

# Translating the Game Space Model from Analytic Framework to Practical Methodology for Structuring Game Development and Research

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## ABSTRACT

Methodological approaches to managing game development (and) research lifecycles are often fragmented. This paper translates Howell and Stevens' (2019) Game Space Model (GSM) into the Game Space Methodology, a stage-based framework for organising game development and practice-based research. The methodology reorders the GSM's "game-as" units into nine practical stages, guiding a project from Design Philosophy through Design, Creation, Publication, Play, and finally Analysis. Each stage highlights indicative processes, outputs, and methods drawn from design research and related paradigms. After outlining how the GSM was translated into a practical framework, the paper uses a single-case study of *What We Take With Us* – a multi-format, values-conscious wellbeing game – to demonstrate its efficacy. The case shows how the methodology supports planning, documentation, and cross-stage reflection, but also highlights limitations around its labour demands, fit with industrial approaches, and stages of the game development process that may currently be unconsidered in the methodology.

## Keywords

research methods, practice research, game space, game development, values-conscious design

## INTRODUCTION

Game development and research continues to wrestle with how to integrate theory, creative practice, and the realities of game production within a single methodological frame. Existing *research* methodologies provide useful approaches to examining development and play (Blessing and Chakrabarti 2009; Kultima and Stenros 2010), while industrial approaches like agile and scrum (Keith 2010) provide structure for

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*creative* processes. However, these approaches often prioritise *sections* of game creation/research.

Howell and Stevens' (2019) *Game Space Model (GSM)* instead maps games as they exist across an *entire lifecycle*, acknowledging games as separate artefacts when designed, developed, published, interacted with, and reported on. This highlights how different stakeholders can shape the 'same' game in different ways. Management of this is difficult in practice, where different stakeholders are responsible for each stage: designers and writers shepherd a game's initial design; programmers, artists, and others turn designerly visions into assets; producers and publishers negotiate release; user experience teams and community managers engage players to understand their expectations and experiences; and analysis is often left to critics and researchers. The GSM segments this so that stakeholders better understand what stage they are analysing (Howell and Stevens 2019). However, in practice, game development teams are often pragmatically focused on creating their stage rather than having a holistic view of the entire process. This means that some actions, like managing player expectations or planning for localisation or certification requirements are routinely underexamined and become urgent problems (Washburn et al. 2016).

To support the planning, reflection, analysis, and governance of these stages, this research contributes a translation of the GSM from an analytical map into an operationalised methodology – the *Game Space Methodology (GSM methodology)*. It helps teams coordinate which methods to use, when, and for what kinds of outputs. Scaffolding game development and practice-based research in this way allows stakeholders to understand the myriad considerations that may arise within the game's lifecycle. While the *GSM methodology* is presented as deliberately detailed, it does not assume that every team will conduct extensive research at every stage. Instead, such presentation aims to foreground how each stage warrants *some* consideration. In doing so, teams can better understand what shapes their design philosophy, how player expectations are discovered and managed, which publication requirements apply, what players experience, and how longer-term analyses can improve subsequent projects.

The methodology is then examined through *What We Take With Us (WWTWU)*, a multi-year, practice-based game research project that explored emotional wellbeing and reflection. *WWTWU* is treated as a single-case study (Yin 2013) of the *GSM methodology* in use, highlighting where the GSM needed changing in translation, where the methodology added value, and what tensions surfaced during the realities of game production. As such, the research question is: **How can Howell and Stevens' (2019) Game Space Model be translated from an ontological representation of the games lifecycle into a practical methodology for managing the game development (and) research lifecycle?**

Importantly, the case study presents a qualitative, practice-based and values-conscious game development process (Coulton and Hook 2017; Flanagan and Nissenbaum 2014) within a research context, rather than a larger commercial production. While the methodology is designed with industrial applicability in mind, it is not offered as a universal solution for game development practice. Instead, it is an organisational scaffold for structuring projects and selecting methods across the game's lifecycle.

## BACKGROUND

### Frameworks for Practical Games Research and Development

The research is primarily concerned with the practical process of game development and its analysis. When undertaking artefact-based projects within research contexts, frameworks like the Design Research Methodology (DRM) (Blessing and Chakrabarti 2009) can provide structure by clarifying the research problem through understanding the field; identifying issues and opportunities; developing and refining methods, tools, or artefacts to address these issues; and testing them to evaluate their effectiveness. While the DRM is useful for guiding an artefact's design and assessment, it may overlook the game's reception 'in the wild' by not fully exploring players' expectations or experiences. The Expanded Game Experience (EGE) model addresses this by exploring a player's journey with a published game artefact (Kultima and Stenros 2010). This spans marketing and media coverage; the decision to engage with the game or alternatives; installing the game, learning the controls, and playing; players reflecting on their experiences; and eventual disengagement with the game.

Industrial contexts similarly stratify game development into three main phases: pre-production, production, and post-production (Aleem et al. 2016). Pre-production emphasises planning, feasibility testing, and marketing (Aleem et al. 2016), as well as outputs like documentation, concept art, engine development and pipeline planning (Chandler 2009). These often coalesce into initial prototypes to test idea validity (Lemarchand 2021). Production then follows, typically guided by agile development methodologies that break projects into two-to-four week sprints where teams collaborate on increasingly-larger goals (Keith 2010). Daily stand-ups keep the team aligned, and post-sprint reviews guide evolving requirements. Sprints typically include planning, design, development, testing, and evaluation phases, which repeat until the product ships (Flanagan and Nissenbaum 2014). Finally, post-production includes testing, marketing, and ongoing support, but has typically been understudied (Aleem et al. 2016). This stage is increasingly essential in modern game development, which often prioritises ongoing player engagement and post-release content delivery (Karlsson 2018).

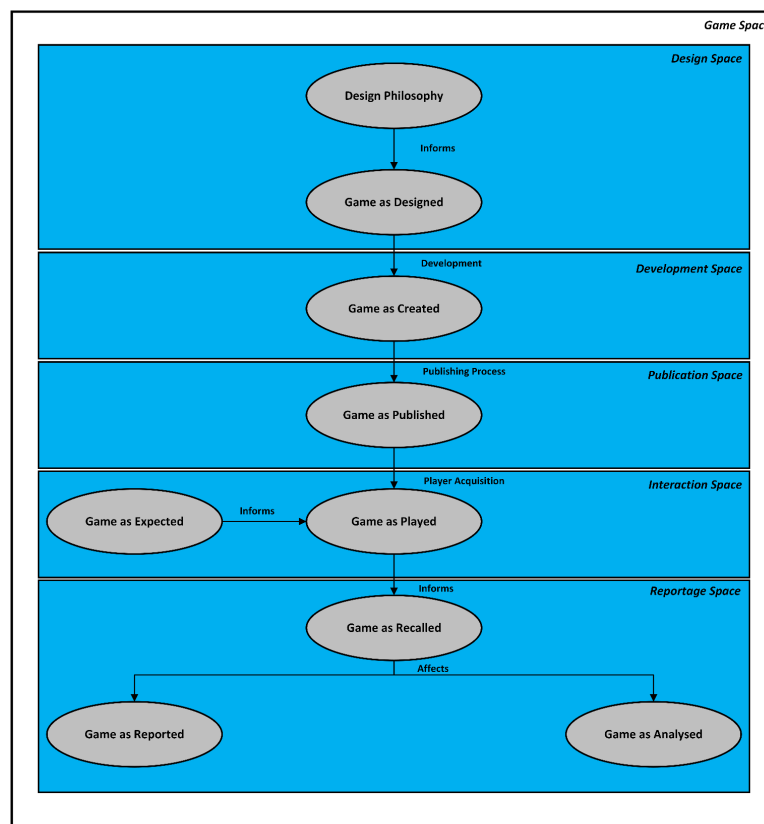
Together, these frameworks offer valuable guidance for structuring development work and analysis, but each stage is too often considered in isolation. For example, The DRM and EGE thus individually emphasise different halves of the game lifecycle. Industrial focus is similarly on artefact progression, which can create communication or knowledge fragmentation across roles (Washburn et al. 2016). As such, there remains a need for frameworks that consider the entire games lifecycle to manage game projects effectively. Howell and Stevens' (2019) Game Space Model provides such an approach through its representation of a game across distinct lifecycle stages.

### The Game Space Model

The GSM, shown in Figure 1, is split into nine stages: the design philosophy, followed by the "game as" designed; created; published; expected; played; recalled; reported; and analysed (Howell and Stevens 2019). These *stages* are integrated into the design, development, publication, interaction, and reportage *spaces* (i.e., spaces are clusters, stages are analytical units).

The Design Space incorporates the designer’s *Design Philosophy* into the *Game as Designed* – the idealised version of the game (often described in design documentation). The Development Space houses the *Game as Created*, where developers translate design ideals into implemented features. The Publication Space houses the *Game as Published* (stewarded by producers/publishers). In most cases, this artefact is identical to the *Game as Created* but may be distinct due to changes made to meet publishing requirements (e.g., certification processes, censorship laws). The Interaction Space houses the *Game as Expected*, which involves players’ assumptions about the medium/product based on marketing material, prior life experiences, and awareness of games culture. These expectations affect the *Game as Played*, where players have an individual play experience with a game during a specific moment in time. The Reportage Space incorporates various ways players, critics, and researchers describe their play experience through the *Game as Recalled*, *Reported*, and *Analysed*. Notably, post-release analysis from one stakeholder perspective (e.g., a designer) may differ from other analyses (e.g., testers, players, or critics) (Howell and Stevens 2019).

However, in following Bogost’s (2012) flat ontological approach, the GSM describes each element is a distinct “unit of being” (e.g., “game-as-code”, “game-as-play”) to assist game analysis. It does not offer stakeholders guidance on moving between these stages. Practical development work requires teams to make decisions across these stages, often using specific research or development approaches. As such, the *GSM methodology* aims to adapt the GSM to better fit these practices while maintaining its granular structure to provide guidance for teams surrounding how to document or collect data within each stage.



**Figure 1: The Game Space Model, adapted for visual clarity**

## Methods and Methodologies for Exploring the Game Space

To construct the *GSM methodology* as an organisational approach for game development and research, this section outlines some approaches that can be used to explore different game space stages. Rather than offering an exhaustive review, it explores established qualitative methods within game development and related research paradigms (Chiapello 2017; Kultima 2017).

Design research argues that the practice of game design generates knowledge through “reflection-in-action” during artefact creation and “reflection-on-action” afterward (Fullerton 2008; Schön 1983). Research-through-design (RTD) similarly treats the design process itself as a site of enquiry (Frayling 1994; Zimmerman et al. 2010). This complements research-for-design (which focuses on preparatory research), and research-into-design (which examines design processes) (Frankel and Racine 2010). RTD practitioners differ on the final artefact’s importance, with some viewing it as merely an embodiment of the knowledge production process (Gaver 2012; Godin and Zahedi 2014), and others seeing it as a tool that validates and generates additional knowledge through interaction (Koskinen et al. 2011; Zimmerman et al. 2010).

Importantly, artefacts communicate research outcomes more effectively than description alone. Practice-based research (PBR) and practice-led research (PLR) emphasise both the creative process and the artefact’s importance, with PBR focusing on the practice process itself, while PLR examines it to generate new theories (Candy 2006). Practice research (Higgins 2022) combines the strengths of both to holistically examine game creation from conceptualisation (theory) to execution (practice). These practice-oriented approaches support earlier GSM stages concerned with planning, defining, and creating the game.

Later stages require attention to player reception and experience. Ethnographic approaches are effective for documenting emotional gameplay experiences within analogue games like larp (Cox 2019), ongoing digital games like MMORPGs (Brown 2015), or wider game community analysis (Boellstorff 2015; Hine 2016). Autoethnography extends this approach by also incorporating an individuals’ reflections and experiences (Woodward 2018), often useful for exploring developer perspectives on creation and deployment through post-mortem analyses (Jerrett 2024b, 2024a; Washburn et al. 2016). Human-computer interaction provides complementary techniques for data collection in these stages. Think-aloud encourages players to verbalise thoughts and emotions to reveal their cognitive processes (though it risks disrupting gameplay) (Alhadreti and Mayhew 2016). Stimulated recall similarly asks players to review and discuss their recorded gameplay (Pitkänen 2015). Finally, surveys and focus groups can collect additional self-reported data, but may be limited by participants’ articulation abilities (Davis et al. 2005; Holl et al. 2020).

Textual and content analysis then supports the final analysis process by enabling close readings of in-game elements like interfaces, mechanics, and narrative structures to uncover underlying priorities, economics, or politics (Consalvo and Dutton 2006; Radde-Antweiler and Zeiler 2015; Reay 2023). This can be extended to technological, cultural, and historical game development contexts. Notably, these approaches provide rich post-hoc data surrounding how or why certain decisions were made (Fernández-Vara 2014).

In the *GSM methodology* that follows, many of these approaches are associated with specific stages to exemplify how data may be generated or analysed across the game lifecycle. While it is unlikely a single project would employ all these methods (or may use more suitable ones), they nevertheless provide illustrative options for documenting/analysing a game's development process and the stakeholders involved.

## THE GAME SPACE MODEL AS METHODOLOGY

In methodological research, terms like "methodology," "method," and "data collection techniques" are often used interchangeably, though definitions vary (Crotty 1998; Pickard 2013). Within this research, a "methodology" refers to the overarching framework guiding a project. A "method" includes techniques used within this framework (e.g., surveys, usability testing) to facilitate data collection, and "data collection techniques" are specific approaches (e.g., interviews, metrics). The stages of the GSM (Howell and Stevens 2019) thus form the basis of a *methodology*, which coordinates methods for each stage by providing practice-based prompts, output suggestions, and data collection methods/techniques to aid documentation of the development process.

In adapting the GSM, several changes had to be made from the original model. While the *GSM methodology* retains the GSM's discrete units, it now emphasises the ordering and connections between stages (that were less important in the original model's structure) because practical projects require such sequencing. Importantly, the methodology assumes that every project should at least *consider* each game space, even if only briefly, though the *depth* and *methods* used in each space may vary across projects. The *GSM methodology* thus provides a useful scaffold for project planning. For researchers, the *GSM methodology* functions as an overarching framework for coordinating separate data collection and analysis efforts that are often presented across the multiple publications large projects typically generate. For developers, the methodology provides clear lifecycle checkpoints that can support project management and cross-stage collaboration decisions, making it harder for elements to be entirely overlooked.

Importantly, while the model's sequencing may bear resemblance to the waterfall model of software development (Fawareh et al. 2024), it should not be implemented as such. Unlike waterfall, the *GSM methodology* does not require each stage to be completed once before the next begins. It aims to provide an overall lifecycle map that allows stakeholders to identify where particular decisions, risks, methods, outputs may sit. In practice, teams may iterate rapidly within and between stages, while still using the nine spaces as checkpoints for planning, documentation, and reflection. To avoid in- and between-stage iteration continuing indefinitely, each space can be treated as a planning checkpoint with proportionate entry/exit criteria for time- or budget-bound projects detailing what needs to be known, what needs to be produced, what risks need to be addressed, and whether the project should continue, pivot, or reduce scope at each stage.

The methodology also made specific sequencing and semantic changes to the original model. The *Game as Expected* is moved earlier in the lifecycle as teams need to understand player, publisher, and stakeholder expectations before production and scope are established. Similarly, *Game as Published* is reframed as various ongoing logistical and ethical constraints (e.g., certification requirements, data protection

obligations), that should influence design decisions prior to creation. Upon release, the *Game as Played* now describes the game as it is experienced across its active lifespan, rather than the GSM's in-the-moment framing.

The stages of the *GSM methodology*, as presented in this paper, are:

1. **Establish the Design Philosophy** by clarifying the project's purpose, values, and audience.
2. **Define the Game as Designed** by establishing design pillars, documentation, and prototypes that express the intended experience.
3. **Explore the Game as Expected** by documenting player, publisher, and stakeholder expectations that inform design decisions.
4. **Understand the Game as Published** by identifying platform, publishing, ethical, and regulatory requirements that shape what can be created.
5. **Monitor the Game as Created** by managing the integration of the game across development tools and pipelines.
6. **Describe the Game as Played** by assessing how the game is experienced over time and how those experiences align with original intentions.
7. **Capture the Game as Recalled** by gathering and evaluating immediate accounts of play.
8. **Examine the Game as Reported** by investigating longer-term trends gathered through community feedback, support tickets, etc. This may impact future player expectations.
9. **Synthesise the Game as Analysed** by integrating data and reflections from previous stages to evaluate the game's impact and refine future projects.

The changes to the GSM to construct the *GSM methodology* are shown in Figure 2. The following subsections outline each game space and suggest practical steps and methods for engaging with it.

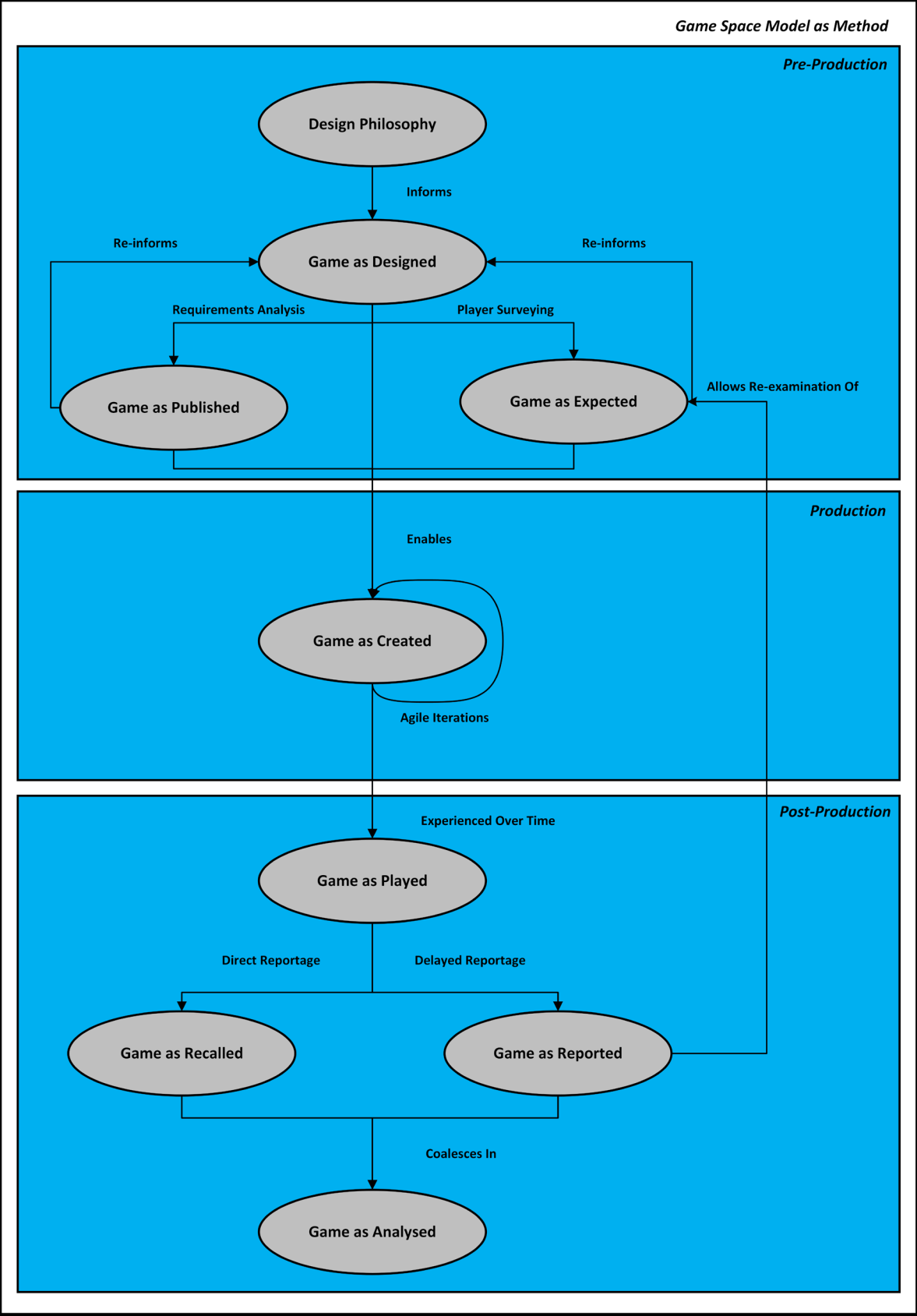


Figure 2: The GSM methodology.

## Design Philosophy

The *Design Philosophy* captures the overarching principles and assumptions that precede concrete design work (Howell and Stevens 2019). Here, teams explicitly state what the project is trying to do, for whom, and under what constraints. This may involve engaging with existing literature and games to develop a theoretical framework using grounded theory (Strauss and Corbin 1990) or integrative reviews of design approaches (Torraco 2005). Autobiographical methods can also be used to articulate the team's own values and experiences for the project (Rusch 2017), while market research (Yu 2024) and SWOT analyses (Rapp 2014) can clarify audience, scope, and risks. Projects typically adopt a player-centric (Fullerton 2008) or a designer-centric (auteur) approach (Montola 2012). Teams should thus emerge from this stage with a brief, shared statement of purpose, audience, and values that can guide later decisions.

Practical steps for this stage include:

1. Identifying the core problem, opportunity, or experience the game addresses and who it is for.
2. Reviewing relevant literature, games, and/or market conditions to clarify opportunities, constraints, and risks.
3. Using autobiographical or reflective methods to understand the team's values and their effects on the project.
4. Documenting and sharing a short design philosophy or vision statement that articulates values, audience, and stance (player- or designer-centric) across the team.

## Game as Designed

The *Game as Designed* translates the project's *Design Philosophy* into decisions about how the game will be created before committing major resources. This includes using methods like autoethnographic play to explore emerging ideas (Brown 2015), examining industry talks (Informa PLC 2024), or performing literature reviews (Snyder 2019) or textual analysis (Fernández-Vara 2014) of comparable games. These inform design "pillars" used to create outputs like design documentation and prototypes (Lemarchand 2021) which can themselves become data for research-through-design (Frayling 1994) and document analysis (Karppinen and Moe 2012). Thus, this stage should produce overarching design pillars and some form of documentation or prototype.

Practical steps for this stage include:

1. Developing design pillars that align with the established Design Philosophy.
2. Drawing on examples, literature, and industry presentations to inform mechanics, narrative, aesthetics, and structure.
3. Formalising initial design documentation and prototypes to test ideas.
4. Recording design decisions and their rationale to support later reflection and revision.

## **Game as Expected**

In the original GSM, *Game as Expected* followed *Game as Published* (Howell and Stevens 2019). In the *GSM methodology*, it is moved earlier in the lifecycle, reflecting the practical need to understand player and stakeholder expectations before major production decisions are made. Expectations include what players think the game will offer, what funders require, and what genre/franchise expectations existing communities have. Survey research can probe for anticipated features, themes, and concerns (Davis et al. 2005), while prototypes can be evaluated through usability testing to ensure emerging designs align with these expectations (Rogers et al. 2023). Quantitative methods like sentiment analysis (Liu 2012) and A/B testing (Siroker and Koomen 2015) can provide additional preference data to support changes.

Practical steps include:

1. Gathering player and stakeholder expectations through survey research.
2. Conducting usability testing on prototypes to evaluate expectation alignment.
3. Using sentiment analysis and/or A/B testing where feasible to assess the impact of proposed changes.

## **Game as Published**

In the original GSM, *Game as Published* followed *Game as Created* and largely accounted for minor platform or localisation differences (Howell and Stevens 2019). In the *GSM methodology*, this stage is brought forward, recognising that publication requirements shape what can be created at all. In industry, this involves understanding a publisher's genre, content, or platform constraints, certification processes, and region-specific regulations (Naumanen 2018), alongside external factors like achievement systems (Hamari and Eranti 2011) or monetisation models (Karlsen 2022). In research contexts, this stage also includes ethical review and risk assessment (Schmalz et al. 2014), which may require adjustments to study design or game content before approval.

Practical steps for this stage include:

1. Identifying platform, certification, publishing, and ethical requirements and integrating them into preproduction planning.
2. Conducting risk assessments to anticipate development and publication challenges and addressing these within design.
3. Documenting required adaptations for different platforms, markets, or stakeholders and their impact on the game's design.

## **Game as Created**

*Game as Created* sees the production of the finalised game artefact through asset creation and integration. Practically, development should be managed in a traceable way. This is often done through the use of agile methodologies that facilitate continuous feedback and iterative refinement (Keith 2010), supported by version control, deployment, and project management tools (Dobrzyński and Sosnowski 2018). This stage is supported by quality assurance (QA) to discover and address issues (Mozgovoy and Pyshkin 2018). Documentation and reflection on this creative process

through development diaries can be useful for later analysis and marketing efforts. A postmortem at the end of this stage should capture key insights and best practices (Washburn et al. 2016).

Practical steps for this stage include:

1. Aligning agile or similar iterative approaches to lifecycle goals when planning and tracking development work.
2. Ensuring traceability through version control and project management tools to support integration and testing.
3. Conducting ongoing QA to identify and address issues throughout development.
4. Documenting decisions and process reflections through development diaries to support later analysis.
5. Running a postmortem to document lessons learned.

## **Game as Played**

In the *GSM methodology*, *Game as Played* focuses on how the game is experienced over time by players, whereas in the original GSM this stage instead described an immediate experience as interpreted “in the player’s mind” (Howell and Stevens 2019). The stage now advocates for the tracking of the evolving live game to examine how players are engaging with it and how this aligns with designed intent (Newman 2012). Methods like telemetry can provide quantitative patterns of behaviour (Drachen et al. 2013). Participant or non-participant observation (Pickard 2013) or ethnographic approaches (Boellstorff 2015) can provide additional insights into how players and communities play. Autoethnography can also be used by developers to document their own lived experience of a project’s evolution (Jerrett 2024a). Teams should thus track how the game evolves (e.g., through changelogs) and how it is received (through player feedback/analytics).

Practical steps for this stage include:

1. Defining telemetry requirements for key behaviours where appropriate.
2. Playing or observing play directly (e.g. in playtests, streams, or community events).
3. Maintaining a changelog of objective changes (e.g., patch notes) to track design changes/drift.
4. Reflecting on game changes and their effect on developer/player behaviour.

## **Game as Recalled**

*Game as Recalled* focuses on how players describe and react to the game shortly after playing it (e.g., in controlled sessions or post-release). Whereas *Game as Played* tracks game changes over time (if any), this stage codifies immediate reactions or public response before the longer-term narratives of *Game as Reported*. At minimum, teams should gather some post-play feedback. In research contexts, methods like think-aloud and stimulated recall can be useful (Alhadreti and Mayhew 2016; Pitkänen 2015). However, such controlled methods are more difficult in industrial contexts, which may instead rely on social network analysis, review aggregation, or post-play survey research to identify recurring player sentiment while their experiences are still fresh (Davis et al. 2005; Khajeheian and Kolli 2020; Liu 2012; Santos et al. 2019).

Practical steps for this stage include:

1. Capturing immediate player feedback via controlled methods like non-participant observation, think-aloud, and/or stimulated recall, or through survey research.
2. Monitoring reviews, social media, or community channels, potentially applying sentiment or keyword analysis to identify recurring reactions.
3. Comparing qualitative recollections to telemetry or observation to identify mismatches between what players *do* and what they *recall*.

## **Game as Reported**

*Game as Reported* examines a game's longitudinal impact on stakeholders (Howell and Stevens 2019). To do this, teams should track recurring questions, issues, or successes with players. This is most often done industrially through community management to process players' ongoing experiences, while support tickets can help address quantifiable bugs (Sparrow et al. 2021). Longitudinal telemetry data can also reveal patterns in player engagement, monetisation, and retention (Sifa et al. 2018). Additionally, survey research (Davis et al. 2005) and context/content analysis (Radde-Antweiler and Zeiler 2015) can help both developers and researchers understand long-term impact. These data sources can provide expectation data that informs updates, sequels, or future projects.

Practical steps for this stage include:

1. Tracking recurring player issues and questions through support systems and community channels.
2. Periodically reviewing telemetry to understand engagement and retention changes over extended periods.
3. Conducting longitudinal qualitative analysis to understand player behaviour/reception over time.

## **Game as Analysed**

The *Game as Analysed* stage synthesises findings from all previous stages, often done through critical and scholarly analysis in the original GSM (Howell and Stevens 2019). In the methodology, this stage also highlights comparative work that feeds into future projects. In research contexts, this typically involves close readings and textual/content/thematic analysis of broader project findings to understand a game's cultural impact (Bizzocchi and Tanenbaum 2011; Fernández-Vara 2014). For developers, this stage moves beyond a single post-mortem to cross-project retrospectives and portfolio reviews to identify best practices and codify institutional memory (Bahman 2015). Academia/industry collaboration can be useful here: academics can analyse developer data and connect it to existing theory, while industry uses these insights to inform strategy and design – a practice exemplified by the partnership between Activision and CalTech (Morrier et al. 2025).

Practical steps for this stage include:

1. Applying close readings or textual/content analysis to examine a game's impact.

2. Performing comparative analyses across projects and portfolios and producing retrospectives to identify best practices for future projects.
3. Collaborating between academia and industry to analyse data and leverage findings into strategic or design changes.

## **WHAT WE TAKE WITH US**

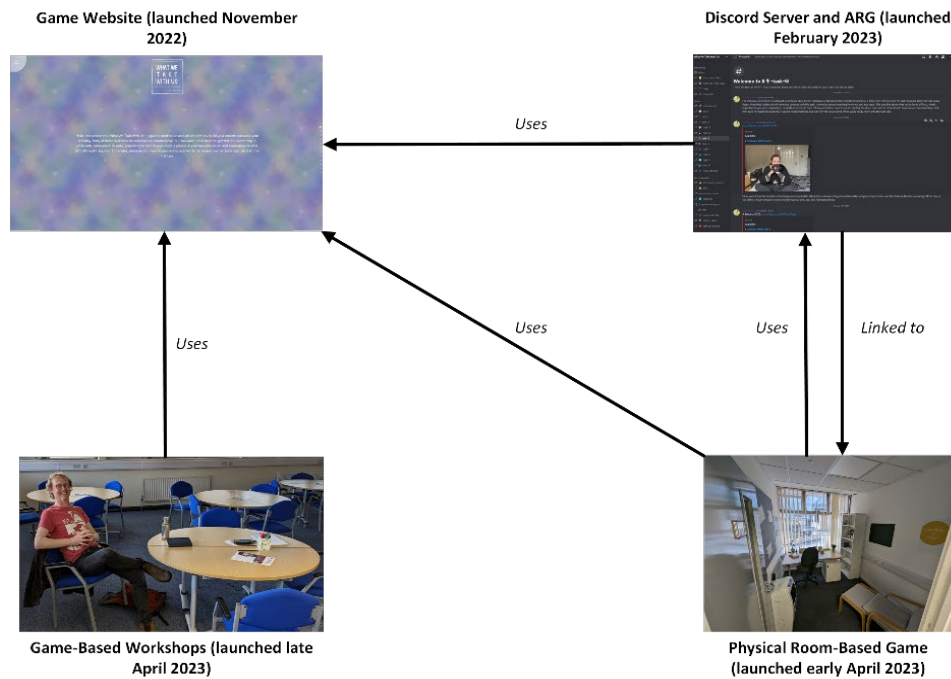
*What We Take With Us (WWTWU)* is a wellbeing-focused game developed as a practice research PhD project (Jerrett 2024a). It combined several linked game formats – a website, room-based game, Discord-based alternate reality game (ARG), and facilitated workshops – to explore how personal experiences and values could be embedded into games. *WWTWU* presents players with a set of reflective, wellbeing-oriented tasks framed through the story of Ana, a character processing the emotional fallout of the COVID-19 pandemic. The website offers eleven tasks; the room-based game has players complete them in Ana’s abandoned office, uncovering her story through documents and environmental clues; the Discord server functions as both Ana’s digital diary and a space for a distributed ARG, where players complete tasks in their own environments while responding to her posts; and the workshops adapted these tasks for academic and community settings.

The decision to adapt the GSM into a methodology followed its usefulness for framing values throughout the games lifecycle early in the project (Jerrett and Howell 2022). *WWTWU* generated myriad data across its lifecycle, including values-conscious design principles; documentation and development diaries; player submissions and Discord logs from the room game, ARG, and workshops; and post-play surveys across stakeholder groups. Some of this data has been analysed elsewhere (Jerrett 2024b, 2023; Jerrett and Howell 2022). Here, it is instead used to represent how a single project moved through the *GSM methodology*.

*WWTWU* is thus used here as a single-case study (Yin 2013) to test the *GSM methodology*. *WWTWU*’s multi-format structure, extended development timeline, values-conscious design philosophy, and diverse stakeholders (e.g., workshop participants, ARG players, room players) therefore provides a complex test case for the methodology as it mirrors the kind of multi-stage research and development contexts it aims to support.

Regarding positionality, the first author was the project’s primary designer and researcher within a UK university context, so the case is inherently shaped by their dual practitioner/researcher role. The wider *WWTWU* project therefore made extensive use of reflexivity and analytic autoethnography (Anderson 2006; Brown 2015) to control for bias. Case findings for this research were triangulated across the project’s existing data and verified by the second author.

Figure 3 shows how the main components of *WWTWU* relate to one another. The following subsections describe how the *GSM methodology* was implemented to structure *WWTWU* in practice, where it proved successful, and where project adjustments should have been made.



**Figure 3:** The components and structure of WWTWU.

## ENACTING THE *GSM* METHODOLOGY IN WWTWU

### Design Philosophy

*WWTWU's Design Philosophy* drew on earlier empathy-focused work (Jerrett et al. 2020) to conduct an integrative literature review (Torraco 2005) on human values in games. This shifted the project's focus from empathy alone to wellbeing and reflection through a broader values-conscious approach, which positions design as inherently political (Flanagan and Nissenbaum 2014). Developed in 2021, the pandemic context established *WWTWU* as a real-world game targeted towards players navigating grief, anxiety, and exhaustion, inspired by the researcher/creator's own feelings at the time.

For the *GSM methodology*, this case showed how the *Design Philosophy* stage explicitly encourages positioning and reflexivity (i.e., defining core developer/project values) early. The defined values list, purpose statement, and design approach reflections informed later decisions and collaborator briefing. However, while in research projects this reflexivity can be grounded in extensive literature review, in commercial settings these philosophies may need to be scaffolded with lighter prompts or existing templates to keep the reflective load manageable.

### Game as Designed

*WWTWU's Game as Designed* was where an initial idea (a values-conscious 'empathy escape room') expanded into a larger multi-format project. Drawing on the established values and additional literature reviews, this stage produced design principles that guided the design of each format. Significant design work in this stage also involved drafting Ana's narrative, deciding how her story and the wellbeing tasks would be distributed across these formats, and building lightweight prototypes.

For the *GSM methodology*, this case shows both the value and risk of the *Designed* stage. Design principles provided useful constraints which, working in tandem with the established values from *Philosophy*, ruled out complex mechanic design. This made it easier to brief collaborators or stakeholders at later stages using these pillars. However, the lack of methodological constraints around scoping meant it was hard to know when this stage was truly complete, leading to scope creep (four formats instead of one). As a result, this phase should pair the need for design principles and prototypes with stage-limited deliverable criteria.

### **Game as Expected**

*WWTWU's Game as Expected* stage was only partially addressed. The project explicitly adopted a designer-centric approach, treating the game as an autobiographical artefact rather than shaping it through player or industry expectations (Rusch 2017). As a result, no formal expectation gathering was conducted, with expectations instead inferred indirectly through research-for-design (Frankel and Racine 2010) by analysing other wellbeing games and drawing on practices from music and art therapy to shape task design and tone.

For the *GSM methodology*, *WWTWU* thus provides a useful negative example. By relying solely on designer-centric practice and exemplar analysis the *Expected* stage was underdeveloped, which likely contributed to lower-than-hoped-for participation during the *Game as Played*. More broadly, it suggests the importance of at least lightweight expectation work, even in strongly personal or experimental projects to surface additional needs, constraints, and project misunderstandings before full production.

### **Game as Published**

*WWTWU's Game as Published* stage was not shaped by platform certification (as a self-published online website/Discord server). Instead, as a research project, publication centred on navigating ethical approval through the risk of a wellbeing-focused but partly secretive pervasive game. *WWTWU* followed the “this is not a game” (McGonigal 2003) framing, which implied that Ana and her narrative were real. This raised concerns around informed consent and emotional risk, which led to concrete design changes. Ana was now framed diegetically as a PhD researcher, allowing consent requests to be embedded into Discord onboarding. However, this dubious framing limited opportunities for collaboration with clinical partners, which then affected marketing.

For the *GSM methodology*, the case emphasised how the *Published* stage is not only about stakeholder or technical requirements. For research-led or small-scale projects, it may also include navigating organisational processes or considering elements like legitimacy and discoverability, which may impact the game’s design. Teams using the *GSM methodology* should thus treat this stage as an opportunity to map project gatekeepers (e.g., ethics boards, organisations, partners, platforms) and plan for how their requirements impact game creation.

### **Game as Created**

*WWTWU's Game as Created* involved orchestrating and tracing implementation across multiple formats: building the website, staging the physical room as Ana’s

office, and configuring the Discord server as her diary and the ARG hub. Notably, Ana's designed content required strict scope management (i.e., reduction) to align design *ambition* with production *reality*. Development was documented using version control, project management, and development diaries, which later fed into a postmortem-style research-through-design account of the project (Coulton and Hook 2017). The subjective framing of this process posed challenges during academic peer review. Reviewers expected generalised findings, not autoethnographic accounts, highlighting the difficulties in balancing production candour with academic rigour in research contexts (Reay 2023).

For the *GSM methodology*, the case shows the importance of tracing and documenting development to produce meaningful data that supports later stages. For example, condensing Ana's story into practical scripts was scope management that fed into future process streamlining. Similarly, this stage showed the sometimes emotionally laborious nature of documenting creation. As such, *GSM methodology* users should plan how this stage should be suitably and sustainably documented for their context and should tailor findings presentation (project specific vs. generalisable) for relevant audiences.

### **Game as Played**

WWTWU's *Game as Played* examined the project as a "live" artefact using analytic autoethnography, reflecting its semi-autobiographical design (Anderson 2006). Deployment across formats was tracked using a research diary, highlighting lower-than-expected player engagement, the friction of live operation, and the emotional strain of running a wellbeing-focused semi-autobiographical game. While analytic autoethnography linked these observations back to existing work, the highly subjectivity nature of the project's reporting again created friction during peer review.

For the *GSM methodology*, the case shows that this stage is not *just* about player acquisition and experience, especially in small or research-led projects. Methodology users must also account for the labour and costs involved in keeping a game running. More broadly, this suggests that teams creating games where live operation can be analysed need to adequately plan for both how it will be documented and the wellbeing safeguards needed to support long-term projects.

### **Game as Recalled/Reported**

WWTWU combined *Game as Recalled* and *Reported*. In both cases, stakeholder responses were examined through survey research (Davis et al. 2005). Room and workshop players completed short post-play interviews and focus groups that captured immediate reactions, while ARG participants were surveyed at its end to reflect on their longitudinal experience. Narrative inquiry then structured short personal accounts of how the game felt to individual stakeholders (Connelly and Clandinin 1990). The *Game as Reported* also incorporated designer and collaborator reflections, where the latter described how their engagement with the project led them to change careers – highlighting the potential for WWTWU to facilitate transformative play (Tanenbaum and Tanenbaum 2015). Other stakeholders correctly recognised the game's *Philosophy*-defined values and described positive wellbeing impacts, showing the game's successful translation across the lifecycle from intent to experience.

For the *GSM methodology*, the case's stages illustrate the importance of both immediate recollections and longitudinal reportage, and of valuing multiple perspectives (e.g., players vs. developers) as *concurrent* and *distinct* rather than merely *hierarchical*. More broadly, this highlights the usefulness of deliberately comparing immediate and longitudinal feedback against internal reflections. Then, rather than assuming alignment, teams should recognise the value added by different stakeholders recalling and reporting the *same project* in meaningfully *different* ways.

## **Game as Analysed**

WWTWU's *Game as Analysed* coalesced the project's various strands into a close reading of the work (Reay 2023). By synthesising findings across the project, its focus transformed from its 'empathy escape room' origins to a more complex picture of values-conscious game development practice and research that occurred within specific cultural and institutional contexts. Most importantly, the project's methodology use highlighted recurring themes around sustainability in game development, such as the labour associated with the practice and research processes, the need for boundary management in game development, and the increasing need for wellbeing safeguards in such contexts.

Within the *GSM methodology*, the case shows this stage as the point where disparate data, outputs, and perspectives are compared to inform guidance for future work, highlighting the *process* rather than the *product*. This stage should thus be used to generate cross-project lessons on organisational/design values, workflow improvements, and wellbeing fortifications to be fed back into future project's *Design Philosophy* stages, rather than merely seeing the analysis process as a project-specific end-of-lifecycle activity.

## **DISCUSSION**

Beyond the stage-specific findings and implications for the methodology discussed above, this section briefly discusses broader findings around the depth of the methodology, its practical uses within various contexts, and its limitations.

### **Every Stage Matters, But Not Equally**

WWTWU showed that the *GSM methodology's* strength lies in making the whole game development lifecycle visible, rather than prescribing equal depth for every stage. Mapping the project across the methodology's nine stages allowed project work to be cognitively (and practically) segmented, while highlighting potentially under-considered fields. WWTWU gave significant attention to some stages (e.g., *Design Philosophy* and *Designed*) that honed the game's values-conscious focus. However, less consideration of *Expected* and *Published* stages led to misalignment in player reception and audience targeting. The methodology made these gaps, and their impacts during subsequent stages, more legible. Other projects can similarly determine their own pivotal stages.

WWTWU also showed that approaching the *GSM methodology* as nine equally deep research programmes was unrealistic. Even in a single-PI PhD project, it was unfeasible to sustain rich data collection in every space. Attempts to do so (e.g. autoethnographies in *Created* and *Played*) created significant emotional and analytical burden. The methodology therefore works best when understood as a

breadth-first scaffold with selective depth. Acknowledging and minimally addressing each stage allows for more robust final products, process documentation, and project traceability. This can help mitigate practical development issues like team turnover, project direction shifts, and the knowledge loss and communication inconsistencies that may result (Farough and Futter 2024). However, only some stages will warrant full studies or extensive documentation. While not every stage will map cleanly to every project, *WWTWU* showed that even stages that seem less important (like expectation gathering and publishing requirements for smaller-scale projects) still benefit from lightweight exploration, as knowledge from each stage always informs the next.

### **The *GSM methodology* in Practice**

*WWTWU* showed that the *GSM methodology* is most useful as a structuring device rather than a prescriptive process. Unlike DRM, which foregrounds the design and research of an artefact (Blessing and Chakrabarti 2009), or EGE, which emphasises players' experiences (Kultima and Stenros 2010), the *GSM methodology* offers an alternative by coordinating methods from these traditions across the *whole lifecycle* to manage longer-term traceability. It works alongside existing agile frameworks to provide conceptual clarity that may be lost in granular task-based sprints and ever-changing requirements (Keith 2010). It also encourages cross-team and cross-stage collaboration regarding who 'owns' specific stages, what is being done at each stage, and how process data is created and managed. The *GSM methodology* adds value by structuring choices about *who* is using *which* methods and *where*.

Within the research context the methodology helped organise both project planning and research outputs. Its practical steps also provided approaches for structuring creation or analysis (e.g., defining values, documenting creation, surveying stakeholders). As presented, the methodology is therefore most applicable to practice-based researchers by providing scaffolding for planning, documenting, and analysing game development work. The methodology can help articulate decisions, surface gaps, and generate analysable artefacts across the entire development process.

However, the structure also scales to small indie teams, where the lifecycle view is useful, but resource constraints require a way to prioritise certain lifecycle stages. For larger commercial teams, the methodology may instead act as governance scaffold that preserves design intent by providing a structure for considering stages that are often rushed, siloed, or informally handled (Washburn et al. 2016). To enact the methodology, teams can start by mapping their planned activities against the nine stages, selecting some stages for deep work and treating the others as checkpoints to minimise potential oversights.

### **Other Projects using the *GSM methodology***

One limitation of the present research is that the *GSM methodology* was only tested using *WWTWU*, as is often the case with design practice projects. To address this limitation and suggest further uses of the methodology, this section provides hypothetical project examples beyond *WWTWU*. For instance, a small indie team developing a short narrative game might use the methodology as a lightweight planning tool rather than a full research methodology. In Design Philosophy, the team might define the game's design pillars (Lemarchand 2021) to include as minimal

failure states and the use of environmental storytelling. The Game as Designed would see this become a practical level flow and/or a vertical slice. The Game as Expected would then involve checking whether a game's public-facing materials (e.g., Steam Page metrics, community feedback) suggest that players understand the game under development. The Game as Published would then work as a production 'gate' to ensure that elements like controller support, localisation needs, save systems, or other systemic requirements are consistent with Steam's platform requirements before the project is too far into production. In this case, the methodology's value is not that every stage becomes a separate study, but rather that the team has a structured way to ensure various stages of the production process are in alignment.

However, for a team using the methodology in a live-service multiplayer project, the lifecycle would not conclude in the way that finite game development projects might. In this case, the Game as Played and Game as Reported stages (among others) would become recurring checkpoints. For example, telemetry might show that players are abandoning a mode earlier than expected. Discord, Reddit, and support tickets might suggest this is due to perceived character balancing issues. That information would form the basis of a post-launch Game as Expected evaluation that would feed into a subsequent Game as Created cycle to create a new balance patch. Here, the methodology does not directly manage the development process of the patch, but it does provide a framework for finding (via Game as Reported), examining (in a new Game as Expected analysis), and addressing (in an additional Game as Created cycle) post-launch problems.

## Limitations and Future Work

The *WWTWU* project also surfaced several other limitations for the methodology. Most notably, the *GSM methodology* is labour-intensive, and often requires sustained documentation, reflection, and analysis across its lifecycle, which for many industrial teams may be unrealistic given the velocity-focused nature of agile approaches. It also implicitly assumes access to research skills and time that not all teams possess, though research practice is becoming increasingly important within studios (Morrier et al. 2025; Riot Games 2015). As such, while the methodology often suggests lightweight methods or techniques for each stage, further research may address labour intensity through industry-facing validation and co-operation for iterating on the methodology. This will allow better understanding of how the *GSM methodology* can be adapted as a lightweight planning/checklist tool, to see how/which stages are addressed in specific project types, and how the lifecycle may need pruning, expansion, or reordering to better reflect different production cultures.

The methodology is also currently ontologically partial, having inherited Howell and Stevens' (2019) "game-as" lifecycle units. While they present myriad stages, allowing the *GSM methodology* to be a productive lifecycle aid for many projects, there may yet be missing considerations. For example, the methodology's design research roots (Chiapello 2017; Kultima 2017) often favour qualitative methods, which may not align with development driven by metrics (Drachen et al. 2013). Its linear structure may also not fit cyclical games-as-a-service development (Karlsson 2018) or highly improvisational user-generated content creation pipelines (Scacchi 2011). *WWTWU*'s real-world, values-conscious, and researcher-authored context is also an atypical game genre for testing the *GSM methodology*. As such, it should be understood as one useful approach to game development/research in need of further validation (in different projects and contexts), rather than a totalising map.

## CONCLUSION

This paper has examined how Howell and Stevens' (2019) *Game Space Model* can be translated from an ontological map of "game-as-" analysis units into the *Game Space Methodology*: a practical scaffold for structuring game development and practice-based research across their lifecycles. Reworking the model as a methodology identified practical ways game development/research can be scaffolded and supported across all nine original stages. Doing so allows for the consideration of under-considered lifecycle aspects (Washburn et al. 2016) and provides a structure to decide where to invest analytical and creative depth, while also providing suggestions for methodological approaches at each stage.

The *WWTWU* case study was then used to address the research question by demonstrating both the usefulness of this translation (particularly for planning, documentation, and cross-stage reflection) and its limits when applied in practice. The case most notably showed the value of treating the GSM as a breadth-first scaffold with selective depth rather than nine equally heavy analysis stages. It also illustrated the methodology's use as an overarching framework in research contexts that may have industrial benefits, not by replacing existing lifecycle or agile approaches, but by highlighting blind spots around player expectations, publication requirements, and reportage mismatches. Finally, the case foregrounded the importance of developer wellbeing concerns that emerge once creation, operation, and other stages are treated as legitimate sites of inquiry, not merely as process.

However, there remain limitations left for future work. These include the labour within both the games lifecycle and its analysis, the ontological partiality of the current methodology, and the need for further industrial validation in other game projects. As such, the *GSM methodology* is not offered as a universal solution, but as one pragmatic approach to organising work and reflection. Future iterations will need to be co-developed and tested with industry partners and in different project types. Doing so may produce lighter-weight implementations and alternative project approaches while retaining the core commitment to lifecycle-wide thinking.

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