

The “face” of the earth: Designing natural elements as characters in movement annotation game

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Introduction

Characters can be considered the "face" of game elements, as they embody the different narratives, challenges and learning opportunities present within a game [4]. Character design, intertwined with the game system with the game's system, helps maintain the balance between mechanics, narrative and player engagement, which is essential for developing meaningful gameplay [4][17].

Games with purpose are designed to engage the audience and solve computational problems in a playful, enjoyable way [2][7][12][18]. In this context, Motion Hollow is designed to crowdsource movement annotation on motion-captured data, encouraging players to tag qualitative aspects of movement while playing [5][6]. This work focuses specifically on the design of the main characters, the Elemental Empresses, integrating them as aesthetic and core gameplay elements.

Background

Natural elements as metaphors for movement

Metaphors and imagery are frequently used in movement practices to complement traditional educational methods, helping dancers better understand their actions and enhance their movement experience [9][11][13][15]. Natural elements like wind, water, fire, and earth are commonly used as metaphors in dance education, encouraging imagination and expression through specific movement qualities [1][14][16].

Natural elements in media

Natural elements like fire, water, earth, and wind are often used in media to represent dynamic forces and powers, and personality. For example, in *Avatar: The Last Airbender*¹ these elements mirror combat styles while also symbolising personality traits, with fire representing passion or aggression (Zuko), water calmness (Katara), earth steadfastness (Toph), and wind freedom (Aang). In *Pokémon*² and *The Legend of Zelda: Breath of the Wild*³ elements define different battle strategies and combat roles.

¹ [Avatar: The Last Airbender \(TV Series 2005–2008\) - IMDb](#)

² Pokémon (TV Series 1997–2023) - IMDb, Pokémon Video Games | Pokemon.com

³ The Legend of Zelda™: Breath of the Wild – Official Site

Methodology

Mapping motion capture segments, with movement qualities, through character personality inspired by nature elements

Motion Hollow combines Laban's 8 Basic Effort Actions [1][8][19] with the natural elements of Fire, Water, Wind, and Earth to create movement metaphors. These metaphors guide players in annotating dance movements by linking elemental traits to specific movement qualities and personality traits, enhancing the narrative and overall gameplay. In terms of aesthetic design, each Elemental Empress is a variation of the same "fairy" design, differing in shapes and colours tied to the four natural elements. After reviewing studies on element-associated colours [3][10], we selected those commonly used in media for a familiar visual experience. Their hairstyles are shaped to reflect forms of the respective elements.

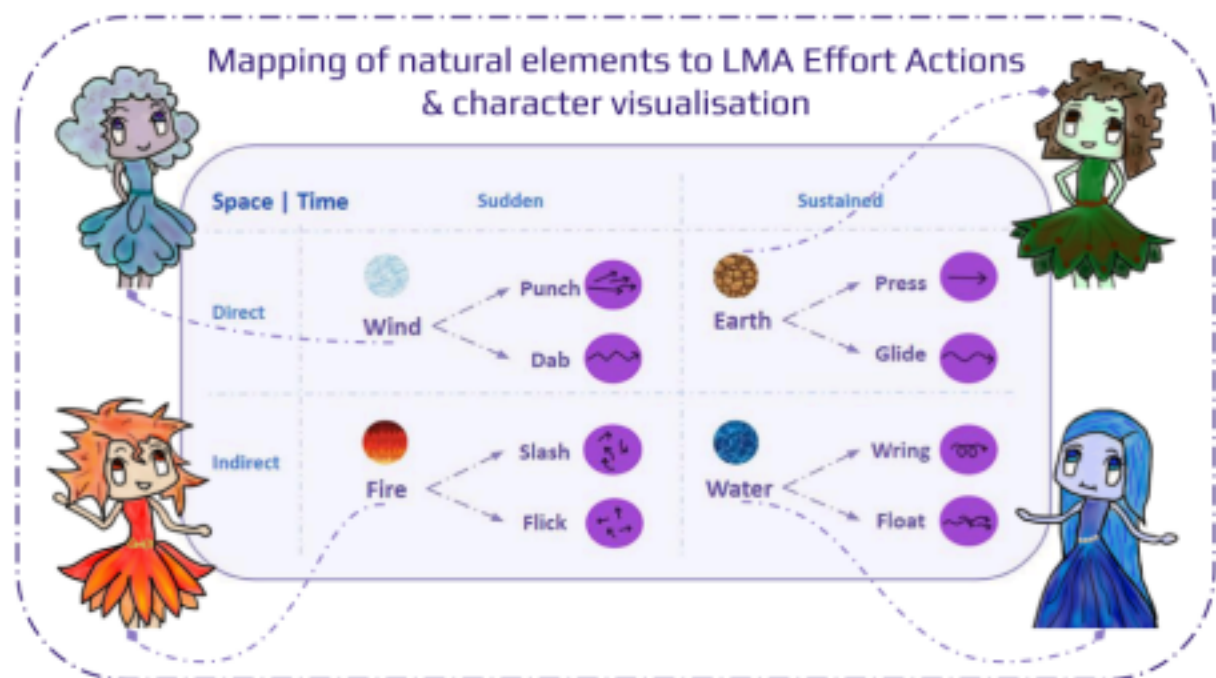


Figure 1: Mappings of natural elements to LMA Effort Actions and character design [5]

Integrating the empress characters as a mechanic

Following the game's storyline, players navigate a mystical world divided into four districts, each ruled by an Empress embodying the traits of one natural element. The player's goal is to restore balance by breaking a "neutrality spell" that has erased the Empresses' identities, except their ability to dance. The narrative choice also facilitates the creation of a neutral, non-intrusive environment for the annotation process. Empresses appear as playing cards, stored in the player's inventory, each assigned to a district and revealing its environment. The cards feature the Empress, elemental references, Effort Actions, and movement metaphors.

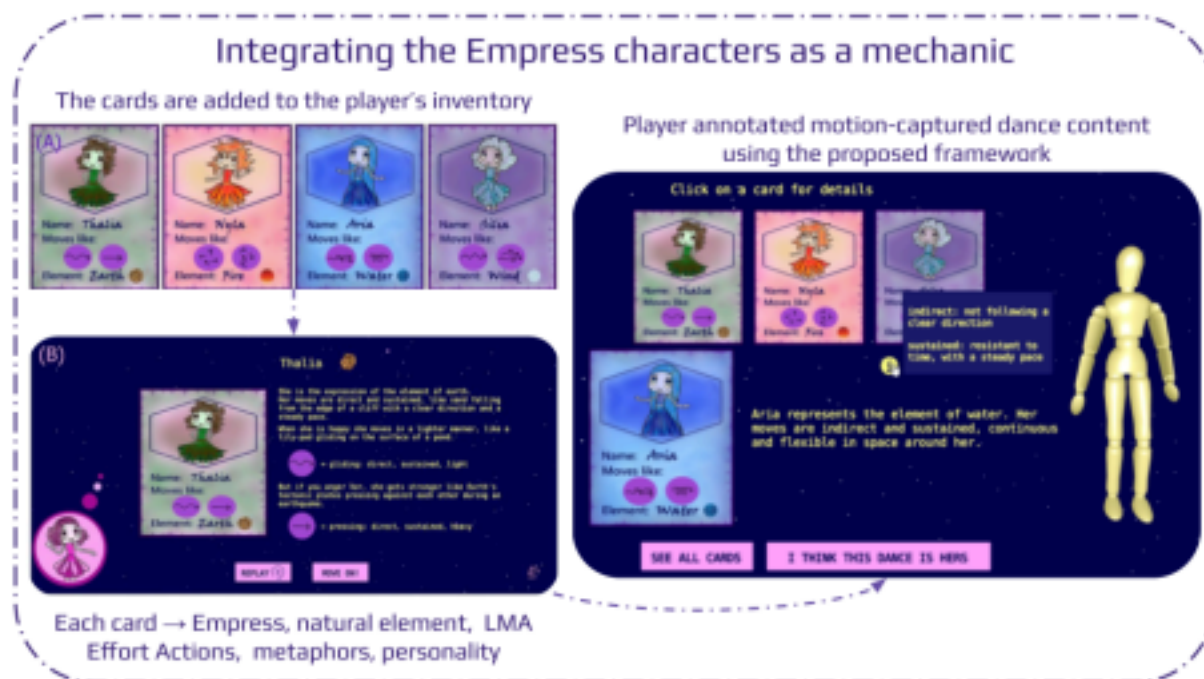


Figure 2: Empress cards as a core mechanic and game elements [5]

Conclusions and future work

By unifying character and environment design, narrative, and game mechanics within a GWAP framework, Motion Hollow creates an intuitive system for users to understand and annotate the qualitative aspects of movement. According to evaluation results [5], this integrated approach engages both novices and experts in interactive, narrative-driven dance analysis. Future steps include exploring more metaphors, character and narrative designs to test the framework's adaptability.

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