

THIS ISN'T MY CRASH BANDICOOT - A Critical Analysis of Character Redesign in Video Games

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***Abstract.** It's common for the look of game characters to change over the years and adapt to reach new audiences. This research was developed to understand which artistic aspects should be taken into consideration to create a more believable character redesign using Crash Bandicoot as the subject of analysis. This article analyses two distinct redesigns of the same video game character and compares them to the first designs, comparing different artistic elements like conceptualization, workflow and execution. **Keywords—** character design, redesign, art direction, Crash Bandicoot*

1. Introduction

Since their invention to the present day, videogames have evolved significantly in both hardware and software. This advance has provided more possibilities for developers to create more daring and creative projects in art direction. Characters created on platforms with lower visual capabilities had to be updated when they had games released on newer platforms. *Mario Bros* and *Sonic the Hedgehog* are great examples of this, having to be adapted when they made the transition from 2D to 3D games. This mainly occurs with the first game of an established franchise on a new generation console. *Mario Bros* with *Super Mario 64* (Nintendo EAD, 1996), *Sonic the Hedgehog* with *Sonic Adventure* (Sonic Team, 1998), among many others. This strategy is also used when developers want to reach a larger player base and increase sales from which may be to a different target audience from the original in some cases.

An example of this is *Bomberman: Act Zero* (Hudson Soft, 2006), released for the Xbox 360. As a franchise created by and for the Japanese audience in mind, the designs and world of a franchise's previous games were more cartoonish, colorful and used a visual language popularized by anime. The idea of *Bomberman: Act Zero* was to be attractive to a mature audience, who were playing more realistic games like *Grand Theft Auto* and *God of War*, known for their serious and bloodier approach. However, this did not work, and in the next game the original visual identity was brought back.

Another character who has also gone through redesigns several times is *Crash Bandicoot* (*Crash*), whose first game was released in 1996 and still is an active IP (intellectual property), with his last game *Crash Team Rumble* (Toys for Bob, 2023) launched this year. He is the protagonist of a series of primarily action and platform

games, having released some spin-offs over the years. As he has gone through various producers and different development studios, it is expected that the art direction and even gameplay have changed drastically. The most interesting thing about this franchise is that mainline games that sold the most: *Crash Bandicoot (Crash 1)* (Naughty Dog, 1996), *Crash Bandicoot 2: Cortex Strikes Back (Crash 2)* (Naughty Dog, 1997), and *Crash Bandicoot: Warped (Crash 3)* (Naughty Dog, 1998) were recently remade for 8th generation consoles and the character designs were updated. This remastered collection was released as *Crash Bandicoot N. Sane Trilogy (N. Sane)* (Vicarious Visions, 2017) and was well-received by fans. Three years later, a new game was released, which aimed to be a sequel to the original trilogy. *Crash Bandicoot 4: It's About Time (Crash 4)* (Toys for Bob, 2020) was the first original game in the franchise since 2010 and had a different art direction from the recreation of the original PlayStation trilogy.

This character and franchise were chosen for several reasons. *Crash* is a very old character who has undergone various redesigns over the years, and not all of them have been embraced by the audience. Aside from the visuals of the first three games, the most appreciated Crash designs from *N. Sane* and *Crash 4*, the two analyzed games. Additionally, these games were highly profitable, especially *N. Sane* that reached over 10 million sales in 2019, combining the results of all platforms. Furthermore, each of these games had a different approach when it came to adapting the visual style of *Crash* and, consequently, the world around him, while having a significant amount of information about the development and character redesign process of *Crash*.

This research was developed to understand which artistic aspects should be considered to create a more believable character redesign, using the design of *Crash* in *N. Sane* and *Crash 4*. The in-game model and concept arts both were taken into consideration during analysis. The character design of these two games will also be compared with the character design in *Crash 1*, *Crash 2* and *Crash 3*. The findings of this study can help guide game developers and artists during a redesign process. The main goal is to create material that will assist both game developers and artists who need to redesign a character for a digital game, as well as academic researchers who study games, game conceptual art and pre-production. The specific objectives are to analyze the visual development of a character in the pre-production of a game and to compare redesigns of the same character in two games produced by two different studios. The field of character design for games is a specialization in game development that has scarce bibliographic material, mainly on character redesign. With this article, both developers and character designers in the market will have a material that will help them decide what workflow to choose to use in this important process, and academic researchers will have more material to support their research.

2. Related Works

Other researchers have conducted similar research to this, but not at this level of detail in the character redesign process. Takahashi and Andreo (2011) proposed guidelines for establishing a methodology for the creative character design process with details. They went through stages such as briefing, brainstorming, and even technical nuances such as the use of stereotypes and application of originality. However, they did not address the in-game adaptation of the concept art and the redesign process. This, although similar in nature with the design process, has specific aspects to take into consideration. Some of

them are how much to draw upon previous designs, what the strengths of each previous design are and (if applicable) how to incorporate them into this new iteration. Redesigning means the artist already has a previously established design as a starting point and start exploring from it. The personality and peculiarities of the character are likely well defined due to their appearances in previous games.

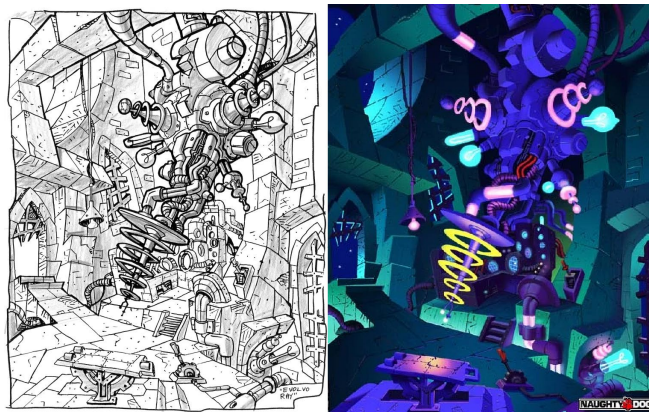
Sheldon (2004) delves into the creative aspects that must be taken into account when creating a character and the storytelling surrounding it. The book addresses character design, but not in a practical way, something that is being addressed here. It is important to note that although the scope of none of these studies, none of them addressed the process of translating concept art into the character within the game. In the case of this research, the adaptation of the character's 2D concept arts to their 3D model within the game was analyzed.

3. Games Case Studies

This work proposal is analyzing *Crash's* character redesign process and results in both *N. Sane* and *Crash 4* as mentioned in Section 1. Discussion was divided in *Art Direction and Animation* and *Visual Design and Characterization*.

3.1. Art Direction and Animation

The franchise main starting inspiration, the initial was the *Looney Tunes* cartoons. *Crash 1's* proposal, the initial briefing was to “create a Warner Brothers cartoon character feel” as stated by Jason Rubin (1996), one of the founders and developers of *Crash 1, 2, and 3*, and the director of art for the original trilogy. To convey the feeling of a cartoon, artists as Joe Pearson and Charles Zembillas were hired, both with experience in cartoon animation, to create the visual design of the characters and environments. Their concept arts presents scenes with good contrast, especially in terms of hue (Figure 1). Despite the presence of textures on the models, the illustrative aspect of the concept art was followed more closely.



**Figure 1. Evolve Ray lineart and finalized art from *Crash 1*.
Source: Charles Zembillas and Joe Pearson, 1995, adapted.**

Character animation was groundbreaking at the time as they were one of the first games to use vertex animation without any bones. This allowed for a lot of squash and stretch, classic cartoon techniques. The timing of the movements brings the feeling of a cartoon, with minimal use of anticipation in *Crash's* animations to prioritize responsive

control. The poses are strong and extreme, often deforming the character significantly, especially in death animations.

Tanguay (2017) stated that one of the goals of *N. Sane* development team was to create the feeling of a AAA (triple-A) collection and they took that into account even in the visual aspect. The remakes were created using an unconventional workflow in game development, where the developers didn't produce any kind of conceptual art. According to James Turner (2020), to recreate the world and characters from the three games, they gathered all the concept art and analyzed the original models by watching gameplay footage. After this curation process, the new models were built. The result was an art direction that appears disjointed, as the elements, especially the characters, work individually but don't integrate cohesively.

A realistic approach was taken regarding textures and lighting (Figure 2). Fur texture is applied to the characters, tree trunks have wood texture, and stone pillars have stone texture. This approach aligns with the goal of creating a AAA collection, as the majority of AAA games feature realistic art direction in terms of lighting and textures. However, realistic textures tend to diminish the cartoonish feeling as the world appears less like a cartoon and more like the real world. In *Crash 1*, *2*, and *3*, no lighting was used due to console limitations. Therefore, the lights and shadows were incorporated into the texture of the models to better convey the three-dimensionality. In the remastered collection, the lighting from Vicarious Visions' proprietary engine, the Alchemy Engine, was used. However, some environments lost quality during this transition. Environments that were dark and conveyed a sense of fear and mystery in the original game were illuminated, losing the original mood.



**Figure 2. *N. Sane's Crash* model in-game and environment.
Source: Vicarious Vision, 2017.**

The animation used in the remakes is cartoonish, utilizing bones and vertex maps to stretch and deform the characters. However, several movements, both in cutscenes and in-game animations, have a slower pace with anticipations, accelerations, and slow decelerations compared to the original and *Looney Tunes* cartoons. Specifically, *Crash's* animations appear to be the most refined in the package, as he is the most prominent element in gameplay. There was limited use of anticipations in *Crash's* animations for the same reason as in *Crash 1*, *2*, and *3*, but his poses in the animations are exaggerated and could be even more so.

Crash 4, as a sequel that aimed to distance itself from the *N. Sane*, chose to update the new art direction with more vibrant colors, greater contrast in the elements, and environments with better-defined silhouettes and cartoonish proportions. The art

direction of the environments is less contrasting compared to the PlayStation games, but they feature a greater number of colors in their palettes. While this is partly due to the hardware leap, the expertise of the concept and environment artists cannot be ignored.

The textures emulate an illustrated and stylized look (Figure 3), even within the Unreal Engine, which is known for its hyper-realistic games. When an explosion occurs, a cartoonish explosion texture is used. There are also differences in materials, with *Crash's* gloves clearly made of a different material than his shorts. It's not possible to see each individual hair on *Crash's* body and head, but rather tufts where the hair gathers on his body.



**Figure 3. Comparison between water texture from *N. Sane* and *Crash 4*.
Source: Vicarious Visions and Toys for Bob, 2020, adapted.**

Unlike *N. Sane*, there was an art direction used to envision and build the worlds and levels that *Crash* traverses. Some enemies and obstacles are more visible here than in the *N. Sane* due to this. This approach proves superior to the workflow explained by Turner (2020) and used in *N. Sane* in staging and specially the lighting. A clear example of this is how *Crash's* eyes react to ambient light in the three games. In various situations and environments, *N. Sane's* *Crash* has strong shadows on his eyes that make the character lose appeal. This was observed based on recorded gameplay of the three games inside *N. Sane* (Figure 4). This problem happens primarily because the developers strictly followed the aesthetics of the original games. Since no lighting was used in those games, it's conveyed through the texture of the scenery and characters. This posed difficulties when developing the *N. Sane* due to the realistic engine used. *Crash 4* overcame this issue by employing having an art direction, using the support of conceptual art to help guide the lighting artists (Figure 5).



**Figure 4. *N. Sane's* *Crash* ugly interactions with lighting.
Source: Toys for Bob, 2020.**

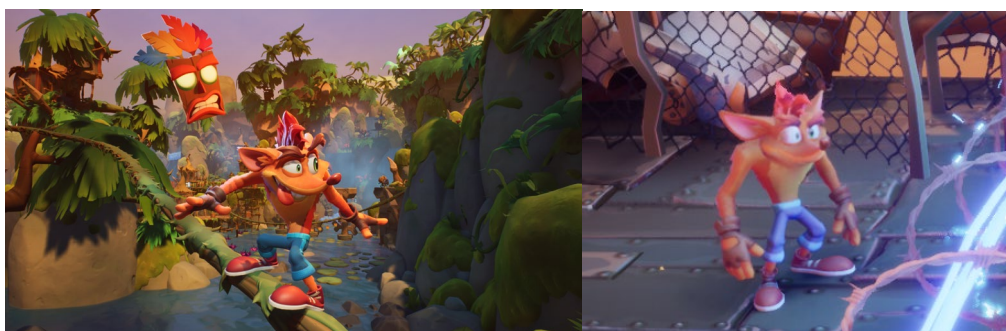


Figure 5. *Crash 4*'s *Crash* promo art and game screenshot.
Source: Toys for Bob, 2020.

The animation in *Crash 4* follows the constant of trying to emulate a cartoon feel. It proves to be quite effective in the poses, which are highly exaggerated and models were deformed, while remaining recognizable and appealing. Extreme poses are also well utilized, such as the subtle dip of *Crash*'s torso when he drastically changes direction. Timing is also well employed, with similar walk cycles conveying different sensations due to this factor. Once again, anticipations were sparingly used as they go against the precision platforming nature of the game.

4.2. Visual Design and Characterization

Crash's original design was created anthropomorphizing an eastern barred bandicoot while giving it visual features that were possible to discern and recognize on Playstation graphics. In the first sketches, *Crash* was supposed to be a wombat but this was changed during development. Despite using a higher resolution in the trilogy games compared to most other games on the console (320p instead of 240p), several design decisions were made to enhance gameplay and make it easy for players to distinguish *Crash* from the surrounding environment. *Crash*'s gloves are dark brown to contrast with the rest of his body and make his hands easily identifiable when he moves. His back has some spots for quicker identification of the character orientation. The size of facial elements such as the head and eyes were also defined to make them more visible during gameplay.

In *Crash 2* and consequently *Crash 3*, *Crash*'s model was altered. There was a reduction in the number of triangles in the model. This and the fact the developers were using a new engine crafted for the game, as Jason Rubin stated in an interview (1997), allowed for an increase in the number of character animations (Figure 6). This was always a priority for the developers as it was a way to show to the audience the personality of a character who didn't speak a word. That's a great way to make a mute main character. He had a disconnected look and a touch of insanity in his gaze due to the different sizes and shapes of his pupils and irises in each eye.

According to Takahashi and Andreo (2011), character's backstory is important for them to become deeper and have a complex personality, even if the character themselves may not be fully aware of it. The original *Crash 1* design document inside *The Crash Bandicoot Files: How Willy the Wombat Sparked Marsupial Mania* (2018), *Crash* started out as a "media monster." He was supposed to speak and reference various TV and movie tropes and actors, contorting every time he switched to another personality. As development progressed, his madness was toned down to maintain a charismatic role while remaining mute. Despite being laid-back and somewhat lazy, he

always showed readiness to spring into action. He consistently demonstrated high physical fitness, with his jumps and maneuvers executed without any apparent effort.



Figure 6. Crash 1's model and Crash 2 and 3's model.
Source: Naughty Dog, 2023, adapted.

N. Sane's Crash design using an unconventional workflow. They took into consideration all existing designs of the character, including American and Japanese promotional illustrations, concept art, and in-game models from the original *Crash Bandicoot* games up until the most recent one at the time, which was *Crash: Mind Over Mutant* (Radical Entertainment, 2008). After analyzing this material, they realized that the designs that people most identify as *Crash* and that evoke nostalgia are the designs from *Crash 1*, *2*, and *3*, so they used those designs as their main inspiration. From a marketing perspective, choosing to adapt the design of the best-selling games almost 1:1 is the safest choice as to attract the fans of the highest selling games (*Crash 1*, *2*, and *3*).

Next, they modeled a high-fidelity model based on the character from the second and third games. According to Turner (2020), they “wanted to bridge the gap between the original game's classic 32-bit visuals [...] by blending the low-poly style of Naughty Dog's original art with modern expectations to find an ideal point of maximum nostalgia”. They took care to update the model, giving it more structural integrity, such as making Crash's eyes fit better in his skull and considering a more flexible rig for animation (Figure 7). *N. Sane Crash's* colors are less saturated, especially his fur, gloves, and shoes. His body appears darker in most environments due to the strong lighting reacting to the model.



Figure 7. Crash 2 and 3's model compared with the N. Sane model by their basic shapes. Source: Vicarious Visions, 2017, adapted.

Crash's personality in *N. Sane* is very similar to the one in the original PlayStation games. He has the same poses and some new animations that fit perfectly with his carefree and slightly wacky personality. However, certain poses don't have the

same appeal and charisma due to the limitations of the model's rig, as seen in the spin-off game *Crash Team Racing Nitro-Fueled* (Beenox, 2019), another PlayStation remake, where this issue doesn't exist.

Crash 4 had a character design development process that involved creating conceptual artwork. The artists were tasked with drawing various facets of the character: versions inspired by the polygonal visuals of the original games, how *Crash* would look in different dimensions, different art styles or emphasizing different aspects of his personality, such as his craziness or mascot-like appearance (Neilson, 2020). After several iterations, Nicholas Kole was assigned to combine the best elements from all the approved previous explorations (Figure 7). The characteristics of the animal that inspired the character were given little consideration, as the original character design deviated significantly from it. To ensure a smooth transition from 2D design to 3D model, some previously drawn poses of the character in motion or interacting with an object were redrawn for the modelers to use as a reference.

The final result is a model that visually distances itself from the PlayStation era *Crash*, but it is an amalgamation of all the character's iterations. This is a strategy aimed at pleasing as many franchise fans as possible. For example, the soles of his shoes have footprint marks, a design aspect derived from his appearance in *Crash of the Titans* (Radical Entertainment, 2007). The two major changes in relation to the design of *Crash* from the early games are the color around his mouth and snout, which now matches the color of his belly fur, and the main color of his body being less reddish and more orangish. His proportions have been slightly adjusted but remain close to the original design. Although the size of his eyes is an improvement over the *N. Sane*, they are more exaggerated as players can quickly read them since the eyes are not heavily affected by shadows. The shapes used are aligned to convey a sense of dynamism. This is achieved through an alternation of sharp edges and curves throughout the design, creating a harmonious balance. The color palette is vibrant, with saturated colors reminiscent of the original visual style. This model reacts better to lights and shadows due to the texture of the model already emulating basic lighting, making *Crash* appear appealing even before entering the game engine.



**Figure 7. *Crash 4*'s *Crash* expression sheet art by Nicholas Kole.
Source: Nicholas Kole, 2021.**

Despite this design being more different from the original when compared to the *N. Sane*, the character portrayal was a great success in this iteration. When *Crash* performs his idle animation, his attitude was better captured. This is due to the type of animation used in this project, which has a faster pace compared to the *N. Sane*. In

various other situations, both in-game animations and cutscenes, all the aforementioned aspects of his personality from *Crash 1, 2, and 3* are present and emphasized. There was a concern to maintain *Crash's* appeal in all possible animations, favoring a quick interpretation of the poses. In cutscenes, there are rare occasions when one of *Crash's* eyes is hidden by his large snout. This could have been a problem for reading his expressions due to the size and position, but the animators took this into consideration.

5. Conclusion

In this article, the character redesign process in different games of the *Crash Bandicoot* franchise was analyzed, focusing on the redesign of the titular character. The study took into account the characterization and visual design of the character in both analyzed games and compared it with the same aspects in the first three games of the franchise. It can be summarized (Table 1) that the character redesign process has many aspects to be considered, such as target audience, current market trends, appeal, level of resemblance to previous designs, and the impact of the new art direction on the character's design.

Table 1. Analyzed aspects of Crash Bandicoot design and redesign processes in the original trilogy, N. Sane and Crash 4

| | Crash 1, 2 and 3 | N. Sane | Crash 4 |
|---------------------------|---|--|---|
| Game Art Direction | Illustrated and very colorful to help the player better read Crash and the environment around him | Recreate the original model but with realistic textures | Illustrated and stylized approach |
| Character Animation | Usage of vertex animation and cartoon-inspired | Usage of bone and vertex animation and cartoon-inspired but with slower pace with anticipations, accelerations, and slow decelerations compared to the Looney Tunes cartoons | Usage of bone and vertex animation and cartoon-inspired but with faster timing (closer to the Looney Tunes cartoons) and more exaggerated appealing poses |
| Model Texturing | Flat with simulated shadows | Realistic textures including fur and hair | Flat but illustrative textures with simulated shadows |
| Interaction with Lighting | The three games don't have lighting | Model reacts well but some instances don't, making it lose some appeal | Model reacts well maintaining appeal in various locations |

| | | | |
|------------------|--|--|---|
| Characterization | A mute yet energetic mutated eastern-barred bandicoot with a crazy yet charismatic personality | Personality very close to the original but doesn't look so crazy due to his animations and poses | Personality better captured than N. Sane's due to his animations and poses |
| Concept Art | Use of concept arts made by cartoon animation artists | Concept art wasn't used | Use of iteration and collaboration of multiple artists with different takes and finalizing using the best characteristics decided by the developers |
| Character Design | Simpler form and silhouette while using saturated and contrasting colors to make the character more readable | Using Crash 2's model as inspiration, a high-fidelity model was built blending the low-poly style of the original model with modern expectations | Amalgamation of all the character's iterations, changing some of his body proportions, basic shapes and a vibrant color palette, with a different main color tone |

It becomes clear that each approach has its benefits and drawbacks, both in terms of visual appeal and marketability. Whether with or without experimentation and iteration in the character redesign workflow, there will always be a foundation based on previous designs and explorations that may or not be used as a starting point. It is evident that neither of these examples took a lazy approach, as both development teams considered many aspects during this stage of the project. This only demonstrates the importance of a project having a strong purpose that makes decision-making easy and logical in the midst of the project. A project with a weak foundation struggle to be worked on and developed over the years.

The limitations of the comparison were within the parameters specified in Section 1. The objective was to analyze character redesign in terms of artistic aspects (silhouette, characterization, color palette, proportions, visual language) and the redesign process itself. It is understood that this has been accomplished. For future works, it would be interesting to validate the analysis conducted here with a professional concept artist or character designer in the gaming industry. Additionally, if suggested, expanding the comparison and research could be considered. Creating a methodology for the process of video game character redesign is beyond the scope of this paper.

References

- Gavin, A. & Rubin, J. (2018), The Crash Bandicoot Files: How Willy the Wombat Sparked Marsupial Mania. Dark Horse Books, 1st edition.
- GDC (2020). Game Art Remastered: From Crash, to Kerrigan, to Corley Motors. Available in: <https://youtu.be/6NSEzm0qy1s>. Accessed in 09 Jun. 2023.
- GDC (2021). Creating Newstalgia for 'Crash Bandicoot 4': Modernizing a Classic IP. Available in: <https://youtu.be/FwjW10ADGnE>. Accessed in 09 Jun. 2023.
- Isbister, K. (2006). Better Game Characters by Design: A Psychological Approach. CRC Cross. 1st edition.
- Naughty Dog. Crash Bandicoot 2: Cortex Strikes Back. Playstation, 1997. Available in: <https://youtu.be/bmnq7yedAzI>. Accessed in 09 Jun. 2023.
- Naughty Dog. Crash Bandicoot 3: Warped. Playstation, 1998. Available in: <https://youtu.be/HG-NRnGp3RA>. Accessed in 09 Jun. 2023.
- Naughty Dog. Crash Bandicoot. Playstation, 1996. Available in: <https://youtu.be/xK-h4M4Aetg>. Accessed in 09 Jun. 2023.
- Neilson, M. (2020), The Art of Crash Bandicoot 4 - It's About Time. Blizzard Entertainment, 1st edition.
- Neo Gamer – The Video Game Archive (2019). Making of - Crash Bandicoot Original Trilogy (1996-1998). Available in <https://youtu.be/WaQRVsZyduc>. Accessed in 09 Jun. 2023.
- Sheldon, L. (2004). Character Development and Storytelling for Games. Thomson Course Technology.
- Takahashi, Patrícia K. & Andreo, Marcelo C.. (2011). Desenvolvimento de Concept Art para Personagens. SBC - Proceedings of SBGames 2011. Available in: <https://www.sbgames.org/sbgames2011/proceedings/sbgames/papers/art/full/92122.pdf>. Accessed in 01 Jul. 2023.
- Toys for Bob. Crash Bandicoot 4: It's About Time. Activision, 2020. Available in: <https://www.crashbandicoot.com/crash4>. Accessed in 09 Jun. 2023.
- Vicarious Visions. Crash Bandicoot N.Sane Trilogy. Activision, 2017. Available in: <https://www.crashbandicoot.com/nsane-trilogy>. Accessed in 09 Jun. 2023.