

Towards the Ontological Framing of the Digital Character: An Object-Oriented Ontology Perspective within Transmedia Narratives

Katerina Malisova
University of the Aegean
katemalisova@aegean.gr

Giorgos Nikopoulos
Baubo Productions
nikopoulos@bauboproductions.com

Spyros Vosinakis
University of the Aegean
spyrosv@aegean.gr

Katerina El Raheb
University of the Peloponnese
k.elraheb@go.uop.gr

Modestos Stavrakis
University of the Aegean
modestos@aegean.gr

Abstract

This paper proposes an ontological framework for designing digital characters in transmedia environments, drawing on Object-Oriented Ontology (OOO). Transmedia storytelling research has emphasized world-building and narrative logic, often treating characters as narrative proxies for continuity and identification. Few studies, however, have examined characters as autonomous entities with ontological depth, a reality that exceeds scripted traits and appearances while sustaining coherence through strategic interpretive openness. Likewise, their emergent interactive agency-the ways personality unfolds through interaction with players, audiences, or environments-remains underexplored. In OOO, objects (entities) possess two dimensions: a “real” dimension, referring to their withdrawn (inaccessible) essence, and a “sensual” dimension, referring to how they appear in encounters with other entities. Building on this distinction, we present the Withdrawn-Transductive-Sensual (WTS) framework, which conceptualizes digital characters as withdrawn (partially inaccessible) entities whose core coherence persists across media, while their affective and behavioral expressions surface selectively. This positions designers as mediators who craft thresholds of engagement rather than fully determining character identity. We situate the framework within the IMAGINE MOCAP project, which combines motion capture, wearable technology, and live coding to prototype personality-driven characters. Our contribution offers both philosophical reorientation and practical guidance for designing autonomous, affectively rich, and believable transmedia characters.

Keywords: Digital Characters; Transmedia Storytelling; Object-Oriented Ontology (OOO)

1. Introduction

Transmedia narratives are storytelling practices in which a narrative unfolds across several distinct media platforms to build a unified storyworld (Thon, 2016). The ontological analysis of digital characters within transmedia narratives focuses on how characters exist across multiple media platforms and their structural relationships within fictional universes. Existing theoretical frameworks in transmedia storytelling emphasize world-building, narrative consistency, and the distribution of story elements across media (Jenkins, 2006; Dena, 2009). While these models provide valuable insights into narrative structures, they rarely interrogate the ontological status of the digital character itself, overlooking its deeper complexity and the emergent, interactive qualities that unfold across multiple media forms (Rosendo, 2016). Likewise, approaches in character design often focus on surface-level attributes, such as visual style, dialogue, and gesture, without fully addressing the underlying structures that sustain character identity across contexts.

This oversight is problematic for several reasons. First, treating characters primarily as narrative proxies reduces them to vehicles for continuity or identification, leading to “flat” characters tied to plot functions rather than entities with depth that audiences can engage with across contexts. Second, it limits design innovation: without a systematic framework for conceptualizing characters as coherent-yet-flexible across media (games, animation, performance, etc.), adaptations risk becoming inconsistent, fragmented, or overly constrained. Third, it weakens audience engagement, since audiences connect more deeply with characters they perceive as affectively rich, and “real.” Finally, it neglects the interactive potential of characters in contemporary media forms such as games, VR, live coding (a performance method in which code is written and modified in real time to generate visuals, sound, or character behavior), and interactive installations, where characters are not only represented but encountered. If their emergent agency is overlooked, design misses the opportunity to let characters “act back” on audiences and co-create meaning.

This gap raises fundamental research questions: What constitutes the being of a digital character beyond its representation in any single medium? How do characters maintain coherence while allowing variability across platforms? And what role does the creative team play in mediating between the hidden dimensions of a character and its perceptible manifestations? To address these questions, this paper proposes an ontological reframing of the digital character through the lens of Object-Oriented Ontology (OOO). OOO, a branch of speculative realism, challenges anthropocentric and representationalist assumptions by positing that all objects, human and non-human, possess a withdrawn reality that exceeds any encounter or relation (Harman, 2011). Applied to digital character design, this perspective not only offers a new way of understanding characters but also a framework that can guide their creation. It suggests that characters are not reducible to their sensory appearances or to designer intention; rather, they exist as autonomous entities whose internal coherence remains partially inaccessible yet operative. For design practice, this means moving beyond the surface-level design of traits to a multi-layered process where creators actively shape hidden depth, define transductive mediations across media, and craft sensual encounters that audiences experience. This reframing has profound implications for transmedia design, positioning the character as an ontological actor with its own affective logic and interactional agency.

Building on this philosophical foundation, we introduce the Withdrawn-Transductive-Sensual (WTS) model, an ontological framework that conceptualizes the digital character as a layered entity spanning three zones: (1) a Withdrawn core of dispositional qualities, affective histories, and interpretive capacities; (2) a Transductive layer that mediates the translation of these qualities across media forms; and (3) a Sensual layer comprising the perceivable expressions that audiences and performers encounter. The contribution of this paper is twofold. First, it advances theoretical understanding by providing an ontological reorientation of the digital character, grounded in OOO. Second, it translates these insights into practical design guidance: moving beyond fixed typologies to support depth and flexibility, offering a systematic workflow for coherence and variability across media, and enabling the creation of believable characters that sustain audience engagement. In doing so, it opens new directions for both design research and professional practice in transmedia productions.

This paper is structured as follows: Section 2 reviews existing work on transmedia characters and identifies ontological gaps in current design frameworks. Section 3 presents the WTS model and its design principles for character designers in detail. Section 4 illustrates the application of these ideas through the IMAGINE MOCAP project, which employs motion capture, wearable technologies, and live coding to prototype digital character personalities, demonstrated via the proof of concept “MONO LOVE”. Section 5 discusses the broader

implications for design research. Finally, Section 6 concludes by summarizing key findings, highlighting open challenges, and outlining future directions for character design in transmedia narratives.

2. Related Work / Literature Review

2.1 Theoretical Frameworks for Transmedia Character Ontology

Research on transmedia character ontology demonstrates a heterogeneous theoretical landscape, with no unified framework dominating the field. Thon (2019) presents a theoretical framework for transmedia character analysis, focusing on how work-specific character instantiations relate within transmedia character networks through relations of redundancy, expansion, or modification. Lino (2020) examines the "ontological fibrillation" of transmedia storyworlds through digital technology, specifically analyzing how Augmented Reality contributes to the ontological materialization of The Walking Dead transmedia universe, updating narratological concepts like paratextuality within digital contexts. Typological or transtextual approaches have also been employed, focusing on how characters operate across texts and media platforms (Bertetti, 2014; Mora-Fernández, 2019). In the works of Blom (2020) and Wilde (2019) Japanese media mix and kyara models are utilized, where kyara denotes simplified, iconic character forms distinct from the narrative-bound *kyarakutā*. Moreover, Albertsen (2019) integrates cognitive and narrative theories with transmedia concepts.

Most studies focus on iconic named characters, including both Western figures (e.g., Batman, Lara Croft, Spider-Man, Sherlock Holmes) and Japanese examples such as Hijikata (Blom, 2020; Thon, 2019). Others explore kyara-like forms, emphasizing their mascot-like, non-narrative qualities (Blom, 2020; Wilde, 2019). A smaller subset of the existing literature examines participatory or fan-created characters through practices such as fan fiction, cosplay, and *dōjinshi*, as well as interactive or multimodal characters that challenge traditional narrative structures (Wilde, 2019; Tosca & Evans, 2022).

The above works reflect a spectrum of ontological assumptions, from stable identity models emphasizing continuity to performative and network-based models privileging mutability and audience agency. Methodological considerations over ontological modeling are often prioritized, without explicitly defining a character ontology (e.g., Kunz & Wilde, 2023). Most studies adopt network-based or template-based models, conceptualizing characters as interconnected entities or as abstract templates instantiated across different media (e.g., Blom, 2020; Thon, 2019; Thon & Pearson, 2022). However, the literature consistently notes a lack of comprehensive, media-sensitive frameworks that can reconcile these competing views (Thon, 2019; Thon & Pearson, 2022; Kunz & Wilde, 2023).

Our approach builds on this landscape but diverges in a crucial way. Whereas network-based and template-based models primarily describe how characters circulate across media, they often overlook the ontological depth of the character itself: the withdrawn qualities, dispositional tendencies, and affective logics that exceed any single instantiation. Likewise, while performative and audience-centered models emphasize mutability, they risk flattening the character into a relational node, without accounting for an underlying coherence that persists across contexts. By adopting Object-Oriented Ontology, we aim to address these gaps. OOO provides a vocabulary for conceiving characters as autonomous entities with both hidden (withdrawn) and perceptible (sensual) dimensions. This ontological grounding allows us to move beyond descriptive mappings of character networks and instead articulate a

design-oriented framework that accounts for how characters maintain coherence, transform transductively across media, and generate affective encounters with audiences.

2.2 Key Ontological Issues in Transmedia Characters

Research on transmedia characters consistently highlights that identity, coherence, and meaning are negotiated across multiple media platforms. While existing studies provide valuable insights into narrative structures and character typologies, they reveal persistent ontological challenges related to identity persistence, theoretical fragmentation, audience agency, and cross-media adaptation. These challenges point to gaps in our understanding of how characters maintain coherence while enabling variability, and how participatory and industrial processes shape their ontology.

Identity Persistence and Stability-Mutability Tensions

A central theme across literature is the challenge of maintaining character identity across media. Western-oriented frameworks often posit a core or template ensuring coherence (Thon, 2019; Thon & Pearson, 2022; Albertsen, 2019), whereas Japanese media mix models embrace discontinuity and flexibility, treating kyara as “networks of manifestations” or mediated performers not bound by strict narrative continuity (Blom, 2020; Wilde, 2019). Tosca and Evans (2022) introduce the “wheel of character” metaphor, where a stable center of traits interacts dynamically with interpretive communities. These models collectively highlight the unresolved ontological gap between fixed essence and performative mutability, that is, between viewing characters as entities with a stable underlying identity and understanding them as mutable performances shaped by media and audiences. This gap is central to our inquiry, since without a framework that can reconcile persistence with transformation, designers risk either flattening characters into static templates or fragmenting them into disconnected manifestations.

Theoretical Fragmentation and Lack of Unified Models

Several scholars critique the overgeneralization of character theories. Thon (2019) and Thon & Pearson (2022) argue for differentiating local, transmedia, networked, and template-based character types rather than assuming universality. Bertetti (2014) and Mora-Fernández (2019) stress that transtextuality and transmediality complicate typological frameworks, rendering them provisional and context-dependent. Despite calls for media-conscious approaches (Kunz & Wilde, 2023), literature lacks a consensual model that captures both narrative-bound characters and performative, participatory forms. For our work, this fragmentation highlights the need for a unifying ontological framework that integrates multiple perspectives while remaining sensitive to media-specific affordances.

Agency, Co-Creation, and Participatory Cultures

Studies also examine audience agency in shaping character ontology. Blom (2020), Tosca and Evans (2022), and Wilde (2019) document how fans contribute to character identity through practices like fan fiction, cosplay, and remix culture, often challenging industrial authority. These participatory interventions blur boundaries between canonical and non-canonical instantiations, introducing ontological ambiguity (Thon, 2019; Thon & Pearson, 2022; Albertsen, 2019). While such practices demonstrate the importance of audience creativity, they also reveal the absence of frameworks that explain how character autonomy and audience agency interact. This motivates our focus on an ontological model that

acknowledges characters as more-than-narrative entities capable of sustaining coherence while engaging co-creative audiences.

Cross-Media Ontological Inconsistencies

Research highlights adaptive transformations across media, such as redundancy, expansion, modification, and re-gendering (Thon, 2019; Thon & Pearson, 2022; Albertsen, 2019; Blom, 2020). While some mechanisms reinforce a unified character identity, others underscore medium-specific reinterpretations and audience-driven reconfigurations (Wilde, 2019; Tosca & Evans, 2022). These findings collectively indicate that character essence is often contingent, shaped by industrial priorities, cultural norms, and participatory dynamics. For design research, this underscores the necessity of a model that can conceptualize both the stability of characters and their media-specific variability without collapsing one into the other.

2.3 Synthesis and Limitations in Current Research

Overall, the literature on transmedia characters spans network- and template-based models, typologies rooted in transtextuality/transmediality, and Japanese media mix/kyara approaches. Several studies adopt network or template conceptions, including Thon (2019), Thon & Pearson (2022), Albertsen (2019), Blom (2020), and Kunz & Wilde (2023); three deploy typology/transtextuality/transmediality (Bertetti, 2014; Mora-Fernández, 2019; Thon & Pearson, 2022); two examine media mix/kyara (Blom, 2020; Wilde, 2019); one mobilizes cognitive–narrative–transmedia theory (Albertsen, 2019); and three foreground methodological issues rather than explicit ontology (Kunz & Wilde, 2023; Tosca & Evans, 2022; Rosendo, 2016). Empirically, several studies focus on iconic named characters (e.g., Batman, Lara Croft, Spider-Man, Sherlock Holmes, Penny Dreadful figures, Hijikata) (Thon, 2019; Albertsen, 2019; Blom, 2020), two on kyara/mascot types (Blom, 2020; Wilde, 2019), one on fan/participatory instantiations (Tosca & Evans, 2022), one on multimodal/interactive or non-fictional characters (Rosendo, 2016), and two on general typologies (Bertetti, 2014; Mora-Fernández, 2019). Across these works, recurring ontological questions include network/template/typology (seven studies), identity and coherence (five), audience agency (four), recognizability/mutability (four), discontinuity/complexity (three), and performativity/engagement/interpretation (three). One study (Kunz & Wilde, 2023) is explicitly methodological.

Taken together, prior research surfaces core issues such as identity persistence, typological fragmentation, audience agency, and cross-media variability. Yet, it stops short of offering a comprehensive ontology that explains how characters remain coherent while transforming across transmedia contexts. Existing frameworks either emphasize stability at the expense of mutability or celebrate performativity and audience agency while neglecting deeper ontological grounding.

Our contribution differs in two key respects. First, the Withdrawn-Transductive-Sensual (WTS) model introduces an ontological layering absent in previous accounts: the Withdrawn dimension (hidden depth), the Transductive dimension (cross-media operationalization), and the Sensual dimension (perceivable expressions). Second, it is not only descriptive but design-oriented, offering principles that guide creators in sustaining coherence, enabling variability, and cultivating affective richness across platforms. In this way, WTS complements and extends existing research by bridging philosophical ontology with practical design methodology.

3. Conceptual Framework: Withdrawn-Transductive-Sensual (WTS) Model

3.1 Ontological Foundation of the WTS framework

According to OOO, objects are both autonomous and withdrawn. Objects are autonomous as they exist independently of other objects and of human perception. An object is not reducible to its relations, functions, or appearances; it has its own reality. Moreover, objects are withdrawn as their true essence is never fully accessible to anything else (including humans or other objects). Any interaction only touches a translation or profile of the object, never its complete being. So, autonomy refers to existence (objects exist in their own right), while withdrawal refers to inaccessibility (their essence is never fully revealed). In Graham Harman's terms, Autonomy means ontological independence and Withdrawal means epistemological limitation and ontological depth (Harman, 2011).

At the core of the WTS model lies the OOO distinction between real objects and sensual objects (Harman, 2011). Real objects refer to the withdrawn essence of an entity, its internal properties, dispositions, and potentialities that remain inaccessible to other entities. Sensual objects, by contrast, denote the appearances of an entity, how it manifests in encounters through qualities, gestures, and expressions. Applying this to digital characters, we conceptualize:

- The Real/Withdrawn dimension as the character's internal coherence: its affective logic, dispositional traits, and latent capacities that are never fully disclosed to the audience.
- The Sensual dimension as the experiential layer: the symbolic (visual, auditory, and behavioral) expressions that emerge in interaction and can vary across media contexts.
- Between these two zones lies what we term the Transductive dimension, a mediating zone where the character's withdrawn properties undergo selective translation from character designers into sensual expressions through performative, procedural, and algorithmic operations. We consider this layer an active zone of transformation, where thresholds of encounter are designed and negotiated.

In transmedia and digital character contexts, multiple agents interact with the character, such as audience (viewers, readers), players, character designers (the ones crafting thresholds and expressions) and performers (in live coding, wearables or motion capture, shaping the sensual layer). Performers may operate through motion capture or through practices such as live coding. Particularly in live coding contexts, coding itself becomes part of the performance, shaping how the character manifests in the sensual layer. Rather than treating characters as fixed narrative constructs or fully knowable entities, the WTS model positions them as ontological actors whose identities are partially withdrawn, emergent, and co-constructed through interaction.

From this perspective, technologies such as motion capture, wearable sensors, and live coding can be situated within the WTS framework not as external add-ons but as transductive mediators. Motion capture enables translation by capturing corporeal movement and mapping it into digital form. Wearables contribute by introducing physiological or environmental data, expanding the range of expressive behaviors across transductive and sensual layers. Live coding emphasizes procedural variability, allowing performers to reconfigure behavioral logic and audiovisual outputs in real time. These technologies thus complement the WTS framework by operationalizing the translation of withdrawn character qualities into perceptible expressions. At the same time, each introduces specific constraints - for instance, motion capture privileges gesture over affective nuance, while live coding highlights

variability over continuity - underscoring the importance of design choices in balancing technological affordances with the character's withdrawn essence.

3.2 The three dimensions of WTS framework

The Withdrawn dimension: Ontological Autonomy and Internal Logic

The Withdrawn dimension corresponds to the character's essence, which is never fully accessible. It includes personality traits, memories, emotions, and logical structures, elements that anchor identity but remain ontologically withdrawn, beyond complete representation in any single medium. These qualities give depth and coherence but resist total capture, ensuring that the character always exceeds its expressions. For both character designers and audiences, this dimension is never directly encountered. Its role is not to reveal itself but to anchor the possibility of encounter, providing depth that cannot be exhausted by any single representation. Every sensual manifestation and systemic mediation points back to this opaque interiority, hinting at what can never be fully shown.

The character's withdrawn essence can be paralleled to a sphere, the exact contents of which are never fully revealed. Each script crafted by the screenwriter for a different medium functions like a thread that penetrates this sphere, revealing only a partial glimpse of the character's inner essence. No single narrative can exhaust the character's identity; instead, each script discloses a distinct facet of its personality, motivations, and qualities, shaped by the affordances and conventions of that medium. Within the script - fundamentally a textual and symbolic representation - we do not encounter the character itself, but a mediated interpretation of its being. This representation encodes aspects of the character's story and traits through narrative structure, dialogue, and symbolic language, offering audiences a way to interpret who the character is. However, because the character's ontological depth always exceeds any single representation, each narrative remains incomplete, leaving gaps, ambiguities, and silences. It is precisely this partial revelation that enables interpretive openness and sustains the sense of mystery that makes the character believable and compelling across transmedia contexts.

The Withdrawn dimension also encompasses the conceptual and symbolic inheritance of a character - its mythic, archetypal, or cultural origin - which exists prior to and beyond any individual instantiation. This includes not only traits shaped by a script, but the broader Idea that underlies the character's very being. For instance, a centaur character designed for a scene is not created in isolation; it carries with it the entire symbolic weight of what a centaur has historically represented - hybridity, liminality, wildness fused with reason - even if only a small fragment of this is activated in performance. The writer selects a narrative slice from this symbolic core; the director interprets and frames it; and the designer materializes it into gesture, motion, and presence. At every stage, this deeper ontological reservoir remains withdrawn yet active, shaping what becomes manifest without ever being fully disclosed. The character, then, is not just what it does, but what it draws from - a persistent symbolic depth that informs even its most superficial behaviors.

Character designers engage this layer indirectly, through acts of speculation and negotiation, deciding which aspects of the withdrawn essence may surface in transductive processes. In doing so, they create ontological tensions, balancing concealment with expression, stability with transformation. The withdrawn layer thus grounds the character's identity as something more-than-its-appearance, sustaining a sense of mystery and inexhaustibility that keeps encounters open and meaningful.

The Transductive Dimension: Mediation and Thresholds of Encounter

Here, the character becomes operational through technical and performative processes, such as motion capture, live coding, AI-driven behaviors (e.g., procedural learning, affective response systems, or generative movement synthesis models), or algorithmic rules (e.g., decision trees, behavioral constraints, or procedural animation systems). The Transductive dimension mediates between the withdrawn essence and the sensual experience, translating ontological potential into actionable form. It serves as the threshold where potential becomes perceptible through rules, constraints, and negotiation. Here, character designers / directors embed structures, algorithms, and dramaturgical principles that determine what remains concealed and what is revealed. It is also here that performers intervene through embodied acts of expressive acting, where gestures, improvisation, and performative intent activate the mediating rules to generate expressive language and aesthetic transformation. The audience encounters the residue of these transductions, a crafted appearance shaped by layers of intentionality, automation, and interpretive potential. Live coding, for example, allows performers to modify generative algorithms in real time, altering how the character appears and behaves; motion capture captures bodily rhythms and translates them into digital form. The audience never encounters the withdrawn core directly but the residue of these transductions - a crafted presence shaped by guided performative structures that balance intention, automation, and improvisation.

Importantly, the transductive dimension is not considered static; it shifts as creative choices, performative acts, and interpretive engagements unfold. For design practice, each encounter across this threshold is therefore not a fixed translation but a continuous becoming, a transformative interplay of agency, materiality, and meaning-making.

The Sensual Dimension: Expression and Interpretive Play

The Sensual dimension is the domain of appearance, the visible, audible, and interactive expressions through which audiences, performers, and systems co-construct meaning. Here, the character becomes perceptible, presenting a surface of signs, gestures, and affects that invite interpretation. It is the space of immediacy, yet never self-sufficient: every sensual expression is haunted by what lies beyond, pointing toward the withdrawn essence through its incompleteness.

This is also the site of performative and participatory encounters. For audiences, it is the primary interface where narrative, aesthetics, and interaction converge. For performers, it is a responsive surface activated through motion, voice, or live coding practices that modulate appearances in real time. Meaning here is fluid, open-ended, and co-produced, emerging from the interplay of perception, context, and systemic mediation.

Ultimately, the sensual layer is where believability and affective presence are most directly felt. Yet these impressions are always partial, haunted by what remains concealed. This tension between expression and withdrawal is precisely what sustains the vitality of the transmedia character.

3.3 The Distribution of creative roles across WTS layers

Within transmedia productions, the roles of Scriptwriter, Character designer, Interaction designer, Director, Performer, Player and Audience operate as interconnected agents of meaning-making. While their contributions differ, each role can be understood in relation to the three ontological dimensions of the WTS framework.

In the Withdrawn dimension, the scriptwriter carries primary responsibility. By defining the core ontological essence of a character - its dispositional logic, narrative elasticity, and symbolic inheritance - the scriptwriter establishes a foundation that guides but never exhausts the character's identity. Their work preserves ambiguity, leaving interpretive gaps that allow different instantiations of the character to remain connected to a deeper essence.

In the Transductive dimension, responsibility is distributed among the director, character designer, interaction designer, performer and motion or choreography designer. The director orchestrates emergent behaviors and adaptive dynamics across media, ensuring coherence in how the character shifts between platforms. The character designer contributes by creating visual and structural affordances - shaping models, gestures, and stylistic consistencies - that allow the character to evolve while retaining recognizability. The interaction designer focuses on rules, procedures, and interactive mechanisms, enabling responsive engagement and situating the character within systems of interaction. The performer activates this layer through embodied gestures, improvisations, and interventions that realize the character's adaptability in practice. Finally, the motion or choreography designer translates the character's internal logic of behavior into kinetic form, breaking actions down into expressive sequences and constructing a movement language that aligns with the character's emotional tone, personality, and narrative role. This role bridges the expressive and technical dimensions of performance, ensuring that motion not only fits the ontology of the character but also respects the medium's unique affordances and sensory characteristics. Together, these roles mediate the translation of hidden essence into operational logics.

In the Sensual dimension, the character becomes available to perception and interpretation. Here, the character designer again plays a central role by shaping perceptual cues - visual, auditory, and haptic - that signal personality and invite interaction. The interaction designer enhances this encounter by crafting experiential and affective qualities that deepen the sense of emotional presence (Bolter & Grusin, 1999). Performers contribute through expressive behaviors that mediate affect and embodiment, while players and audiences engage directly, interpreting signs and co-creating meaning through their participation (Boehner et al., 2007).

Table 1 summarizes this distribution of responsibilities across the three WTS dimensions, mapping the specific contributions of each role in the creative ecosystem of transmedia character design.

WTS dimension	Key Roles/Agents	Responsibilities
Withdrawn (Ontological Core)	Scriptwriter	- Defines the core ontological essence of the character (OOO: withdrawn nature) (Harman, 2018). - Maintains ambiguity and narrative elasticity to allow interpretive openness (Eco, 1989; Ryan, 2013).

Transductive (Mediation)	Director, Character Designer, Interaction Designer, Performer, Motion / Choreography Designer	- Director: Orchestrates emergent behaviors and adaptive dynamics across media, coordinating the overall transmedia performance and flow (Simondon, 1958). - Character Designer: Creates visual and structural affordances to support character evolution across media (Manovich, 2001). - Motion / Choreography Designer: Translates dispositional logic into kinetic language, constructing expressive movement sequences that align with the character's emotional tone, personality, and narrative role, while respecting the unique affordances of each medium (Moen, 2006). - Interaction Designer: Designs rules, procedures, and interactive mechanisms, ensuring responsive, meaningful engagement across contexts (Löwgren & Stolterman, 2004). - Performer: Executes actions and behaviors that realize character evolution according to transductive rules, ensuring adaptability in performance contexts (Simondon, 1958).
Sensual (Encounter & Expression)	Character Designer, Interaction Designer, Performer, Player, Audience	- Character Designer: Shapes perceptual cues (visual, auditory, haptic) to suggest interactions. - Interaction Designer: Crafts experiential and affective qualities, enhancing emotional presence and embodied engagement (Bolter & Grusin, 1999). - Performer: Enacts expressive behaviors that mediate affect and presence. - Player & Audience: Engage interpretively and embodiedly with the character (Boehner et al., 2007).

Table 1. Distribution of creative roles and responsibilities across WTS layers.

Among the roles outlined above, this paper does not single out one profession but addresses the creative team as a whole. Scriptwriters, directors, character designers, interaction designers, performers, players, and audiences all contribute differently to how digital characters take shape across the Withdrawn, Transductive, and Sensual dimensions.

To support this collective process, we provide practical guidance for the creative team in designing digital characters with personality across the transmedia contexts explored in the IMAGINE project - Games, Animation, Interactive Media, and Interactive Networked Environments. Our guidance draws directly from the WTS framework, offering a structured approach for the team to work in concert, ensuring that characters remain coherent in identity while adaptive in expression. The framework thus supports collaborative design practice by aligning philosophical insight with actionable strategies for creating believable, expressive, and multi-layered characters across diverse platforms.

3.4 Design Principles and Philosophical Practice

This subsection presents a set of design principles and practical guidelines for creative teams working in transmedia productions. Grounded in the WTS framework and informed by Object-Oriented Ontology, transmedia storytelling theory, and performance studies, these principles translate philosophical insights into actionable strategies for practice. They are intended to guide the collaborative creation of digital characters with personality, ensuring coherence of identity, adaptability across media, and richness of experiential engagement.

We articulate three overarching principles:

- *Ontological Depth*: Characters possess an inexhaustible essence that remains partially withdrawn, beyond any single representation or narrative function. Designers should resist reducing characters to predefined attributes or closed arcs, instead preserving mystery, opacity, and variability to sustain interpretive openness.
- *Transductive Mediation*: Direct replication across media undermines believability. Characters should retain core identity while transforming to match each medium's affordances. Designers operate as threshold architects, crafting the mediations through which code, performance, and audience input converge.
- *Sensual Multiplicity*: Characters are experienced through sensual qualities, e.g. appearance, sound, movement, and interaction. To make them believable, designers must craft multiple sensory and affective layers that resonate across media.

These three principles are best understood not as isolated guidelines but as interdependent forces. Ontological Depth anchors coherence, Transductive Mediation translates hidden potential into systemic and performative logics, and Sensual Multiplicity ensures that characters resonate affectively across media encounters. Only when these principles operate together can a digital character sustain believability, adaptability, and richness across transmedia contexts. Figure 1 illustrates this interdependence as a triangular schema, where each principle occupies a corner and their convergence at the center produces the goal of a Believable Transmedia Character.

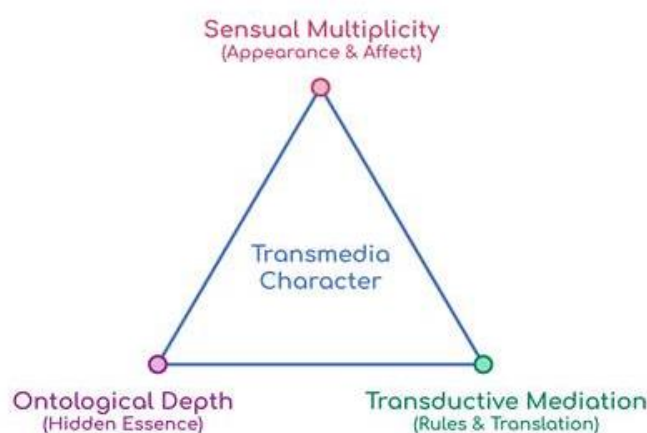


Figure 1. WTS Design Principles for Transmedia Characters.

Building on these principles, we developed medium-specific guidelines for Games, Animation, and Interactive Media/Networked Environments. These guidelines are not tied to a single case study but are derived conceptually from the WTS framework and informed by established practices in media design. They are presented here as generalized tools to support

creative teams in sustaining character coherence, supporting adaptive behaviors, and crafting multi-layered experiential encounters. Their practical application is further demonstrated in Section 4, through the IMAGINE MOCAP project.

Each table links the three core principles to the corresponding WTS layer and provides concrete design actions. In this way, they bridge the philosophical grounding of WTS with practical strategies that can be adopted by designers, directors, and performers working across different media contexts.

Table 2 demonstrates the application of the WTS framework and its design principles in the context of Games, providing practical guidance for creative teams to create coherent, adaptive, and personality-rich transmedia characters.

Principle	WTS Layer	Practical Guidance
Ontological Depth	Withdrawn / Transductive / Sensual	- Use parametric personality models (e.g., confidence, empathy). - Embed ambiguity in backstory and behaviors. - Maintain core identity across levels, allow surface variation.
Transductive Mediation	Transductive	- Keep core traits invariant, allow adaptive behaviors. - Ensure emergent behaviors remain consistent. - Map personality to gameplay mechanics.
Sensual Multiplicity	Sensual	- Use visual, audio, and haptic feedback. - Design interactions that elicit empathy. - Ensure personality cues are clear and readable.

Table 2: Practical Design Guidance for Creative teams in Games

In Table 3, we illustrate how the WTS framework and its design principles can be applied to Animation, providing creative teams with actionable strategies to preserve identity, support expressive behaviors, and communicate personality across sequences.

Principle	WTS Layer	Practical Guidance
Ontological Depth	Withdrawn / Transductive / Sensual	- Preserve recognizable traits (silhouette, color, style). - Allow expressive contradictions. - Introduce narrative gaps for interpretation.

Transductive Mediation	Transductive	- Define rules for motion, gesture, and expression. - Allow exaggeration without losing personality. - Use cross-media visual cues for coherence.
Sensual Multiplicity	Sensual	- Apply expressive exaggeration (timing, squash/stretch). - Maintain consistent aesthetic style. - Communicate emotional states clearly.

Table 3: Practical Design Guidance for Creative teams in Animation

Table 4 presents the application of the WTS framework and its design principles in Interactive Media and Networked Environments, guiding Creative teams to craft adaptable, responsive, and multi-layered characters that engage audiences in real-time interactions.

Principle	WTS Layer	Practical Guidance
Ontological Depth	Withdrawn / Transductive / Sensual	- Create modular behavior components for real-time adaptation. - Preserve interpretive openness during improvisation. - Allow personality to emerge dynamically.
Transductive Mediation	Transductive	- Embed adaptive behaviors responding to audience/players. - Reference traits/actions from other media. - Ensure transmedia identity coherence.
Sensual Multiplicity	Sensual	- Design embodied cues (gesture, posture, spatial positioning). - Integrate multimodal feedback (visual, auditory, haptic). - Make audience actions trigger perceivable character responses.

Table 4: Practical Design Guidance for Creative teams in Interactive Media and Networked Environments

In the following section, we demonstrate the practical application of the WTS framework and its design principles through a proof of concept, showcasing how they inform the design of transmedia characters in practice.

4. Case Study: IMAGINE MOCAP

4.1 Description of IMAGINE MOCAP project

IMAGINE MOCAP is a research initiative exploring how motion capture (MoCap), wearable technologies, and live coding practices can converge into a unified methodology for designing personality-driven characters in transmedia contexts. The aim is to establish a comprehensive design pipeline that captures, translates, and expresses personality traits across multiple digital and hybrid media, including animation, interactive installations, and games. Central objectives of the project include: (a) Identifying nonverbal behavior patterns linked to personality and determining how they can be effectively captured, analyzed, and represented using different technologies; (b) Mapping these behavioral patterns to expressive parameters for characters, maintaining interpretive openness while ensuring ontological depth; (c) Developing a database of personality-driven movement signatures, accessible for both real-time and non-real-time applications; (d) Designing a workflow where each aspect of character personality (e.g., gestures, affective dynamics, corporeal rhythms) is captured through the most effective method and expressed in the most suitable medium; and (e) Producing a professional transmedia project as a proof of concept, demonstrating the scalability and creative potential of the integrated methodology.

4.2 Application of the WTS Model through the proof of concept MONO LOVE

The proof-of-concept project MONO LOVE, designed and directed by Giorgos Nikopoulos (IMAGINE MOCAP Research Team), provided the testbed for applying the WTS framework as a design methodology. The project revolves around two centaur characters whose hybrid nature embodies tensions of animality and humanity, vulnerability and power, intimacy and violence. Their shared nightmare becomes a site where personality traits, symbolic motifs, and corporeal dynamics are expressed across media. Developed through Blender (cinematic animation), Unity and Godot (interactive embodiment), and OSC/SuperCollider (real-time sonification), MONO LOVE illustrates how the three WTS principles - Ontological Depth, Transductive Mediation, and Sensual Multiplicity - can be systematically implemented in the creation of transmedia characters.

Ontological Depth

Ontological depth was established by defining the centaurs as mythic and dispositional beings rather than surface assets. The script articulated key tensions: the male centaur's confidence undermined by jealousy and fragility, and the female centaur's strength coupled with demands for recognition. Symbolic motifs including the mantis (eros and predation), the birds (otherness and intimacy), the tortoise body (endurance), and hair-as-bond (constraint) served as parametric anchors of personality. These motifs functioned as latent parameters and synthesized into a personality map, which functioned as a portable reference across design stages, ensuring that the characters' identities carried interpretive openness across media rather than being reduced to fixed typologies (Figure 2).

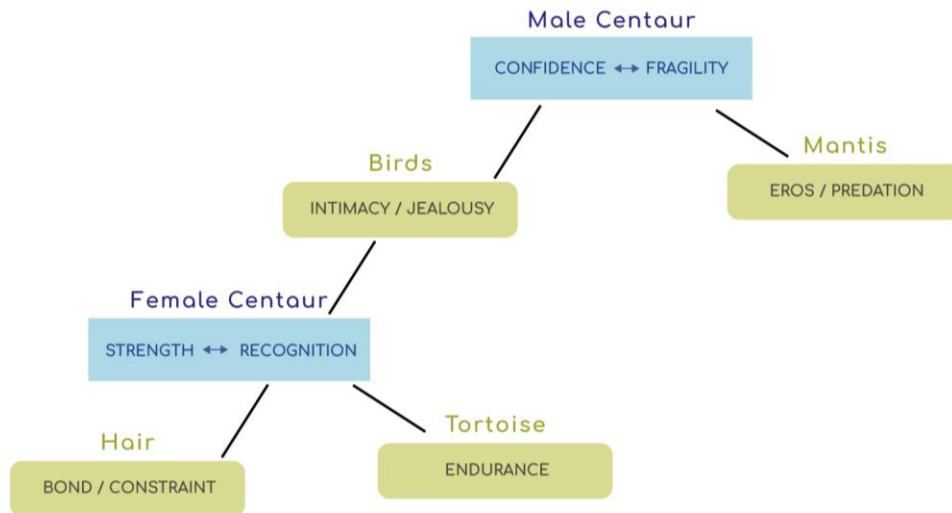


Figure 2. Symbolic Motifs as Parametric Anchors of Personality.

Coherence across divergent instantiations was thus achieved not through static traits but through symbolic tensions that allowed the heroes to remain recognizable while adapting fluidly. In animation, the mantis metaphor emphasized predation and vulnerability; also, the birds highlighted intimacy and jealousy in contradiction to the interactive environments where they have an assisting role; in live coding, hair-as-bond became a constraint enacted through sonic modulation. By grounding identity in symbolic tensions that varied depending on the medium, rather than in closed typologies, the design preserved interpretive openness, sustained a sense of mystery, and provided designers with a reservoir of expressive potential that could be remapped across media.

The creator reflected that this approach maintained plurality on personality aspects of each character, but also a balance between recognizability and variability, ensuring that each adaptation revealed a different facet of the characters without collapsing their ontological depth.

Transductive Mediation

Transductive mediation was achieved through workflows that translated withdrawn qualities into operational forms (Figure 3). A generic humanoid rig functioned as a universal grammar, enabling Rokoko motion capture to be retargeted in Blender and adapted for Unity, Godot, and SuperCollider. This structure also supported creative remapping: gestures performed on a humanoid could be expressed as a centaur's gait, a bird's flight, or the grounded weight of a tortoise body. Motion features such as tempo and tremor were streamed via OSC into SuperCollider, where they modulated sonic density, spatialization, and timbre. These processes positioned rigging and streaming not only as technical solutions but as ontological translators, shaping how jealousy, desire, or hybridity became perceptible in different media.

The outcome was that workflows acted both as technical pipelines and ontological translators, shaping how jealousy, desire, or hybridity became perceptible in different modalities. Rigging, streaming, and retargeting preserved continuity while enabling reinterpretation, allowing the same expressive kernel to shift fluidly between animation, interaction, and sonification. Each character, through this transmedia pipeline, reintroduced itself at every stage of the process, highlighting different aspects of its expressive toolset to the animator, performer, dancer, or director depending on the level of mediation involved.

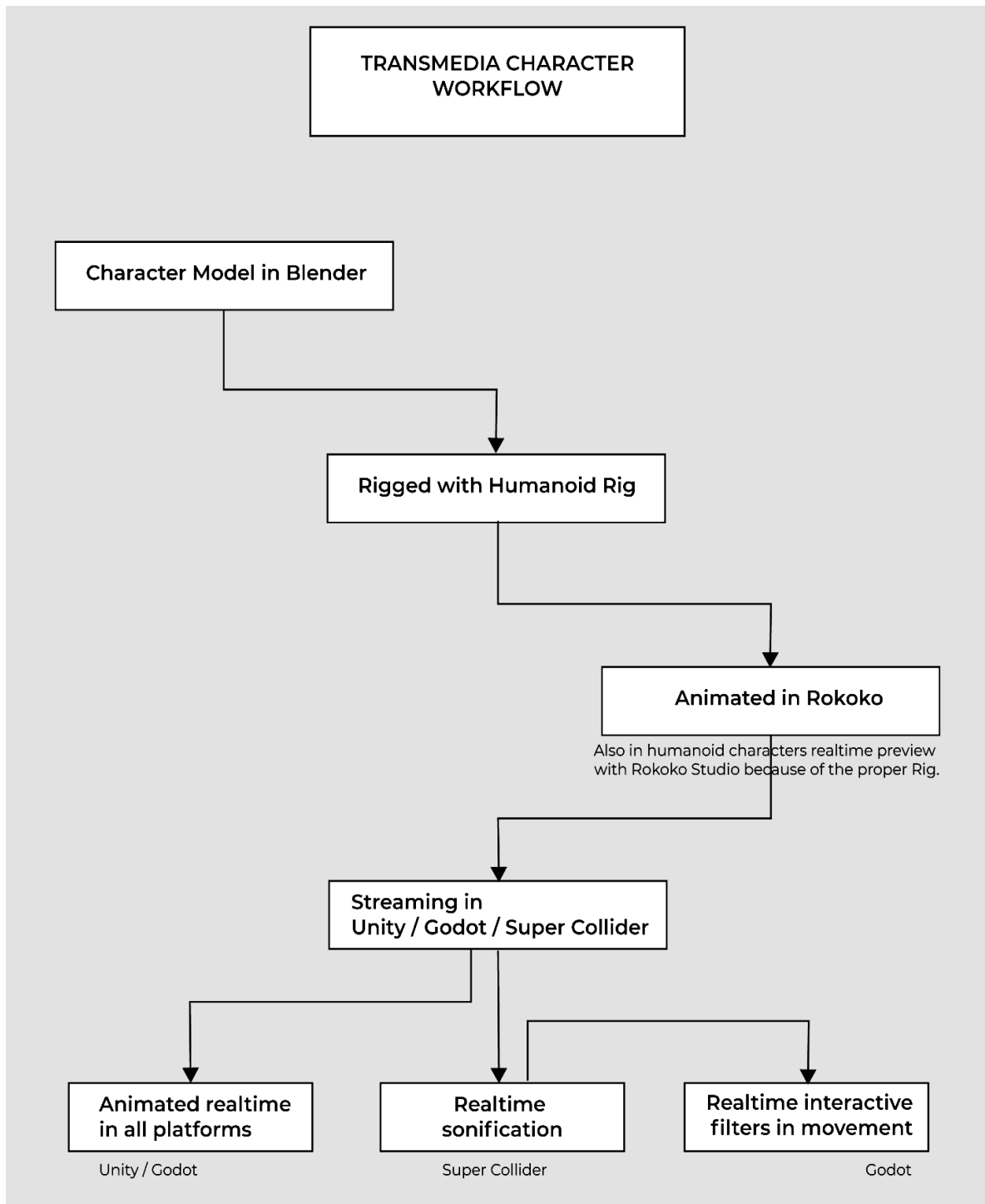


Figure 3. Transmedia character workflow

For example, the Birds - when animated during the beach scene with real-time sound feedback - generated a different expressive and affective response than when animated solely through motion capture and visual preview in the game environment. Similarly, animating the male hybrid centaur within Rokoko Studio's character-only preview elicited a distinct expressive focus compared to performing the same character within the full wearable and sound-augmented setup. These differences were not hierarchically richer or simpler, but instead revealed how overlapping media affordances open varied pathways for expression and interpretation.

The creator reflected that this process foregrounded mediation as a creative negotiation, where rules and pipelines became active sites of meaning-making rather than passive tools.

Sensual Multiplicity

Finally, Sensual multiplicity was realized in the perceptible encounters staged for audiences. In the beach sequences (Figure 4), the female's openness to the birds contrasts with the male's jealousy and instability, staging affect through blocking and proxemics. In the game environment, this relational staging becomes spatially explicit: the Player Character (PC), named EGO, appears on the left screen facing both the Object of Desire (ALTERO) in the central screen and the Birds (OTHER) on the right. This triadic composition externalizes the internal dynamics of attraction, jealousy, and projection that in the film remain more implicit, transforming affective tension into an interactive spatial geometry that the player must navigate.



Figure 4. Sensual dimension: Spatial articulation of relational dynamics among EGO (male centaur), ALTERO (female centaur), and OTHER (birds).

In the cave (Figure 5), shafts of light and volumetric fog render vulnerability and confrontation; live OSC mappings allowed bodily rhythms to directly modulate sound, so gestures were heard as well as seen.



Figure 5. Sensual dimension: Shafts of light and volumetric fog frame the centaurs in a state of vulnerability and confrontation.

Each medium privileged different facets - cinematic composition in Blender, responsiveness in Unity/Godot, affective resonance in SuperCollider - while pointing back to the same ontological depth.

Here the practical outcome was that the centaurs manifested differently across contexts, offering audiences layered ways of encountering the same ontological entity.

The creator of MONO LOVE observed that variations across media did not fracture identity but amplified affective presence, showing that multiplicity can sustain coherence when designed as an intentional principle.

5. Discussion

Designing a transmedia character involves engaging with its multiple, hidden dimensions, shaping how it emerges, adapts, and interacts across media and audiences rather than attempting to fix a single essence. Through the WTS framework, we embrace ontological indeterminacy, where characters are not reducible to scripts or models but are autonomous, withdrawn constructs that unfold through performance, computation, and audience interpretation. This perspective reframes character design as an epistemic practice: designers do not capture an inner truth but mediate an evolving assemblage of behaviors, gestures, and expressive cues.

The review of transmedia character ontology literature highlights persistent conceptual and methodological gaps that WTS directly addresses. First, scholars have noted the absence of a unified ontological model, with existing accounts ranging from template-based and typological frameworks to Japanese media mix perspectives (Thon, 2019, 2022; Thon & Pearson, 2018; Wilde & Kunz, 2023). While these approaches offer valuable insights, they tend either to overgeneralize across media or to focus too narrowly on specific cases. WTS addresses this limitation by distributing character identity across three distinct ontological layers - Withdrawn, Transductive, and Sensual - providing conceptual unification without collapsing complexity into a single dimension. This layered approach preserves both coherence and flexibility, offering a structured lens for analysis while respecting the multiplicity of character existence.

Second, literature reveals a longstanding tension between stability and mutability. Template-oriented models emphasize continuity and coherence, whereas media mix perspectives highlight discontinuity and performative fluidity (Blom, 2020; Wilde, 2019). WTS interprets these positions as layered effects: stability is anchored in the Withdrawn layer, mutability arises through Transductive mediation, and interpretive richness unfolds at the Sensual threshold. This layered conceptualization reframes debates over persistence and variability as inherent features of multi-layered ontologies rather than contradictions or shortcomings of existing models.

Third, existing research often underspecifies the mechanics of production and participation. Many accounts describe transformations or audience interventions without fully theorizing the processes that mediate identity across media. WTS foregrounds transduction - the technical, performative, and algorithmic processes that operationalize character essence - as the critical intermediary bridging the Withdrawn and Sensual layers. By naming this dimension, WTS emphasizes that characters are actively realized rather than passively represented. Here, the role of the Director becomes central: orchestrating distributed processes, ensuring ontological coherence, and safeguarding thematic resonance across media. Unlike the Scriptwriter, who defines the essence, or the Character Designer, who materializes it, the Director manages improvisation and audience agency without dissolving the core ontology. This supervisory role ensures that multiplicity does not devolve into fragmentation, balancing coherence and adaptability through ongoing negotiation.

Fourth, the role of audience agency remains ambiguously positioned in prior accounts. Practices such as fan fiction, cosplay, and remixing often challenge canonical authority, yet their ontological significance is rarely articulated. WTS situates audience, performer, and

designer interventions at the Sensual layer as constitutive rather than peripheral. This reframing underscores that identity and meaning are co-constructed at the point of encounter, positioning participation as a fundamental dimension of character ontology rather than an external effect.

The case study of MONO LOVE demonstrates how these theoretical principles can be applied in practice. Ontological depth was enacted through symbolic motifs and personality mapping, ensuring interpretive richness and coherence. Transductive mediation was realized through shared grammar - rigging, retargeting, OSC protocols - that actively shaped how character traits became perceptible across media. Sensual multiplicity was staged through cinematic, interactive, and sonic encounters, each foregrounding different facets while maintaining ontological continuity.

Taken together, the analysis and case study show that the WTS framework advances conceptual debates in transmedia studies and offers generative principles for practice. These can be summarized as follows: (1) define ontological depth early as symbolic and dispositional anchors; (2) design transductive grammar that preserves invariants while enabling adaptive remapping; and (3) plan for sensual multiplicity by assigning expressive priorities to each medium. In doing so, WTS provides creators with a reproducible methodology for sustaining coherence while embracing diversity in the design of transmedia characters.

6. Conclusion

This paper has introduced and applied the WTS framework, structured around Ontological Depth, Transductive Mediation, and Sensual Multiplicity, as a contribution to the theory and practice of transmedia character design. Unlike typological or medium-specific models, WTS articulates character identity as a layered ontology, enabling coherence without sacrificing variability. Through the case study of MONO LOVE, we demonstrated how these principles can be concretely applied: withdrawn motifs grounding symbolic coherence, transductive workflows translating identity into operational forms, and sensual encounters ensuring multimodal expressivity. By integrating conceptual, technical, and performative dimensions, WTS reframes character design as both an ontological and procedural practice. The framework offers two primary contributions. Conceptually, it provides a unified ontology that clarifies longstanding debates about stability, mutability, and participation in transmedia characters. Practically, it translates these concepts into workflows and design strategies that creators can adapt in diverse media contexts. Future research should further test the adaptability of WTS in other case studies, including extended reality environments, and participatory fan practices. Such explorations can expand its methodological reach and refine its theoretical propositions. Ultimately, WTS advances the understanding of transmedia characters as ontological actors, coherent yet mutable, withdrawn yet encounterable.

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