal_{FL} \coloneqq \{\text{Garrus, Jacob, Miranda}\}$, i.e. squadmates with the most leadership experience

**player choice #4**: Two party members during the Infiltration $\qquad$ ▷ Beat 07
$P_2 \leftarrow^2 S \setminus \{st, fl_1\}$

**cutscene**: Sealing the doors after the Infiltration $\qquad$ ▷ Beat 08
**if** $st \notin L \vee st \notin Ideal_{ST} \vee fl_1 \notin L \vee fl_1 \notin Ideal_{FL}$ **then**
$\quad S \coloneqq S \setminus \{st\}$, i.e. the Specialist Technician dies
**end if**

**player choice #5**: Biotic Specialist to hold the biotic bubble $\qquad$ ▷ Beat 09
$Biotics \coloneqq \{\text{Jack, Jacob, Miranda, Morinth, Samara, Thane}\}$
$bs \leftarrow (S \cap Biotics)$
$Ideal_{BS} \coloneqq \{\text{Jack, Morinth, Samara}\}$, i.e. biotics users with exceptional powers

**player choice #6**: Fireteam Leader during the Long Walk $\qquad$ ▷ Beat 10
$fl_2 \leftarrow S \setminus \{bs\}$

**player choice #7**: Escort for the *Normandy* crew $\qquad$ ▷ Beat 11
$esc \leftarrow \varnothing \cup (S \setminus \{bs, fl_2\})$

**player choice #8**: Two party members during the Long Walk $\qquad$ ▷ Beat 12
$P_3 \leftarrow^2 S \setminus \{bs, fl_2, esc\}$

**cutscene**: Encounter with the Collector Swarm $\qquad$ ▷ Beat 13
$victim_4 \coloneqq \textsc{First}(\{\text{Th., Jack, Ga., Le., Gr., Sa., Jacob, Mo., Ta., Ka., Za., Mo.}\} \cap P_3)$
**if** $bs \notin L \vee bs \notin Ideal_{BS}$ **then**
$\quad S \coloneqq S \setminus \{victim_4\}$, i.e. a current party member dies
**end if**

**cutscene**: Opening the doors for the fireteam $\qquad$ ▷ Beat 14
**if** $fl_2 \neq \text{Miranda} \wedge (fl_2 \notin L \vee fl_2 \notin Ideal_{FL})$ **then**
$\quad S \coloneqq S \setminus \{fl_2\}$, i.e. the Fireteam Leader dies
$\quad$ **if** $fl_2 = f \wedge f \in \{\text{Jack, Thane}\}$ **then**
$\quad\quad$ The paramour's last words differ from their usual (non-romantic) ones
$\quad$ **end if**
**end if**

**cutscene**: Checking up on the *Normandy* crew $\qquad$ ▷ Beat 15

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> **if** $esc = \varnothing$ **then**
>> $CS := \varnothing$, i.e. the entire crew dies
>
> **else if** $esc \notin L$ **then**
>> $S := S \setminus \{esc\}$, i.e. the Escort dies
>
> **end if**

> **player choice #9**: Two party members during the final battle        ▷ Beat 16
> $P_4 \leftarrow^2 S \setminus \{esc\}$
> Implicit choice (squadmates holding the line): $HTL := S \setminus (P_4 \cup \{esc\})$

### 4.3 Phase III

Beats 17 through 20 once again consist mostly of cutscenes that rate the player's performance. At this stage, however, they evaluate both the pre-endgame initiative and the phase II decisions. The game then awards the player with one of three possible endings.

> **player choice #10**: Destroying or purging the Collector Base          ▷ Beat 17

> **cutscene**: Escaping the Collector Base                                ▷ Beat 18
> $S := S \setminus (P_4 \setminus L)$, i.e. non-loyal party members die
> $S := S \setminus \textsc{CalculateHoldTheLineCasualties}(HTL, L)$[12]
> **if** $|S| < 2$ **then**
>> Commander Shepard dies
>
> **end if**

> **cutscene**: Dialogue with the Illusive Man (varies)                    ▷ Beat 19

> **ending**:                                                              ▷ Beat 20
> **if** $S = R$ **then return** "No One Left Behind"
> **else if** $S \neq R \wedge$ Shepard lives **then return** "Against All Odds"
> **else if** Shepard dead **then return** "Mission Accomplished"
> **end if**

## 5  Conclusions

Having broken down the Suicide Mission into its abstract constituents of resources, beats, and phases, we can now attempt to extract general recommendations for the gameful narrative design pioneered by the creators of *Mass Effect 2*.

- **Endgame structure**. The Suicide Mission clearly follows a cinematic three-act structure[13], with the first act/phase mostly introducing complications outside of the protagonist's (immediate) control, the second, longest act consisting of confrontations over continuously rising stakes, and the final act containing the climactic resolution wherein the protagonist either lives or dies (beat 18), depending on the player skill. Each act contains a number of story beats that alternate between player decisions that advance the

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[12]For the specifics of the casualty calculus during the "hold the line" sequence, see e.g. `http://tvtropes.org/pmwiki/pmwiki.php/Analysis/MassEffect2`.

[13]See `http://tvtropes.org/pmwiki/pmwiki.php/Main/ThreeActStructure`.

narrative in meaningful ways and cutscenes that provide regular feedback on the efficacy of said decisions, creating a ludic feedback loop between the player and the game within the constraints of a cinematic narrative.

- **Transfer of learning**. To reach the best ending, the player is expected to repeatedly go beyond explicit instructions given by the game. The three endgame-relevant *Normandy* upgrades cost valuable in-game resources, but the player is never explicitly informed of their true purpose beyond vague hints that every investment may count during the endgame. Likewise, in the choice of the Specialist Technician, the Fireteam Leaders, and the Biotic Technician, the player is expected to deduce, despite the lack of an explicit skill ranking in the game, which squadmates are inherently better at certain tasks for reasons that are only explained in the "flavor text" and do not impact the core combat gameplay.

- **Failing forward**. Apart from the "game over" scenarios in the core combat gameplay, it is impossible to fail the Suicide Mission, as the game contains no cutscenes or dialogue pertaining to Commander Shepard's failure to defeat the Collectors. The characters thus always succeed at both their individual tasks and the overarching objective. Dramatic tension is maintained, however, by the question of the *price* they will pay for their success, since every wrong choice quickly results in at least one fatality. While the success of the mission is predetermined by the game, its magnitude is entirely up to the player. This allows the game to pick an ending based on a simple tally of the survivors, representing one of the most ludic approach to concluding game narratives.

- **Static roles, variable actors**. The key to combining gameful experience with tight narrative scripting in *Mass Effect 2* is the decoupling of its key roles from the specific characters (with the notable exception of Commander Shepard). This approach has several far-reaching implications:

  The narrative theme determines the specific roles. In *Mass Effect 2*, the theme is infiltration and sabotage, so the roles represent areas of expertise needed on such a mission (technology, leadership, biotics, and combat). Another major theme is dedication to the cause, so loyalty is a consistent factor after phase I and even exclusively determines the characters' fate in beats 15 and 18.

  In order to make role assignments meaningful, a larger actor pool (i.e. many more squadmates) is required than is strictly necessary to fill each role. Doing so, however, also allows for a highly modular narrative built around a static underlying structure, especially if the ideal actors for each role number more than one but much less than the total.

  Despite this, all actors are involved in the narrative at all times, even if only off-screen. Particularly the "hold the line" sequence in beats 16 through 18 gives narrative significance to those squadmates who have not been assigned a particular key role up to that point.

  Fully defined non-randomized priority queues that determine who dies and who lives in each cutscene allow the developers to manage the high dimensionality of the possibility space without reducing it to a "choose your own adventure"-style branching tree.

- **Design variety**. *Mass Effect 2* is built upon a handful of design patterns that underlie most of its content. The pattern for squadmates' character arcs, for example, is "Shepard receives a dossier, recruits the squadmate in one mission, then gains their loyalty in another", while the pattern for story beats during the endgame is "Shepard assigns a squadmate to a task, they complete it and either survive or die". While learning these

patterns allows the player to gain confidence in their skills faster, they can also make the game too predictable, so the developers go out of their way to deviate from the formulas in almost every instance. To name a few specific examples:

Some characters need additional interactions after their recruitment mission before they join as squadmates. One of them is "recruited" in the course of a main story mission.

Some loyalty missions may not secure squadmates' loyalties, some loyalties may be lost again in post-mission arguments, and one loyalty mission even doubles as both recruitment and loyalty mission for a secret squadmate who replaces a previously recruited one.

A small subset of Secondary Resources decides the Primary Resources' fate in the endgame phase I, regardless of loyalties, introducing the initial complications to the plot.

In phase II, player choices are clustered in groups of three and four at the start of the Infiltration and the Long Walk sequences, respectively, and their ramifications are displayed in a sequence of cutscenes punctuated by core combat gameplay.

Even an ideal Specialist Technician dies if paired with a non-ideal Fireteam Leader; likewise, even loyal party members can perish defending a non-ideal Biotic Specialist.

The Escort role does not have to be assigned, unlike all others: leaving it unassigned preserves the squad's strength, but results in the death of all crew survivors.

If the second Fireteam Leader perishes, they exchange characterization-laden final words with Shepard; Miranda, however, cannot die at any point of the Long Walk sequence.

Mordin and Thane have no purpose during the Suicide Mission: they are neither ideal choices for any particular roles (except the Escort, if loyal), nor confer any significant advantage during the "hold the line" sequence, even if loyal.

*Mass Effect 2* was, perhaps, the most innovative video game ever produced by BioWare, and many of the design patterns it pioneered or improved upon have not been revisited since, by them or by other developers.[14] It is the author's sincere hope that this analysis will inspire more video game developers to produce gameful narratives in the manner of *Mass Effect 2*, armed with the understanding that its success was not a random fluke but a result of skillful and deliberate iteration on a few relatively simple design and content patterns.

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[14] Deep Silver Volition's *Saints Row IV* deserves a honorable mention, however, for paying homage to the Suicide Mission, as well as to many other elements of the *Mass Effect* series.